第 6 章 A Comparative Study on Home Production Rate Between United States and Japan

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1. Preface

This paper examines the over-time changes of the "Home Production Rate" in the United States and Japan during the years 1970 and 1990. This comparison of Home Production Rate is done both theoretically and empirically through three such different concepts as Self-sufficient Home Production Rate (SSHPR), Direct Technological Home Production Rate (DTHPR) and Value-added Home Production Rate (VAHPR). The purpose of this study is to clarify the features of both countries as independent national economies by investigating their domestic economic structure in regard to production of goods and services. And, this study is, at the same time, a proof of our assertion that the present economic system is in a stage of "the multi-national capitalism[1]".

2. Explanation of Home Production Rate

First, let us define "Self-sufficient Home Production Rate"(SSHPR). SSHPR is the share of the domestic production in total demand and is sometimes called simply "Self-sufficient Rate". Taking the i-th industry as an example, the total demand in the domestic market is the summation of domestic production X_i and imports M_i, $X_i + M_i$ Then, Self-sufficient Home Production Rate (SSHPR), τ_i^S, is defined as the equation (1).

(1) $\qquad \tau_i^S = X_i /(X_i + M_i)$

Second, we will define "Direct Technological Home Production Rate" (DTHPR). DTHPR is the share of domestic input that is the total of domestic intermediate input and value-added in the total input. This name is derived from technological relations on the production side where a certain amount of raw material or labor force is

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1 Multi-national capitalism is a stage of capitalism where the main players are multinational enterprises that have their subsidiaries with local juridical rights in plural countries, and these enterprises attain economic globalization through international business activities (internationalization of comparative advantage) with a global point of view.

necessary to produce a certain amount of output. In this criterion, domestically produced input is all regarded as domestic input. Let us write domestic intermediate input to j-th industry from i-th industry X_{ij}^d (then the total of domestic input to j-th industry is $\sum_i X^d_{ij}$) and value-added v_j. Direct Technological Home Production Rate (DTHPR), τ_j^T, is thus defined as equation (2).

$$(2) \quad \tau_j^T = (\sum_i X^d_{ij} + v_j)/X_j$$

However, it is natural that domestically produced input cannot be produced without indirectly imported parts or materials. Therefore, paying attention to this respect, we can define "Value-added Home Production Rate" (VAHPR) as the share of <u>net</u> domestic input in the total input. This criterion is explained as follows. Generally speaking, input in a production process is divided into such three categories as domestic goods, imported goods and value-added. But, the production of the domestic goods again requires the same three kinds of above-mentioned input: domestic goods, imported goods and value-added. Therefore, infinite repetition of this division will ultimately result in a dichotomy of input: ultimate imported input and ultimate value-added. That is why, we name the rate of the latter to the total output "Value-added Home Production Rate".

This criterion can be expressed as follows based on the framework of Input-Output Analysis. The demand-supply equilibrium condition of the Input-Output model is written as equation. (3):

$$(3) \quad X = A^d X + F^d,$$

where X is a vector of domestic output, A^d is the technological input coefficient matrix, $A_{ij}^d = X_{ij}^d / X_j$, and F^d is a vector of final demands for domestic goods. Solving equation (3) with the output X gives the following output determination equation.

$$(4) \quad X = (I - A^d)^{-1} F^d,$$

where matrix I is a unit matrix all diagonal elements of which are one. The matrix $(I - A^d)^{-1}$ is called Leontief's Inverse Matrix that has a similar meaning to the Keynesian multiplier. Since VAHPR of j-th industry, τ_j^V is translated as the total of

value added ultimately induced by a unit production of final demands of *j*-th industry, it can be defined as the following equation (5):

(5) $\tau^V = \widehat{v}(I - A^d)^{-1}$, $\tau^V = [\tau_1^V, \quad \tau_2^V, \quad \cdots, \quad \tau_n^V]$

where $\widehat{v}$ is a diagonal matrix with value-added rates and l is an aggregation row vector whose elements are all one.

