NOTES

(Note: there are no notes for chapter 1.)
Notes for Chapter 2

Introduction

See Wright, 1978; Weisskopf, 1978a,b, 1979; Shalik, 1978a; and Bell, 1977 for recent critical summaries of the various Marxian crisis theories. Sweesy (1942) is also a good source of historical and critical analysis of these theories.

1 The post-Keynesian school has emphasized the role of disequilibrium in addition to equilibrium in its economic analysis. The classic article here is that of N. Kaldor (1940) which shows the economy as spontaneously leaving equilibrium situations and as having multiple equilibria.

2 The following is a scheme for simple reproduction in a two sector model. Sector 1 is the means of production industry and sector 2 produces consumer goods. Use the symbols of section 2.1 but translate them into price terms:

\[ Y_1 = c_1 + v_1 + s_1 \]
\[ Y_2 = c_2 + v_2 + s_2 \]

where \( Y_i \) is the total production in sector \( i \). For simple reproduction, all variable capital and all surplus are consumed:

\[ \text{demand} = c_1 + v_1 + v_2 + s_2 = Y_2 = c_2 + v_2 + s_2 = \text{supply} \]

or:

\[ v_1 + s_1 = c_2 \]

This is an equilibrium condition.

3 "Fundamentalist Marxist" is a name coined by Fine and L. Harris (1976). It might be summed up as the belief that the value composition of capital inexorably rises, causing a secular fall in the rate of profit, intensifying crises, and increasing the chances of revolution. Despite the name, this school often has interesting insights into economic processes.

4 One reasonable structural explanation of the current problems of U.S. hegemony is Kowthorn's (1971) theory of the unity-rivalry cycle. See also Hobsbawm (1975). The hegemony of one imperialist power (Britain in the 19th century, the U.S. in the post-World War II period) gives
way to inter-imperialist rivalry and the relative decline of the hegemonic power. After severe international crises, wars, and class struggles, a new hegemonic power can arise (or an old one can reassert its status), starting the cycle anew. Kindleberger’s (1973) analysis of the Great Depressions as a result of hegemonic interregnum fits well here.

Section 2.1


Thus, I reject Shaikh’s (1979) recalculation of the rate of surplus value which increases the measure of surplus value by including the wages of unproductive workers. It is very common among fundamentalist Marxists to overemphasize the role of unproductive labor (that is, labor that doesn’t create surplus value directly). Such labor need not be a “barrier to accumulation” since it can be “indirectly productive.” Marx points to this phenomenon in the case of the merchant’s capital and, by implication, labor done in the merchant sector: Merchant’s capital, therefore, does not create either value or surplus-value, at least not directly. In so far as it contributes to shortening the time of circulation, it may help indirectly to increase the surplus-value produced by the industrial capitalists. In so far as it helps to expand the market and effects the division of labor between capitals, hence enabling capital to operate on a larger scale, its function promotes the productivity of industrial capital, and its accumulation. In so far as it shortens circulation time, it raises the ratio of surplus-value to advanced capital, hence the rate of profit. And to the extent that it confines a smaller portion of capital to the sphere of circulation in the form of money-capital, it increases
that portion of capital which is engaged directly in production.

(KII, p. 280)

Unproductive labor may be indirectly productive, however it need not be so. This applies to labor in the banking sector and the state as well.

2See Sweezy (1942, ch. 12) for a discussion of breakdown theories.

Note that if capitalism is overthrown, the rate of profit will fall to zero, since the surplus will be totally under democratic control (or perhaps under the control of a new, non-capitalist, non-proletarian, ruling class). It is only in this sense that there is a downward trend in the rate of profit. As long as the capitalists control the accumulation process, they can delay accumulation to raise the rate of profit.

