THE DEVELOPMENT OF WARTIME REPRODUCTION THEORIES IN JAPAN

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I

Following the invasion of Manchuria in 1931, the Japanese economy underwent measures for a great expansion of armament production capacity through inflation (the gold embargo was abolished in 1930 but again enforced in 1931). From about 1933, armament inflation became apparent, necessitating measures for quasi-wartime organization. This was clearly indicated by the successive promulgation of various control regulations from 1936. In 1937, Japan entered a state of war with China, but wartime control was as yet carried on principally in the sphere of prices until 1939. Distribution control was adopted in 1940, following the appearance of a food shortage, and the Japanese economy then clearly changed to wartime organization. The promotion of armament production through inflation still continued, but the military demand still exceeded production capactiy following the extension of the war, the deficit being covered by a reduction of production for civilian purposes. Thus, normal reproduction of the Japanese economy became impossible, and reproduction on a reduced scale developed. This reproduction on a reduced scale started in the autumn of 1939, and from that time production for civilians was reduced. However, owing to the continued expansion of armament production, reproduction was on an enlarged scale from the viewpoint of the whole economy. But after 1941, the expansion of armament production became impossible, and the Japanese economy indicated clearly the reproduction process on a reduced scale. Japan thus progressed towards the catastrophe of 1945. After 1944, from the economic point of view, Japan already experienced confusion, which could not be managed.

II

With the background of the above mentioned economic development,

the wartime reproduction theories or the theoretical analysis of the repro-
duction structure of the wartime economy started to be discussed among
Japanese economists.

Before the wartime reproduction theories became an important subject
of the economics in this country, there had been two controversies. The
dispute as regards the wartime reproduction process was regarded as a
continuation of these or their recapitulation. One of these two controversies
was the dispute as regards the armament inflation which developed from
1932 to 1934; the other was a series of deliberations on the reproduction
theory which was introduced for the first time in Japan in 1922 by an essay
of Dr. Hajime Kawakami named *Criticism of the Theory of Capital Accu-
mulation of Dr. Fukuda* in a periodical *Shakai-Mondai-Kenkyu (Study of So-
cial Problems)* March-June, 1922.

The first dispute concerning armament inflation was meant as a warn-
ing against the wartime economy, pointing out the difficulties arising from
inflation, the possibility of which was anticipated in 1931 when Japan started
the invasion of Manchuria. Leaders in the dispute were Mr. Tsunao Inomata
who was an economist of the Labour-Farmer school *(Roono-ha)* and was later
arrested in the so-called Labour-Farmer school case, and Mr. Shintaro Ryu
who wrote a number of economic articles from the Marxian viewpoint in
the thirties, but now is critical of liberalism. We have no space to dwell
on this dispute in detail. The theoretical substance of the dispute was, as
mentioned before, to clarify generally and theoretically the factors causing
armament inflation and its process and effects on the economy as a whole.
However, this dispute was interrupted about 1934 by the arrest of Mr.
Inomata, and the theoretical meaning of the dispute later developed in
wartime reproduction theories under a different form.

The second dispute developed in the form of deliberations as regards
the theory of wartime reproduction rather than that of normal reproduction,
and was started by the essay of Dr. Hajime Kawakami on *Criticism of the
Theory of Capital Accumulation of Dr. Fukuda* (1922). However, it was
Introduction to the Diagrammatic Analysis of the Reproduction Process (1931)
by Mr. Moritaro Yamada, (at present professor of the Tokyo University)
that took up Marx's theory of the reproduction process as a subject and
introduced to this country the whole of the theories in Western Europe
which appeared after Marx.

The wartime reproduction theory developed as a summary of the abo-
ve theories under the necessity to meet the actual economy.

III

The explanation of the reproduction scheme in the wartime economy and the application of the reproduction theory to wartime economy started from attempts by Rosa Luxemburg in 1913 and Nikolai Bucharin in 1922 from the viewpoint of international development of the reproduction theory. Luxemburg dwelled on this problem in Section 32, Part III of her book *The Accumulation of Capital* published in 1913, and Bucharin in the preface of his book *The Economics in the Transformation Period* published in 1922.