It would be worthy to point out that SSHPR (or self-sufficient rate) has a different point of view from DTHPR and VAHPR.   Namely, SSHPR is a rate of domestic supply against the total demand, while the latter home production rates are the rate of the domestic goods in the total input.   More concretely, SSHPR of rice in Japan, for example, is almost 100% since the domestic rice almost satisfies the domestic rice market, but DTHPR is less than 100% if Japanese rice farmers use imported fertilizer and herbicide as input.   On the other hand, as to coal in Japan, its SSHPR is very low as the domestic supply keeps decreasing, but DTHPR of Japanese coal is nearly 100% as long as the Japanese coal miners hire Japanese workers and use Japanese equipment and machinery for coal mining.   We can see these examples in Table6-1 and Table 6-2.   As shown in Table6-1 SSHPR of Japanese mining is, as is well known, low (29.9% in 1970 and 13.3% in 1990), while as shown in Table6-2, DTHPR of Japanese mining is extremely high (99.4% in 1970 and 98.4% in 1990).   In the next section, we will pick up some characteristics of home production rates in different criteria of Japan and the United States using Input-Output tables based on the above discussion.

Table6-1 Self Sufficiency Rate

		Japan		The United States	
		1970	1990	1972	1990
1	Agriculture, forestry & fishing	80.8	85.6	97.6	96.2
2	Mining & quarrying (including crude oil)	29.9	13.3	88.0	76.8
3	Food, beverages & tobacco	94.2	89.8	96.3	94.5
4	Textiles, apparel & leather	97.1	85.0	92.2	73.2
5	Wood products & furniture	96.5	88.2	91.8	90.8
6	Paper, paper products & printing	97.7	97.4	96.3	95.1
7	Industrial chemicals	94.0	91.8	96.5	92.4
8	Drugs & medicines	92.1	93.0	96.6	89.8
9	Petroleum & coal products	91.3	84.3	91.7	86.3
10	Rubber & plastic products	99.2	97.0	94.8	90.0
11	Non-metallic mineral products	99.2	96.9	95.5	90.1
12	Iron & steel	98.0	97.3	90.9	87.8
13	Non-ferrous metals	83.9	70.9	90.0	88.6
14	Metal products	99.3	98.4	96.8	92.1
15	Non-electrical machinery	95.3	93.3	94.7	85.1
16	Office & computing machinery	81.3	93.4	91.5	72.7
17	Electrical apparatus, nec	98.0	96.6	95.2	82.5
18	Radio, TV & communication equipment	97.8	95.3	89.6	70.5
19	Shipbuilding & repairing	98.3	97.3	96.0	94.2
20	Other transport equipment	99.5	98.3	86.9	87.9
21	Motor vehicles	99.1	97.2	89.2	72.8
22	Aircraft	49.7	55.6	97.0	92.9
23	Professional goods	90.1	88.8	92.7	86.1
24	Other manufacturing	90.9	90.2	86.8	66.6
25	Electricity, gas & water	100.0	100.0	99.3	99.1
26	Construction	100.0	100.0	100.0	100.0
27	Wholesale & retail trade	99.2	99.6	98.6	98.7
28	Transport & storage	98.8	91.3	100.0	100.0
29	Communication	94.3	95.1	98.5	98.9
30	Finance & insurance	99.5	99.4	100.0	100.0
31	Real estate & business services	99.5	97.6	99.8	99.2
32	Restaurants & hotels	99.6	98.8	100.0	99.9
33	Community, social & personal services	99.7	99.5	100.0	99.9
34	Producers of government services	100.0	100.0	100.0	100.0
35	Other producers	100.0	99.7	19.5	———
	Simple Average	92.7	90.7	92.9	89.7

(note) The production of 35 th industry was negative in the IO table of the U.S. in 1990 , so this   industry was excluded from the calculation of this study.