Fundamentalist Marxist assertions seem to imply that capitalism will overthrow itself, that is, will automatically self-destruct. On the contrary, as Marx noted, "The emancipation of the working class must be won by the working class itself." To Marx, the end of class society can result only from the independent self-organization of the working class and not from some apocalyptic crisis. An apocalyptic crisis could just as well set the stage for fascism (as in Germany in the 'thirties). In fact, crises, besides being miserable experiences for all workers, represent only opportunities for revolutionary change, that is, weak points in capitalism's armor.

3Marx wrote that

The composition of capital is to be understood in a twofold sense. As value, it is determined by the proportion in which it is divided into constant capital, or the value of the means of production, and variable capital, or the value of labor-power, the sum total of wages. As material, as it functions in the process of production, all capital is divided into means of production and living labor-power. This latter composition is determined by the relation between the mass of means of production employed on the one hand, and the mass of labor necessary for their employment on the other. I call the former the value-composition, the latter the technical composition of capital. There is a close correlation between the two. To express this, I call the value composition, in so far as it is determined by its technical composition and mirrors the change in the latter, the organic composition of capital.

(KII, p. 762.)
In view of the Cambridge capital controversy (see Harcourt, 1972), the technical composition of capital is a ratio between two index numbers or two vectors, because of the existence of heterogeneous means of production and labor-power. It cannot be measured independently of the distribution of income. However, I will assume that we can do so for expositional purposes.

Second, I have dropped the phrase "the organic composition of capital" because there is no "close correlation" between the technical composition of capital (c) and the value composition of capital (k, k', k'', k‴). See equation (5) of the text. The organic composition of capital seems an appropriate concept for cross-section problems such as the transformation problem. (See note 6 of section 3.1.)

4 The assumption that \( a_1 = 1/q_4 \) is a first approximation. It can be taken as a short-term, "holding all else equal", statement. Or if the technical composition of capital is equal between sector 1 and sector 2 and the machine-output coefficients are constant over time, then \( a_1 \) will move inversely with \( q_4 \). See the second section of the Appendix to this chapter for proof.

5 One possibility is that the rising rate of surplus value will lead to a realization crisis as in Baran and Sweezy (1966). (See section 2.2.) But if the value composition of capital rises, it means a shift of aggregate demand to investment from workers' consumption. This will counteract underconsumptionist tendencies.

6 To be more rigorous than the discussion in the text, let \( r^{**} = r^* + 1 \) and calculate percentage growth rates from equations (8'), (5'), and (6)

\[
\begin{align*}
(8') \quad \delta^{**} &= \delta - (\omega^* \theta + k \omega^*) \\
(5') \quad \theta &= \theta^* - q_1 \\
(6') \quad \omega^* &= \omega^* - q_2
\end{align*}
\]

where \( \delta = (dx/dt)/x \) for any \( x \); D is assumed constant. To have \( \delta^{**} \) (and \( r^* \)) fall,

\[
\delta = \omega^* (\theta - q_1) - k (\omega^* - q_2)
\]

must be positive.
Assume that \( \vec{u} = 0 \) and consider the three cases:

**Case I:** Assume that \( \vec{w}' = \vec{r}_2 \).

Then \( r^* \) falls iff \( \vec{r} > \vec{r}_1 \).

If \( \vec{q}_1 > \vec{r}_1 \) and \( \vec{q}_1 > \vec{r} \), this is impossible.

**Case II:** Assume that \( \vec{q}_2 - \vec{w}' = \vec{w} > 0 \).

Then \( r^* \) falls iff \( (\vec{r} - \vec{q}_1) > -\vec{w} k \)

or iff \( (\vec{r} - \vec{q}_1) > -\vec{w} k/\vec{w} \).

Since the right hand side is positive, these conditions are less easily met than in Case I.

**Subcase:** Assume that \( \vec{w}' = 0 \) (as in the Okishio theorem).

Then \( r^* \) falls iff \( \vec{r} - \vec{q}_1 > (k/\vec{w}) \vec{q}_2 \).

Further, assume even development of the two sectors, so that \( \vec{q}_1 = \vec{q}_2 = \vec{q} \). Thus,

\( r^* \) falls iff \( \vec{r} > ((k + \vec{w})/\vec{w}) \vec{q} \) where the coefficient of \( \vec{q} \) is greater than unity.

