

### 4.3 ROTATION OF CAPITAL AND BASIC ECONOMIC RATIOS

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*CONTEMPORARY CAPITALISM AND MARXIST ECONOMICS*,  
 Oxford, Clarendon Press, 1983, appendix 2, p. 284-287)

#### MARXIST RATIOS WHEN PERIODS AND RATES OF TURNOVER DIFFER FROM UNITY

##### *The Concepts of Period and Rate of Turnover*

In chapter 4, Marxist ratios were considered on the assumption that  $K = C + V$  represented both the *money-capital advanced* at the beginning of the year (to purchase the means of production and labour-power) and the *production cost* of the annual product. In technical terms, it was assumed that the *period of turnover* of capital was equal to 1 (one year) or that the *rate of turnover* of capital was equal to 1 (one turnover a year). The *period of turnover* can be defined as the interval of time between the moment when the capitalist lays out money-capital (to purchase means of production or labour-power) and the moment when he recovers the money-capital advanced (through the sale of the product); more simply, it is the time necessary to recover the money-capital advanced. The *rate of turnover* is the reciprocal of the period of turnover: it can be defined as the number of times a given amount of money-capital advanced is recovered during a certain period of time.

The following table represents by means of different symbols the sums of *money-capital advanced* (invested at the start) and the *monetary*

	<i>Money-capital advanced</i> (stocks)	<i>Monetary cost of production</i> (flows)	<i>Period of turnover of capital</i>	<i>Rate of turnover of capital</i>
Fixed capital	$\bar{F}$	F	$t_f = \bar{F}/F$	$n_f = F/\bar{F}$
Raw materials	$\bar{M}$	M	$t_m = \bar{M}/M$	$n_m = M/\bar{M}$
Constant capital	$\bar{C} = \bar{F} + \bar{M}$	$C = F + M$	$t_c = \bar{C}/C$	$n_c = C/\bar{C}$
Variable capital	$\bar{V}$	V	$t_v = \bar{V}/V$	$n_v = V/\bar{V}$
Total capital	$\bar{K} = \bar{C} + \bar{V}$	$K = C + V$	$t_k = \bar{K}/K$	$n_k = K/\bar{K}$

TABLE B.1 *Money-capital advanced, monetary costs of production, periods and rates of turnover of capital: symbols used*

*cost of production* (recovered during the year through the sale of the output produced). The sums of money-capital advanced are *stocks* (amounts of money invested at the start), the monetary costs of production are *periodical flows* (periodically renewed as production and sale are renewed). The ratios between stocks and flows give the *periods of turnover* of the money-capital, the inverse ratios between flows and stocks give the *rates of turnover* of the money-capital.

The following pages start by building up a simplified example in which periods and rates of turnover differ from unity. They then show what the basic Marxist ratios become under these new conditions.

### *A Simple Quantified Example*

The data of the example are as follows.

- (1) An enterprise produces four carriages a year (one a quarter). The sale of each carriage immediately follows its production.
- (2) The outlay in circulating capital (purchase of materials and of labour-power) is renewed at the beginning of each quarter. This 3-month outlay amounts to 750 000 for materials and 100 000 for labour-power.
- (3) The outlay in fixed capital (purchase of machines) amounts to 2 million and is made in full at the beginning of the first quarter. The machines remain in use for 5 years (that is for a production of twenty carriages); one-fifth of their value and price is transferred to the annual output (one-twentieth to each carriage).
- (4) The wage-earners' rate of surplus labour is 150 per cent, and profit is assumed to be equal to surplus revenue ( $P = S$ ).

Using the symbols defined above, the next table shows the stocks of capital invested at the beginning of the first quarter, then the production cost and the selling price of a quarter's and a year's output, finally the period of turnover (in years) and the rate of turnover (per year) of the capital invested.

We see that it takes the capitalist one quarter to recover the stock of circulating capital  $\bar{M}$  and  $\bar{V}$ : so the period of turnover of  $\bar{M}$  and  $\bar{V}$  is 0.25 (=  $\frac{1}{4}$  year). Reciprocally, the yearly rate of turnover of  $\bar{M}$  and  $\bar{V}$  is 4: the same amount of money (750 000 for  $\bar{M}$ , 100 000 for  $\bar{V}$ ) can be used four times a year to purchase materials and labour-power.