3. Comparison of Self-sufficient Home Production Rates (SSHPR) and Value-added Home Production Rates (VAHPR)

Let's see the self-sufficient home production rate of each industry of the United States and Japan in Table 6-1.   SSHPRs in Japan decreased by three points or more during the 20 years from 1970 to 1990 in such seven industries as 2)Mining (including crude oil), 3)Food, Beverages & Tobacco, 4)Textiles, Apparel & Leather, 5)Wood Products & Furniture, 9)Petroleum & Coal Products, 13)Nonferrous Metals, and 28)

Table6-2　Direct Technological Home Production Rate

		Japan		The United States	
		1970	1990	1972	1990
1	Agriculture, forestry & fishing	99.0	98.5	98.6	97.9
2	Mining & quarrying (including crude oil)	99.4	98.4	98.9	97.3
3	Food, beverages & tobacco	90.0	93.0	97.2	97.1
4	Textiles, apparel & leather	92.9	92.1	96.3	93.3
5	Wood products & furniture	82.3	88.0	96.6	96.5
6	Paper, paper products & printing	97.1	96.2	96.5	95.6
7	Industrial chemicals	95.5	90.6	97.3	94.6
8	Drugs & medicines	96.7	96.5	98.3	97.0
9	Petroleum & coal products	60.4	51.8	92.2	77.5
10	Rubber & plastic products	95.2	96.5	97.6	95.3
11	Non-metallic mineral products	95.0	96.6	98.2	97.0
12	Iron & steel	93.2	95.1	93.5	95.4
13	Non-ferrous metals	74.0	67.6	89.3	91.5
14	Metal products	99.3	98.1	96.7	95.1
15	Non-electrical machinery	98.8	97.4	97.8	95.1
16	Office & computing machinery	97.5	95.8	97.5	86.4
17	Electrical apparatus, nec	96.7	95.7	97.7	94.5
18	Radio, TV & communication equipment	98.2	96.6	97.3	91.1
19	Shipbuilding & repairing	99.4	98.2	97.4	95.3
20	Other transport equipment	99.1	98.1	96.0	93.1
21	Motor vehicles	99.3	98.7	96.1	89.8
22	Aircraft	81.8	75.1	97.8	94.8
23	Professional goods	98.2	96.6	97.2	95.2
24	Other manufacturing	97.3	97.7	93.0	94.1
25	Electricity, gas & water	93.8	88.5	98.4	95.7
26	Construction	99.2	98.1	98.7	97.5
27	Wholesale & retail trade	98.9	98.7	99.8	99.3
28	Transport & storage	98.5	96.1	98.7	97.9
29	Communication	93.9	96.0	97.9	96.3
30	Finance & insurance	99.7	99.4	98.8	96.4
31	Real estate & business services	99.6	99.0	99.7	99.3
32	Restaurants & hotels	99.8	99.3	99.8	99.5
33	Community, social & personal services	98.6	98.3	98.7	98.4
34	Producers of government services	100.0	100.0	100.0	100.0
35	Other producers	99.6	98.1	100.0	———
	Simple　Average	94.8	93.7	97.3	95.0

Transport & Storage.　SSHPRs of the heavy and chemical industrial section also showed a decline, but the degree was rather marginal compared with the above-mentioned industries.　On the contrary, SSHPRs have risen greatly in 16)Office & Computing Machinery and 22) Aircraft.

On the other hand, in the United States, SSHPRs in 17 industries among the total 35 industries were applicable to this "3% decline criterion".　The most extreme examples are 16)Office & Computing Machinery (decline from 91.5% to 72.7%) and Motor Vehicles (decline from 89.2% to 72.8%).　We can observe from these figures the

seriousness of the decline of SSHPRs in American major manufacturing industries[2].

Next, taking a look at Table 6-3 of Value-added Home Production Rate (VAHPR), there are only 5 such industries in Japan whose value added home production rate decreased by 3% or more: 7)Industrial Chemicals, 9)Petroleum & Coal products, 13)Non-ferrous Metals, 22)Aircraft, 25)Electricity, Gas & Water.   Among them, only VAHPRs of 9) Petroleum & Coal products and 13)Nonferrous metals have declined as largely as their SSHPRs.   VAHPRs in Japan remain around the 90% level on the whole in the main sections such as 14)Metal products, 15)Non-electrical machinery, 18)Radio, TV & communication equipment, 19)Shipbuilding & repairing, 20)Other transport equipment, 21)Motor vehicles, and 24)Other manufacturing.   That is an inheritance of Japan's so-called "one-set type" structure of the national economy. These figures mean that the Japanese reproduction networks (or, industrial relations of input-output structure) are almost complete domestically within Japan, especially in the main manufacturing industries.