**Case III:** The full employment profit squeeze. Assume \( \vec{k} = 0 \).

\( r^* \) falls iff \( \vec{w}' > \vec{q}_2 \).

As Marx notes, prices are more important in determining capitalist behavior:

Whether the commodities are sold at their values or not, and hence the determination of value itself, is quite immaterial for the individual capitalist. It is, from the very outset, a process which takes place behind his back and is controlled by circumstances independent of himself, because it is not values, but the divergent prices of production [long-run average costs plus so-called normal profits and other elements of the surplus] which form the regulating average prices in each sphere of production.

(KIII, p. 873.)

For the value rate of profit \( (r^*) \) to be translated into the price rate of profit in an easy and meaningful way, strong conditions are required. There should be a correspondence between the value and price forms of both the rate of surplus value and \( k \). First compare the value and price
forms of property income. The value form, ignoring depreciation, is
\[
S/L = 1 - w^* = 1 - w'/q_2
\]
whereas the price form is
\[
R/Y = (Y - wE)/Y = 1 - wE/pQ = 1 - w'/q
\]
where \( q \) is the average aggregate physical productivity of labor \((Q/E)\), \( Y \) is the nominal level of NNP \((p0)\), \( p \) is the NNP deflator, \( w \) is the nominal wage, and \( Q \) is real NNP.

Note that (a) depends on productivity of sector II while (b) depends on the productivity of the economy as a whole. Similarly, the real wage \( w' \) is nominal wage \( w \) deflated by an aggregate price index. Formulas (a) and (b) are the same if and only if \( p_0/p = q/q_2 = a_0/a \).

Given the assumption that \( a_2 = 1/q_2 \), this is the same as assuming that the labor theory of value directly determines relative prices.

For the composition of capital, the value form is
\[
k = D t / q_1
\]
while the price form is
\[
= p_1 D MP/Y = (p_1/p) D (MP/E) (E/Q) = (p_1/p) D t/q
\]
For the value and price forms to move together, we must have
\[
p_1/p = q/q_1 = a_0/a
\]
Again, this is the same as assuming that the labor theory of value determines prices directly.

It is not even this simple: the inverse correlation between value and productivity is true only by assumption. See footnote 5 above.

Section 2.2

Underconsumptionism is the dominant theme of Baran and Sweezy, 1966; Baran, 1957; O’Connor, 1973; Perlo, 1974; Sherman, 1976a,b; Sweezy, 1942, 1974a, 1978a,b; and Magdoff and Sweezy, 1977. Different theories of stagnationism are presented by Levine, 1975 and Steindl, 1933, 1979. For criticism, see Boddy and Crotty, 1976a; Shaikh, 1978; and Biesemey, 1976. O’Connor’s (1966) critique of Baran and Sweezy is also useful.
1 The similarity with Mandel's theory of long waves (1975, ch. 4) is striking, even though Mandel applies a TEPP framework. See also Schumpeter (1939).

2 Barclay and Stengal (1975) present a good summary of the conceptual differences between "surplus" and "surplus-value". These differences are much more important for Baran (1957) than for Baran and Sweezy (1966) as long as one doesn't equate "waste" with unproductive labor. Nothing is lost, I feel, if we equate Baran and Sweezy's "surplus" with the price form of surplus-value.

My meaning of surplus should be distinguished from the neo-Ricardian version of this concept. (Sraffa, 1960, p. 9-10.) By surplus I mean the social surplus product (K1, ch. 9, section 4) which is output net of wages and depreciation, where the salaries of top managers should be excluded from wages. In other words, I mean property income. Sraffa's surplus equals output net of depreciation and subsistence wages. The neo-Ricardian concept ignores the moral and historical element of "subsistence", whereas the Marxian concept of subsistence is equivalent to the average standard of living of the working class in a given period. (See Mandel, 1975, ch. 5.)