In Japan, the wartime reproduction theory started from the introduction by Mr. Shintaro Ryu of the diagram of wartime reproduction process of Rosa Luxemburg and that of the diagrammatic analysis of Bucharin by Mr. Hiromi Arisawa. It developed gradually from criticism of these to original analysis through diagrams to grasp in abstract and in general the various factors which make possible reproduction in the wartime economy. Literature worthy to be mentioned are as follows : —

Shintaro Ryu, The Problem of Armament Production and the Reproduction Process, *Journal of the Ohara Social Problem Research Institute*, No. 296, June 1935 ; Hachiro Noguchi, Diagram of Reproduction and Armament Industries, *Economic Review*, Vol. 3, No. 9, June 1936; Yoshizo Yoshida, Basic Concept of an Analysis of War Economy—The Problem of Armament Production and Reproduction Process of Social Capital as a Whole, *Free Trade*, Vol. 19, No. 11 and No. 12, December 1937 ; Kazuo Nonomura, History of the Theory of Japanese Defense Economy Organization, *Circular of the South Manchurian Railway Co.*, Aug. 1940 ; Misaburo Kawasaki, Reproduction Scheme of the Wartime Economy, *Fundamental Problems of the Wartime Economy*, published by the Kaizo-sha, December 1948, pp. 2-26.

Discussions concerning wartime reproduction were carried on in the form of disputes among many economists. Following the development of the wartime economy, political suppression was strengthened, and the study of the wartime reproduction process which aimed ultimately to establish a theory for the criticism of thé Japanese wartime economy was interrupted. The development of the theory of wartime reproduction lasted only for a short period from 1935 to 1940: during this period, the arrest of members of the Japan Proletarian Party (Nihon-Musan-To), General Council of Trade Unions, the left-wing of the Japan Farmers' Associations and the Labour-Farmer school occurred in 1937; the General League of Trade Unions (Sodomei) was dissolved in 1940; the so-called Planning Board (Kikaku-in) case arose in 1941 ; in 1942 the case of Hidemi Ozaki and the Research Department of the South Manchurian Railway Co. occurred. The analysis

of wartime reproduction was thus suspended in about 1940, and only flatter ing and optimistic views concerning developments were allowed.

The analysis of wartime reproduction in Japan thus had to remain un-propitious. Its results may be mentioned as follows: The dispute started from a discussion of the introductory concept in the diagrammatic analysis of the wartime reproduction process such as whether the armament industry belongs to department I (production of production means) in the theory of repro-duction process, or to department II (production of means of consumption), or whether it constitutes another specific department; these discussions only yielded positive analysis by Mr. Misaburo Kawasaki, apart from deliber-ations as to whether a diagram should be made by two department as in the classic diagram of Marx or by three departments including one of the armament industry department (however, there may be objections against my estimate of the results).

A brief introduction of these two results will be given below.

IV

The opinion that armament industries belong to department I is repre-sented by Mr. Hachiro Noguchi. He stated that the problem concerns the metal, machinery and chemical industries which produce armaments but at the same time manufacture production means. The armament industry is a part of these industries, but it is a special industry having particular form of value realization in department I. (Hachiro Noguchi, Diagram of Reporoduction and Armament Industries). His concept is based on the theory that the natural form of armaments is similar to means of production. But armaments are not always produced by the metal, machinery and chemical industries, or the production branch of means of production. This contra-diction will not be countered by his argument.

The theory of Mr. Noguchi that the armament industry belongs to department I was connected with the idea that the reproduction process of the wartime economy can only be grasped by a diagram divided into two departments, and that it is wrong to diagrammatize wartime reproduction into more than three departments. It poses the problem concerning the di-vision of departments.

This problem started from deliberations as to what department arma-ment production should belong, although there also was the criticism by Professor Moritaro Yamada of the theory of Rosa Luxemburg on gold production. Among the disputants, we may distinguish two tendencies. The one group maintained the absolute validity of two departments. The other group advocated that the division into two departments is well recog-

nized, but that there exists no absolute validity of a division into only two departments; the necessity of a division into two departments means a division into more than two departments at least when the reproduction process is a subject of discussion. The latter group often approved and advocated a division into more than two departments if necessary. For convenience, we may divide the disputants into a group advocating the absolute validity of two departments and a group leaving open the possibility of more than two departments.