On the other hand, the situation as to VAHPR in the United States is also considerably different.   Namely, VAHPRs in the United States have also declined largely during the same period as well as self-sufficient home production rates.   Even though the number of industries whose VAHPR declined by 3% or more is 13 which is less than 17 in SSHPR, the absolute level of decline was much larger than the Japanese case.   And it is particularly notable that VAHPRs are smaller than SSHPR in as many as 18 industries in 1990.

They are 1)Agriculture, forestry & fishing, 3)Food, beverages & tobacco, 6)Paper, paper products & printing,7)Industrial chemicals,9) Petroleum & coal products, 13)Non-ferrous metals, 14)Metal products, 19) Shipbuilding & repairing, 22)Aircraft, 25)Electricity, gas & water, 26)Construction, 27) Wholesale & retail trade, 28)Transport & storage, 29)Communication, 30)Finance & insurance, 31)Real estate & business services, 32)Restaurants & hotels, and 33) Community, social & personal services.

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2 These two industries also recorded great reduction in the other two criteria of home production rates, as we will see later in this report.

Table6-3   Value-Added Home Production Rate

		Japan		The United States	
		1970	1990	1972	1990
1	Agriculture, forestry & fishing	95.8	94.8	96.4	94.4
2	Mining & quarrying (including crude oil)	93.9	93.4	97.8	95.2
3	Food, beverages & tobacco	85.8	88.6	94.3	93.2
4	Textiles, apparel & leather	85.4	85.8	92.6	88.1
5	Wood products & furniture	76.0	82.7	94.1	92.9
6	Paper, paper products & printing	92.2	91.7	94.2	92.2
7	Industrial chemicals	88.3	82.1	94.8	90.3
8	Drugs & medicines	93.7	92.7	96.9	94.7
9	Petroleum & coal products	58.7	49.3	89.9	73.1
10	Rubber & plastic products	89.4	89.3	95.3	91.1
11	Non-metallic mineral products	89.8	91.8	96.4	93.7
12	Iron & steel	78.8	84.0	90.4	91.0
13	Non-ferrous metals	62.6	57.4	82.3	84.6
14	Metal products	90.0	90.5	92.6	90.7
15	Non-electrical machinery	90.9	91.8	94.6	91.4
16	Office & computing machinery	90.6	90.7	94.9	82.2
17	Electrical apparatus, nec	87.0	88.9	94.3	90.3
18	Radio, TV & communication equipment	91.3	91.2	94.7	87.1
19	Shipbuilding & repairing	91.8	91.9	94.4	91.8
20	Other transport equipment	91.4	91.7	91.7	88.1
21	Motor vehicles	91.3	91.8	91.9	83.3
22	Aircraft	76.1	69.6	95.3	90.7
23	Professional goods	91.5	92.0	95.1	92.4
24	Other manufacturing	89.9	91.6	89.9	90.5
25	Electricity, gas & water	89.7	84.9	96.9	92.2
26	Construction	91.7	93.7	96.2	94.3
27	Wholesale & retail trade	96.8	97.1	99.3	98.1
28	Transport & storage	92.9	92.6	96.6	95.7
29	Communication	90.1	92.5	96.5	93.5
30	Finance & insurance	98.9	98.5	98.3	95.5
31	Real estate & business services	99.1	98.0	98.9	98.1
32	Restaurants & hotels	98.3	98.3	99.2	98.6
33	Community, social & personal services	96.0	96.0	97.4	96.5
34	Producers of government services	100.0	100.0	100.0	100.0
35	Other producers	98.6	95.5	100.0	———
	Simple Average	89.3	88.9	95.0	91.6

In the observation of this section, we already confirmed that home production rates in the United States decreased remarkably in the period of 1972 to 1990, and we also saw that Japan's home production rates are also in a decreasing trend. Though, as mentioned above, the decline of home production rates is equivalent to the increase of leakage of "value" from the domestic economy to economies abroad; thus we should remember this situation simultaneously contributes to formulate a base of globalization in the production structure. Taking into consideration that the GDPs of both the United States and Japan grew greatly in the same period, we can conclude that the world

economy has changed in a plus sum economic game with a decreasing home production rate by mutual leakage of value-added. This is another expression of a step-by-step deepening of the multi-national capitalism.