The importance of the definition of "surplus" is shown by the limitations of the work of Stanfield (1973). He investigates the empirical basis of the Baran and Sweezy hypothesis that the surplus tends to rise. First, he finds that surplus (for him, potential output minus total essential consumption) increases absolutely and as a percentage of GNP. Unfortunately, as Stanfield himself points out, this definition of surplus (which is close to Baran's (1957) definition of potential surplus) is useless for crisis theory. Second, he finds that the investment-seeking surplus (potential output minus total consumption) falls relative to the total surplus. To Stanfield, this fact undermines Baran and Sweezy's views. But we should be interested not in the ratio of investment-seeking surplus/total surplus but in the ratio investment-seeking surplus/GNP or approximately, Rs/Yp. Also, an income-side definition of surplus captures Baran and Sweezy's theory more correctly than that of Stanfield. (Third, Stanfield rejects stagnationism by looking at the rate of capacity utilization over the period 1929-1970.)
The fact that it didn't rise could easily be explained by countereacting influences, specifically Viet Nam war era military expenditures.

In some markets, for example, steel, prices tend to rise when demand falls (independent of government "jawboning" and international competition). See Eckstein and Wyss (1972).

The inadequacies of underconsumptionism based on monopoly theory appear starkly in the following quotation from Baran (1957).

There is, however, another outlet for these profits (investment seeking surplus), an outlet that played historically a major role. This is the founding of new industries which, like Africa in the early nineteenth century, are not yet appropriated by any great power [corporation] and represent a no-man's land that is free for all. As mentioned above, this mode of utilisation of the economic surplus is not foreclosed by technical possibilities. Such possibilities have always existed to a sufficient extent, and are at present, if anything, more ample than ever before. What limits the founding of new industries at the present time is the structure of the investment process. Only large-scale firms are in the position to raise the capital that is needed for the establishment of a new industry. These firms either themselves operate in monopolistic or oligopolistic industries, or — if they are financial institutions — are closely connected with such industries. Thus in deciding on whether to undertake the development of a new industry, they have to consider first and foremost whether that new industry would compete or not with their established businesses. Clearly, a firm in one oligopolistic industry that would compete not with its own product but with that of a third party. Yet for reasons referred to before, such operations are looked at askance in the world of giant businesses and finance, and tend to be undertaken only on rare occasions.

To Baran, the economy as a whole is planned by the monopolists who don't even compete between industries. If so, why can't they plan away underconsumption tendencies? And, using Baran's analogy, there is nothing to prevent the great powers from scrambling for new opportunities which are "more ample than ever before" just as the great powers scrambled for Africa in the late 19th and the early 20th centuries.
It is interesting to note the role of competition in Marx's thought:

In practical life we find not only competition, monopoly and the antagonism between them, but also the synthesis of the two, which is not a formula [as Proudhon would have it], but a movement. Monopoly produces competition, competition produces monopoly. Monopolists are made from competition; competitors become monopolists. If the monopolists restrict their mutual competition by means of partial associations, competition increases among the workers [meaning, I believe, increased opposition to capitalists]; and the more the mass of proletarians grows as against the monopolists of one nation, the more desperate competition becomes between the monopolists of different nations. The synthesis is of such a character that monopoly can only maintain itself by continually entering into the struggle of competition.

(Marx, 1847, p. 132.)

The concentration and centralisation of capital (KII, p. 775-779) is counteracted by centrifugal tendencies (KIII, p. 246) and develops unevenly. Note that for Marx, competition did not mean the same as the neoclassical's "perfect competition". Rather, it means the division of the capitalist class into "many capitals". It is also a dynamic process instead of a static equilibrium. For further on competition, see Weeks (1977b) and section 3.1 below.