The representative of the former group is Mr. Moritaro Yamada, and his opinion is sustained by Mr. Hachiro Noguchi (the pen-name of Mr. Norio Moriya), Mr. Mitsuyoshi Sakamoto, etc. As regards the latter, we can point out Mr. Misaburo Kawasaki, Mr. Yoshizo Yoshida, etc.

As regards the grounds for the absolute validity of the two departments theory, there is, firstly, the formal reason or the presentation of proof by literature. These disputants refer to Marx, Lenin, and maintain the absolute validity of two departments theory through quotations in literature. Second, they present positive reasons for the absolute validity of only two departments. We shall call these substantial reasons. We shall examine the formal reasons and the substantial reasons as follows.

1. Formal Reasons

Marx in his *Capital*, Vol. III, Part 7, Chapter 49, stated as follows : "In Volume II we divided all capital into two great classes: Class I, producing means of production, and Class II, producing articles of individual consumption. The fact that certain products may serve as well for personal consumption as for means of production (a horse, cereals, etc.), does not invalidate the absolute correctness of this division in any way. It is, in fact, no hypothesis, but merely the expression of a fact." (Eng. ed., p. 974)

Mr. Moritaro Yamada in his *Introduction to Diagrammatic Analysis of Reproduction Process* advocated that the above quotation emphasizes the absolute validity of two departments. However, it is not proper to maintain this absolute validity only by this quotation. It is also possible to construe this quotation as testifying the validity of a division into more than two departments.

Professor Yamada further refers to Lenin's following two statements :

(1) "The starting point of consideration concerning the realization of products in capitalistic society is to divide two completely different forms of social products——means of production and means of consumption" (Lenin, *Criticism of the Romantic School of Economics*).

(2) "The necessity of dividing social production into two departments (means of production and means of consumption) was not explained by Mr. Tugan-Baranowsky. But according to the correct opinion of Mr. Bulgakov

only this divis'on has the most theoretical meaning in the dispute on the theory of markets" (Lenin, *Memoirs for the Theory of Markets*).

The same can be applied to these quotation of Lenin as in the case of Marx. The statements of Lenin may mean "rigid adherence to the two departments theory" as Professor Yamada considers. But it cannot be maintained that they exclude as wrong division into more.than two departments.

Thus, the quotation of Marx and Lenin which was presented as a ground for the absolute validity of the division into two departments by Professor Yamada may have a meaning against the theory of one department, but cannot be used against the possibility of more than two departments.

2. Substantial Reasons

There are two kinds of substantial reasons. The first is the way of thinking that the departments of social production are numerous but the relation of these departments in the reproduction process can be summed up as $I(v+m)= IIc$; the other is that the division into two departments indicates the extent of the development of production capacity. We shall examine these opinions in order.

(1) Assistant Professor Yoshizo Yoshida stated as follows:

"The ground for the absolute validity of a division into two departments by Mr. Yamada is, in short, that in simple reproduction the relation between department I and other department is summarized as $I(v+m)= IIc$; in other words, the portion of products in department I which can be transferred into the other department is $v+m$ and this shall be equal to the aggregate c of the other department (Osaka University of Commerce, *Journal of Economics*, Vol. 18, No. 5, 1948).

This point presents a most important problem in the theory of reproduction process.

As is well known, the Marx's diagram of reproduction has the following construction.

$$I. \quad c_1+v_1+mk_1+mc_1+mv_1=P$$
$$II. \quad c_2+v_2+mk_2+mc_2+mv_2=K$$

There are the following three fulcra in this respect.

(1) c_1
(2) $v_1+mk_1+mv_1=c_2+mc_2$
(3) $v_2+mk_2+mv_2$

According to the opinion of Professor Yamada, the two fulcra of c_1 and $v_2+mk_2+mv_2$ are placed within the department; therefore, the conditions of reproduction are summarized as $v_1+mk_1+mv_1=c_2+mc_2$. Is this true?