Money-capital advanced	Production cost and selling price		Period of turnover (in years)	Rate of turnover (per year)
	One quarter (= 1 carriage)	One year (= 4 carriages)		
$\bar{F} = 2\,000\,000$	F = 100 000	400 000	$t_f = 5$	$n_f = 0.2$
$\bar{M} = 750\,000$	M = 750 000	3 000 000	$t_m = 0.25$	$n_m = 4$
$\bar{C} = 2\,750\,000$	C = 850 000	3 400 000	$t_c = 0.81$	$n_c = 1.24$
$\bar{V} = 100\,000$	V = 100 000	400 000	$t_v = 0.25$	$n_v = 4$
$\bar{K} = 2\,850\,000$	K = 950 000	3 800 000	$t_k = 0.75$	$n_k = 1.33$
—	S = P = 150 000	600 000	—	—
—	Price = 1 100 000	4 400 000	—	—

TABLE B.2 Money-capital advanced, production cost and selling price, periods and rates of turnover of capital: a quantified example

On the other hand, it takes the capitalist 5 years to recover the stock of fixed capital F: so the period of turnover of F is 5 (years), and the yearly rate of turnover of F is one-fifth.

#### The Basic Marxist Ratios

##### The rate of surplus value

As before, the rate of surplus value relates the yearly *flow* of surplus revenue created to the yearly *flow* of variable capital laid out. (It is equal, as before, to the rate of surplus labour and expresses the degree of exploitation of the wage-earner).

$$S' = \frac{S}{V} \left( = \frac{600\,000}{400\,000} = 150\% \right)$$

Moreover, it is possible to define a 'yearly rate of surplus value', which relates the yearly *flow* of surplus revenue created to the *stock* of variable capital laid out. This new ratio, symbolized by means of  $\bar{S}'$ , is equal to the usual rate of surplus value ( $S'$ ) multiplied by the rate of turnover of  $\bar{V}$ :

$$\bar{S}' = \frac{S}{\bar{V}} = \frac{S}{V/n_v} = S' \cdot n_v (= 600\%)$$

*The composition of capital*

Instead of being defined as the ratio between the yearly *flow* of constant capital and the yearly *flow* of variable capital ( $C' = C/V$ ), this is now defined

- (1) either as the ratio between the *stock* of constant capital and the *stock* of variable capital:

$$\bar{C}' = \frac{\bar{C}}{\bar{V}} \left( = \frac{2\,750\,000}{100\,000} = 27.5 \right)$$

- (2) or as the ratio between the *stock* of constant capital and the yearly *flow* of variable capital (which reflects more clearly the degree of mechanization of the production process):

$$\bar{C}' = \frac{\bar{C}}{\bar{V}} \left( = \frac{2\,750\,000}{400\,000} = 6.875 \right)$$

*The rate of profit*

This relates the yearly *flow* of profit to the *stock* of capital invested  $\bar{K}$  (and not to the yearly flow  $K$  representing the production cost):

$$\bar{P}' = \frac{S}{\bar{K}} = \frac{S}{\bar{C} + \bar{V}} \left( = \frac{600\,000}{2\,850\,000} = 21.05\% \right)$$

What becomes of the formula relating the rate of profit to the other two ratios (rate of surplus value and composition of capital?) Each term of the above equation can be divided either (a) by  $\bar{V}$ , or (b) by  $V$ . We thus have:

$$(a) \quad \bar{P}' = \frac{S/\bar{V}}{\bar{C}/\bar{V} + \bar{V}/\bar{V}} = \frac{\bar{S}'}{\bar{C}' + 1} = \frac{S'}{\bar{C}' + 1} \cdot n_v$$

$$(b) \quad \bar{P}' = \frac{S/V}{\bar{C}/V + \bar{V}/V} = \frac{S'}{\bar{C}' + 1/n_v}$$

In both cases, we see, just as before, that the average rate of profit rises as the rate of surplus value rises and the composition of capital falls; in addition, the rate of profit rises as the rate of turnover of variable capital rises.