Section 2.3

The contributions of the various authors to the FEPS theory are cited in the text. See Fuchs and Harevich (1975) for a critique of Bodd and Crotty, and Yaffe (1973b) for a criticism of Glyn and Sutcliffe. Finally, see Weeks (1979) for criticism of Bodd, Crotty, and Itho. Both Yaffe and Weeks argue that the TRF theory should replace that of the FEPS. Goodwin (1972) and D. Harris (1978, ch. 10) present mathematical versions of the FEPS.

The fact that Glyn and Sutcliffe (1971, 1972) see no political business cycle suggests that there exist some factors specific to Britain that prevent that cycle from taking place or because that theory is invalid as a general rule. One factor is that the British working class until recently has been strong enough to significantly push the British state to maintain some sort of rough full employment. There is also substantial doubt that the political business cycle theory applies except in the
U.S. in the 'seventies.

2 Glyn and Sutcliffe do not ignore this problem.

Section 2.5

1 Here we introduce the distinction between $Y$ and $pQ$. In footnote 8 of section 2.1, they were equal. If we consider an economy with no imported raw materials this is so. As soon as raw materials are imported, we should utilize the distinction between $pQ$, which is output net of depreciation and raw material costs. $Y = pQ - p_m Q_m$ where $Q_m$ is the quantity of raw materials imported.
Notes for Chapter 3

1 See, for example, E.R. Weintraub’s (1979) survey of the microfoundations of macroeconomics. It remains fully in the neoclassical camp. For example, he never considers the fallacy of composition, even though it is very important to Keynes’ analysis and the textbook paradox of thrift.

2 See Rowthorn (1974) and Reich (1981, ch. 5) for more extended critiques of neoclassical economics: they see it as individualist, subjectivist, naturalist (technological determinist) and as making commodity exchange (rather than production) primary. This generalization is definitional: an economist who uses neoclassical “tools” without falling into these traps is not neoclassical. However, it seems that neoclassical tools tend to bias analysis in the direction of these traps. Other forms of orthodox economics (Keynesian, Institutionalist, and Cambridge (von Neumann-Sraffa)) can be closer to Marxist economics in form or content.

A major contender to replace neoclassical economics is post-Keynesian economics. For a general survey, see Eichner and Kregel (1975). For critical evaluations, see Tarshis (1980), Yellen (1980), and Crotty (1980). The last is a Marxist critique of the post-Keynesian school. Crotty makes the useful distinction between post- and neo-Keynesians where the latter is concerned with equilibrium of growth and the former with disequilibrium, uncertainty, and finance. In the following, I will call the neo-Keynesians the “Cambridge school” or the “von Neumann-Sraffa school.”

3 This is a slightly changed quote from Marx (1851). See Marx (1859) and EI, p. 199-202 for seminal statements of the historical materialist framework.

The notion that the forces of production determine the relations of production in any simple way should be rejected. This is technological determinism or naturalism. As Marx noted, each mode of production has its own laws of motion, including the “laws” of the development of the forces of production. (EI, p. 101.) At the same time, the structural-functionalist approach which implies that social forces and the forces of production will develop in harmony with the
needs of the relations of production should be rejected. Rather, the forces and relations of production are relatively independent so that they develop unevenly and come into conflict.

6 See Hartman (1979) for a vigorous argument that Marxists under-emphasize the role of the family (in its various forms) in their analysis.

Kelvin Lancaster, a neoclassical economist, states a basic distinction of Marxist political economy:

Capitalism (private ownership of capital) and private enterprise (private control over what to produce and how much) are related but not identical, and microeconomics is primarily concerned with the latter. The most extensive analyses of the market economy (Debreu...; Arrow and Hahn...) correctly refer to their model as that of a private enterprise economy or a competitive economy, not a capitalist one. (1973, p. 1092.)