We shall sub-divide department I into two sub-divisions. I_a represents the sub-division of means of production for department I and I_b the sub-division of means of production for department II. The reproduction scheme

in this case will be as follows:

$$I_a. \quad c_1a + v_1a + m_1a$$
$$I_b. \quad c_1b + v_1b + m_1b$$
$$II. \quad c_2 + v_2 + m_2$$

In this case, the conditions of reproduction must be the following three, even if c_1a and $v_2 + m_2$ are placed respectively within the department.

$$(1) \quad v_1a + m_1a = c_1b$$
$$(2) \quad c_1b + v_1b + m_1b = c_2$$
$$(3) \quad v_1a + m_1a + v_1b + m_1b = c_2$$

(1) indicates the relation between I_a and I_b in department I, (2) the relation between I_b and II, and (3) the relation between the whole department I and department II. In this case, even supposing that c_1a and $v_2 + m_2$ can respectively be placed within the department, c_1b cannot thus be fixed. A solution is only realized by exchange with c_2 of department II, as c of department I is not always realized by inside circulation in department I. Mr. Misburo Kawasaki states in this respect as follows :—"In case department I is not sub-divided, the one part of constant capital c which seems to be realized by the mutual transaction of capitalists within department I is, in reality, realized only by exchange with c_2 of department II. (Misaburo Kawasaki, *ibid.*, pp. 14-15).

Conversely, if the absolute validity of two departments is maintained and a division of the entire reproduction scheme into more than two department is not approved, the fact that a portion of c of department I is realized only by exchange with c of department II will not present itself. On the contrary, "if departments become numerous, the *new* relation between each production department which is beside the question in the case of two departments will become clear······The more detailed the theory of reproduction process becomes, the more numerous the division of production department" (Misaburo Kawasaki, *ibid.*, p. 8)

The above also applies to the diagrammatic analysis of wartime reproduction. It is important in this case to investigate the special characteristics of armaments as to utility value and its special role in reproduction, as well as the special characteristics in the process of realization of value. For this object, it is necessary to consider the armament industry as a special department in making a diagram.

(2) Professor Yamada maintains the absolute validity of two departments, and rejects a division into more than two departments, on the ground that "the division into two department constitutes a standard to indicate the degree of development of the production capacity." He writes as follows: "Why did Marx and Lenin lay stress on two departments? This will be due to the fact that the summing up into two departments constitutes a standard to indicate the degree of development of the production capacity.

The mutual co-relation of the natural viewpoint, the division into two departments and the expression of production capacity should be remembered" (Moritaro Yamada, *Introduction to Diagrammatic Analysis of Reproduction Process*, p. 26).

Is this true? If Professor 'Yamada's opinion is correct, there should be no means other than "the summing up into two departments" to indicate "the degree of development of the production capacity." However, "the degree of development of the production capacity" can also be expressed by c : v. If the diagram of the reproduction process is to express the degree of development of the production capacity and the production relation, as stated by him, it will be sufficient to utilize the construction of c+v+m. The explanation of Marx only emphasizes that the division into two departments must be directed from the viewpoint of utility value and natural forms and for the only purpose of analysis of the replenishment of raw materials.

As made clear by the above explanation, the absolute validity of two departments cannot be maintained in the theory of the reproduction process. Moreover, when the problem concerns diagrammatic analysis of the relation with the department of means of production, the department of articles of consumption and the department of armaments in the reproduction of wartime economy, the analysis will make no sense unless the above three departments are expressed by three diagrams.

As regards disputants maintaining that the armament industry belongs to department II, Mr. Seiichi Tanaka may be listed as a representative (Seiichi Tanaka, Digestion of National Bonds, *Journal of Economic Study of the Rikkyo University*, Vol. 1, No. 4, 1938). His attitude is correct. Armaments are not different from means of consumption from the viewpoint of utility value. Consequently, it will be correct to consider armament production as a sub-division of department II. But he refused to consider armaments as a specified department in the diagrammatic analysis, delegating them to a sub-division of department II. This is incorrect in view of what has already been mentioned.

The summary of the above is: the armament industry is a sub-division of department II from the viewpoint of the special characteristics of its utility value, but from the necessity to investigate its special characteristics as to utility value, its special rôle in the reproduction process and its special characteristics in the realization of value, it is correct to consider it as a special department in diagrammatic analysis. Mr. Misaburo Kawasaki and Mr. Yosizo Yosida tried to analyse the wartime reproduction process from this standpoint.