6 As early as the "Communist Manifesto", Marx and Engels saw crises as the product of this conflict. (1847, p. 478.)

It is common in Marxist crisis theory to say that while a crisis occurs at the level of circulation (in the form of a realization crisis), the crisis is actually caused in production. (See, for example, Weeks, 1977a.) But what do we mean by "production"? For some, it means the microeconomics of production in the firm. This is inadequate because it avoids the holism (concern with totalities) of historical materialist methodology, thus falling back on neoclassical methodological individualism. Macroeconomic theory in general cannot be derived simply from microeconomic analysis without suffering from the fallacy of composition. That is, the whole is different from a mere sum of the parts. In conclusion, we must examine "production" in terms of the societal mode of production.

7 Without these two basic structural characteristics, a mode of production is not capitalist. Consider a typology of modes of production with a highly developed division of labor. Without the anarchy of production (that is, without private appropriation of surplus) we see a collectivist mode of production. This can be democratic, worker-controlled collectivism (that is, socialism) or bureaucratic collectivism. The
latter (labelled "state capitalism" by some) prevails in countries such as the U.S.S.R. Without class antagonisms, we would see socialism. A non-class society with decentralised production would be the hypothetical simple commodity producing mode of production, which many argue tends to become capitalist. Each of these modes of production (like feudalism and the slave mode of production) has different dynamics than capitalism.

Section 3.1

1"Livelihood" does not imply the physical subsistence level, but subsistence that includes "moral and historical" elements. (KJ, p. 275.) However high a worker's wages are under capitalism, she is always dependent on the capitalist for her livelihood. However, this analysis says nothing clear about how wages are determined. The wage (the price of labor-power) is a variable determined by the historical process of class struggle within the dynamics of the system — being pushed from below by workers' needs (see note 2 of section 3.2), pulled upward by shortages of labor-power at times, and being pushed downward by capitalists in search of higher profits.

2See Marglin, 1974; Stone, 1974; Braverman, 1974; Gintis, 1975; Edwards, 1979; and Reich and J. Devine, 1980 for recent theoretical and empirical analyses of the labor process under capitalism.

3See Brenner (1977) for a clear explanation of the differences between capitalism and feudalism and the transition from the latter to the former.

4Weeks (1977b) draws out the distinction between the orthodox concept of market competition and the Marxist concept of competition among capitalists. He points out that as long as labor is free "in a double sense" there is always an objective basis for competition in the Marxian sense. (See note 5 of section 2.2 for more on competition.)

5The connection between inter-capitalist relations and class relations is shown by Marx's assertion that

...in a society where the capitalist mode of production prevails, anarchy in the social
division of labor and despotism in the manufacturing division of labor [and class antagonism in the production process] mutually condition each other.

(Ki, p. 477.)

Marx intended for class antagonisms and the anarchy of production (competition) to be seen in tandem, as conditioning each other. This is shown by the structure of his analysis in *Capital*: in volume I, after discussion of commodity production (market economy) in general, he discusses "capital in general", the abstract relation between the capitalist and working classes. Then, in volume II, he considers competition, the relations between and differences among capitalists. In volume III, he brings together his analyses of the previous two volumes and begins his incomplete theory of economic crisis.

It is useful to note that in both the "Communist Manifesto" (Marx and Engels, 1847) and "Socialism: Utopian and Scientific" (Engels, 1880) both the mode of production and the mode of exchange are singled out as important aspects of capitalism. Engels, for example, saw modern socialism as a response to the abuses of capitalism, the result of

...on the one hand, of the class antagonism existing in the society of today between proprietors and non-proprietors, between capitalists and wage-workers; on the other hand, of the anarchy existing in production.

(Engels, 1880, p. 683.)

Both of these are aspects of the contradiction between socialized production and capitalistic appropriation. He emphasizes the role of the anarchy of production as causing crises. For example,

...the production of commodities, like every other form of production, has its peculiar, inherent laws...; and these laws work, despite anarchy, in and through anarchy. They reveal themselves in the only persistent form of social inter-relations, i.e., in exchange, and here they affect the individual producers as compulsory laws of competition.... They work themselves out, therefore, independently of the producers, and in antagonism to them, as ineradicable natural laws of their particular form of production. The product governs the producers.

(p. 705.)

6 This gets us into the transformation problem literature. In this literature, one often hears of the "redistribution of surplus value
among sectors to equalize the rate of profit." (See Baumol, 1974.)
In reality, surplus value is not redistributed since labor is not shipped from one sector to another. Rather the value of each commodity is re-priced to equalize the rate of profit. If commodities were to exchange at values, the capitalists with a high technical composition of capital would be receiving a lower rate of profit than those with a low technical composition. Thus, if we pretend that we are starting in the situation where commodities sell at their values, capitalists in the former industry will migrate to the latter in order to get the higher profit rate. The price of the goods of the former rises while the price of the commodities produced in the latter falls. In the end, when the rate of profit is equalized between sectors, the product of the labor done in the high technical composition industry is worth more in price terms than that of the labor done in the low technical composition industry.

So when we speak of the redistribution of surplus we are referring to a shift in the relative price of the product of the labor done in two (or more) industries. The primary story here is the capitalists' effort to extract surplus labor. The secondary story is the pricing of the product, the surplus labor, and the surplus product. The total amount of surplus labor limits the surplus since re-pricing does not create surplus value.

In view of the discussion above, it must be renamed the "pricing problem". The pricing problem is not meant to be a derivation of prices (of production) from values. As Steedman (1977) points out, both are derivable from socio-technical production coefficients and, for prices of production, the real wage rate. Rather, it is an investigation of the relationship between prices and values, that is, how values are priced. Consider a simple three-sector model with no joint production that crosses sectoral boundaries. Labor operating old machines will be considered to be creating less value than that operating new machines. Socially necessary abstract labor time will be taken to mean that labor required to produce a product on average, given the actual combination of techniques being used. (Thus, the ambiguities in the meaning of value that Steedman, 1977, sees are abolished. See Armstrong, Glyn, and Harrison, 1976.)
Value produced in sector \( i \) is:

\[
\begin{align*}
    a_i &= c_i + v_i + s_i = c_i + v_i (1 + s') \\
    (i = 1, 2, 3)
\end{align*}
\]  

where \( c_i \), \( v_i \), and \( s_i \) are constant capital, variable capital, and surplus value in sector \( i \). Because wages and the length of the working day equalize between sectors (by assumption of perfect labor-power markets), surplus-value is proportional to variable capital in each sector according to the factor \( s' \), the rate of surplus value. On the other hand, the price of production is

\[
\begin{align*}
    y_i &= \bar{p}_i a_i = \left( \bar{p}_1 c_i + \bar{p}_2 v_i \right) (1 + r') \\
    (i = 1, 2, 3)
\end{align*}
\]  

where \( p_i \) is the price per value (per hour of socially necessary abstract labor time) of commodity \( i \). We are going to assume what Seaton (1957) called a "postulate of invariance" that total value = total price, that is,

\[
\frac{\sum_i p_i a_i}{\sum_i s_i} = 1 \text{ or } \frac{\sum_i p_i a_i / s_i}{\sum_i s_i} = \frac{a_i}{s_i} = 1
\]  

Thus, the weighted average of price-value ratios is equal to unity. One of three possible "postulates of invariance" has been chosen. (The other two are total surplus = total surplus value and \( p_i = 1 \) for a given \( i \).) Since we are interested only in the relative pricing of the value produced in the three sectors, any of these invariance postulated will do. Relative pricing is the key question; a secondary question is that of the absolute level of each of the prices. The choice of an invariance postulate necessary to calculate absolute prices is on the level of the choice of a numeraire, that is, not very important.

The purpose of the pricing problem is to solve the system of equations (a), (b), and (c) for the \( \bar{p}_i 's \) and \( r' \). (There are four unknowns and four equations once we substitute (a) into (b) and (c)). Since Bortkiewicz it has been common to assume that simple reproduction conditions are met; this assumption should not be introduced because to do so is to assume Say's Law. When solutions are found, \( \bar{p}_i \) should be greater than unity if \( c_i / v_i \) is high and less than unity if \( c_i / v_i \) is low.