V

The theoretical analysis of the wartime reproduction scheme was permitted for a short period under the political and social conditions prevailing during the war. Consequently, the discussion was limited to analysis and disputes concerning preliminary concepts as explained in Section IV, and no structural analysis could be developed. Some positive development can only be found in the essay of Mr. Misaburo Kawasaki in 1940, written with the object of formulating methods of investigation of the wartime economy by the Research Department of the South Manchurian Railway Co. We shall briefly introduce his opinion as follows:

The wartime reproduction scheme can be represented by the following diagrams.

I. $c_1 + v_1 + m_1(k) + m_1(s) = P$ (Produktionsmittel)

II. $c_2 + v_2 + m_2(k) + m_2(s) = K$ (Konsumtionsmittel)

M. $c_3 + v_3 + m_3(k) + m_3(s) = M$ (Munition)

$m(s)$: Mehrwert (surplus value) taken from the capitalist by the state in taxes.

$m(k)$: Mehrwert (surplus value) directed for consumption.

In this case, the condition of reproduction is the following :

$$c_1 + v_1 + m_1(k) + m_1(s) = c_1 + c_2 + c_3$$
$$c_2 + v_2 + m_2(k) + m_2(s) = v_1 + m_1(k) + v_2 + m_2(k) + v_3 + m_3(k)$$
$$c_3 + v_3 + m_3(k) + m_3(s) = m_1(s) + m_2(s) + m_3(s)$$

This abbreviates as follows:

$$v_1 + m_1(k) + m_1(s) = c_2 + c_3 \cdots\cdots\cdots\cdots\cdots(1)$$
$$c_2 + m_2(s) = v_1 + m_1(k) + v_3 + m_3(k) \cdots\cdots(2)$$
$$c_3 + v_3 + m_3(k) = m_1(s) + m_2(s) \cdots\cdots\cdots(3)$$

As it is possible to compile formula (2) from (1) and (3), the conditions of simple reproduction in wartime reproduction are (1) and (3). These two formulas can be transferred into:

$$(v_1 + m_1) - c_2 = c_3 \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots(1)$$
$$c_3 + v_3 + m_3 = (m_1 + m_2 + m_3) - (m_1k + m_2k + m_3k) \cdots\cdots(3)$$

The formula (3) means—the limit of scale of armament production is fixed by the balance of the total surplus value of products in each department deducting individual consumption of capitalists.

Formula (1) means—within the above mentioned limit, the scale of armament production fluctuates in inverse proportion to that of the department producing articles of consumption, namely, the scale of constant capital for armament department is limited by the balance of the aggregate of variable capital and surplus value in the department producing means of production deducting the constant capital of the department producing

articles of consumption.

The wartime reproduction scheme on an enlarged scale can be indicated by the following diagrams.

I. $c_1 + v_1 + m_1(k) + m_1(s) + m_1(c) + m_1(v) = P$

II. $c_2 + v_2 + m_2(k) + m_2(s) + m_2(c) + m_2(v) = K$

M. $c_3 + v_3 + m_3(k) + m_3(s) + m_3(c) + m_3(v) = M$

In this case, the conditions of reproduction on an enlarged scale are as follows:

$c_1 + v_1 + m_1(k) + m_1(s) + m_1(c) + m_1(v) = c_1 + m_1(c) + c_2 + m_2(c) + c_3 + m_3(c)$

$c_2 + v_2 + m_2(k) + m_2(s) + m_2(c) + m_2(v) = v_1 + m_1(k) + m_1(v) + v_2 + m_2(k) + m_2(v) + v_3 + m_3(k)$

$c_3 + v_3 + m_3(k) + m_3(s) + m_3(c) + m_3(v) = m_1(s) + m_2(s) + m_3(s)$

These can be abbreviated as follows:

$v_1 + m_1(k) + m_1(s) + m_1(v) = c_2 + m_2(c) + c_3 + m_3(c) \cdots\cdots\cdots(1)$

$c_2 + m_2(s) + m_2(c) = v_1 + m_1(k) + m_1(v) + v_3 + m_3(k) + m_3(v) \cdots\cdots\cdots(2)$

$c_3 + v_3 + m_3(k) + m_3(c) + m_3(v) = m_1(s) + m_2(s) \cdots\cdots\cdots(3)$

It is possible to compile formula (2) through formulas (1) and (3), therefore the conditions of reproduction on an enlarged scale in wartime reproduction are (1) and (3). These two formulas can be changed to the following formulas.