Note that the rate of profit equals

\[
\begin{align*}
    r' &= \frac{\sum_i p_i a_i / s_i}{\sum_i s_i / s_i} = \frac{\left( \bar{p}_1 c_i + \bar{p}_2 v_i \right)}{\left( \bar{p}_1 c_i + \bar{p}_2 v_i \right)} \\
    &\neq \frac{\sum_i p_i a_i / s_i}{\sum_i s_i / s_i} (c_i + v_i)
\end{align*}
\]
Similarly, total surplus ≠ total surplus value. However, if \( s_i = 0 \) for all \( i \), then \( \text{surplus} = r' = 0 \). The production of surplus value is necessary to the existence of surplus and limits the size of the surplus. (See Morishima, 1973.)

Because of the fact that capitalists demand a profit on fixed capital rather than costs, equation (b) must be restated, assuming that \( r = r^g \):

\[
y_i = \bar{p}_1 a_i = \bar{p}_1 c_i + \bar{p}_2 v_i + r \bar{p}_1 K_i^g
\]

\[
= \bar{p}_2 v_i + (r + D) \bar{p}_1 K_i^g \quad (i = 1, 2, 3)
\]

(b')

where \( K_i^g \) is the value of fixed equipment in sector \( i \). \( c_i \) is the value of depreciation of this equipment \( ( = D K_i^g) \) since we are ignoring raw materials. The new pricing problem is to solve equations (a), (b'), and (c) for the \( \bar{p}_i \)'s and \( r \). Here the rate of profit equals

\[
r = \frac{\bar{p}_2}{\bar{p}_1} \frac{s_i}{\bar{p}_1 K_i^g} = R/K
\]

(d')

Again, the rate of profit is not equal to \( s/(c + v) \), and the total surplus

\[
R = \frac{\bar{p}_2}{\bar{p}_1} \frac{s_i}{\bar{p}_1 K_i^g}
\]

(e)

is not equal to total surplus value. Formula (e) shows that the size of the aggregate surplus is determined not only by the surplus value produced in each industry but also the relationships among industries (which determines the \( \bar{p}_1 \)'s).

The "law" of uneven (and combined) development is incompletely explained and is a matter of controversy among Marxists.

See Amin (1974) and deJanvry and Garramthe (1977) for views concerning the different laws of motion of articulated and disarticulated economies (where the latter lack sector 1) in the capitalist world system.

Section 3.2

Marx saw the long-run tendency of capitalism's development as the negation of the first two structural aspects isolated here (and thus of the third). Competition leads to the concentration and centralization of production. This intensifies the class struggle the produces the possibility of the overthrow of the capitalist system. However, this process has been as yet incomplete and has developed unevenly.
"See Lebowitz (1977-8) on the role of needs in Marx's theory. Jencks et. al (1972) state the role of needs clearly:

The goods and services that made it possible to live on $15 a week during the Depression were no longer available to a family with the same "real" income (i.e., $40 a week) in 1964. Eating habits had changed, and many cheap foods had disappeared from the stores. Most people had enough money to buy an automobile, so public transportation had atrophied, and families without automobiles were much worse off than during the Depression. The labor market had also changed, and a person without a telephone could not get or keep many jobs. A home without a telephone was more cut off socially than when few people had telephones and more people "dropped by". Housing arrangements had changed, too. During the Depression, many people could not afford indoor plumbing and "got by" with a privy. By the 1960s, privies were illegal in most places. Those who could not afford an indoor toilet ended up in buildings which had broken toilets. For this they paid more than their parents had paid for privies. Examples of this kind suggest that the "cost of living" is not the cost of buying some fixed set of goods and services. It is the cost of participating in a social system. The cost of participation depends in a large part on how other people habitually spend to participate. (p. 5)

Section 3.3

1This partial equalization of the rate of profit is probably enough to ensure that relative values do not correspond to relative prices of production and that the aggregate surplus does not move exactly with surplus value.