$(v_1 + m_1 - m_1(c)) - (c_2 + m_2(c)) = c_3 + m_3(c) \cdots\cdots\cdots\cdots(1)$

$c_3 + v_3 + m_3 = (m_1 + m_2 + m_3) - (m_1 k + m_2 k + m_3 k) - (m_1 c + m_2 c + m_3 c) \cdots(3)$

The formula (3) means—the scale of armament production is limited by the balance of the aggregate surplus value of each department deducting individual consumption and accumulation of capitalists. In more detail, the following two conclusions can be introduced : (1) Smaller individual consumption of capitalists will bring about a larger scale of the armament department. (2) As this department must be enlarged anyway, a reduction of accumulation will be found only in department I and II. But if accumulation in department I and II becomes nil, there develops a simple reproduction process. Consequently, the condition (1) is appropriate in any case, but the validity of (2) is relative.

Formula (1) means—the scale of constant capital in the armament department is limited to the balance of the aggregate variable capital and surplus value in department I, deducting constant capital accumulated and, further, total constant capital of department II. There is a correlative relation between department I and armaments and department II.

The author formulated an arithmetic diagram for each case, giving a certain numerical value c ,v ,m , etc. respectively, and investigated the actual process of quantitative circulation—realization of products. The author further investigated wartime reproduction on a reduced scale through an arithmetic diagram to find out conditions in the following cases: (1) when departmet II shows reproduction on a reduced scale as a result of simple reproduction in department I and enlargement of the armament departments;

(2) when department I and II show reproduction on a reduced scale, whilst armaments alone expand; (3) when department I shows reproduction on an enlarged scale and, at the same time, the armament department expands suddenly, thereby causing department II to experience reproduction on a reduced scale.   He also investigated through an arithmetic diagram the effects of the enlargement of armaments when idle capacity exists.

. As regards details, please refer to his work.   His conclusion through diagrammatic analysis in the first case of reproduction on a reduced scale is as follows:

(1) Within a certain limit, it is possible to enlarge the armament department by a reduction in department II and to develop a smooth reproduction process.   So long as simple reproduction in department I is a premise, reduction in department II is a condition for the smooth reproduction process despite the enlargement of the armament department. In this case, a decline in entire production value will be possible under certain relations of the composition of capital value between department II and the armament department.   (2) Consequently, it is wrong to call in question the destruction of reproduction conditions in wartime economy simply and mechanically on the ground of a decline in entire production or in the production of articles of consumption.

If this be so, what is the meaning of the so-called " certain limit " ?   As already made clear in the section of simple reproduction, the limit is the point where the scale of the armament department or, in other word, the volume of military consumption, becomes equal to the balance of the entire surplus value deducting minimum individual consumption of capitalists. When military consumption exceeds this limit, a nation must collect the value necessary for the purchase of armaments from c or v in the diagram. It is clear that the collection from c results immediately in reproduction on a reduced scale.   The collection of value from v makes reproduction of labour impossible as a direct effect (v in this case is assumed as the minimum value of articles of consumption necessary for reproduction of labour).

VI

The above is a summary of the theories of wartime reproduction process in Japan.   The greater part of these theories is but an outcome of Marxist doctrine. Other theories only covered the general and abstract characteristics of the wartime reproduction scheme.   It is rather impossible to grasp from these theories a consistent theoretical explanation of the various phenomena in the wartime economy which developed in Japan during the war.   It is therefore natural that a study of this wartime economy had to be carried

on from another dimension. We find here the weakness of the foundations
of the Japanese wartime economy, as well as the poverty in theories which
corresponds to the lack of freedom of speech and thought during the war.
With the new international political and economic conditions, Japanese
rearmament has become a political and economic problem in Japan. It is to
be hoped that Japanese rearmament economics will not show the weakness
experienced in the past. In Marxist economic circles in Japan, the poverty
in methodology in the above stated sense has not yet been remedied.