4. Reversal phenomenon of value added home production rate

What we take up in this section is a reversal phenomenon in VAHPR in the main industrial sections between the U.S. and Japan. Observe the bottom line of Table 6-3 that shows the simple average of VAHPR of all industries. We can see that VAHPR in the United States in 1972 is 95.0% while Japan's in 1970 is 89.3%, which is as much as 5.7 points below the U.S. case. Also in 1990, American VAHPR is larger than in Japan's case, where each average is 91.6% and 88.9% respectively and the difference largely shrinks to 2.7 points.

However, when we compare details of VAHPR in each industrial sector, what we may overlook in the simple average comparison can be read. American VAHPRs were superior to Japan's in almost all 35 industrial sectors in 1970, but in 1990 VAHPRs 9 of Japan's industrial sectors turned out to be superior to their American counterparts[3]. Moreover, these 9 industrial sectors include such high-tech or key industries as 15) Non-electrical machinery, 16)Office & computing machinery, 18)Radio, TV & communication equipment, and 21)Motor vehicles. That shows that a hollowing out of the U.S. industry proceeded during that period and suggests that its production capacity and competitiveness declined remarkably on the whole in the national economy. This situation would provide a background to Reganomics, which is characterized by supply side economics based on tax reduction and deregulation and also might prove indirectly that Japan-bashing was inevitable. In short, American capitalism has accomplished an evolution to multi-national capitalism during this period. On the other hand, the American domestic economy, because of this phenomenon, was suffering from twin deficits that led to economic stagnation in 1990.

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3 It is clear that the reason for this phenomenon is not that Japan's value-added rate increased during 20 years as shown in Table 6-3.

In such circumstances, what contributed to overcome the economic recession was development of the information service industries. Namely, by compensating for declining home production rates in the manufacturing sectors by expansion of high-tech and information industries, the Unites States could succeed in the improvement of its employment rate and income in the entire national economy. This provided a typical example of prescription for the contradiction in the American economy according to its multi-nationalization. The reason why this is a typical example is that the U.S. economy got over its difficulty of its decline of home production rates in manufacturing sectors through enhancement of its domestic tertiary industry leveraged by high-tech and information technology. Generally speaking, an economic structure shifts its center of gravity from primary, secondary to tertiary sectors according to economic development[4].

5. Difference between Direct Technological Home Production Rate (DTHPR) and Value-added Home Production Rate (VAHPR)

Rules of Origin in international trade agreement legitimize several standards and one of them is a "standard of last substantial processing place" in the production process of a commodity. The empirical analysis in the previous section provided an interesting result regarding this. As shown at the beginning of this report, DTHPR regards whatever is domestically produced as domestic input. But, VAHPR excludes foreign input contained in domestically produced input. The difference between them matters since it is based on the difference of production element endowment and comparative competitiveness. In this section, therefore, we review the difference of these two types of home production rates in the United States and Japan in 1970 and 1990.

First, we refer to the bottom line (average of all industries) of Table 6-2 and Table 6-3. In 1970, DTHPR of the Japanese average is 94.8% and VAHPR of the Japanese average is 89.3%; therefore, the difference is 5.5 points. In the United States in 1972, the same statistics are respectively 97.3% and 95.0%; therefore, the difference is no more than 2.3 points.

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4 This briskness gave birth to "the new economy theory" without cyclical boom and recession. Thanks to the American economic boom, President Clinton could submit the 1999 budget with a 9.5 billion dollar surplus after an interval of 30 years (Nikkei, Feb 2 in 1998 evening). However, the financial disease of a Black Monday type (maximum debt country) in addition to the aspect of the bubble stock prices has not been overcome yet. The amount of foreign debt at the end of 1996 reached as much as 870.5 billion market dollars (US. Department of Commerce, Survey of Current Business, October in 1997).

However, in 1990, they change respectively to 93.7% and 88.9% in Japan, while they change to 95.0% and 91.6% in the United States. The difference between DTHPR and VAHPR for each country is 4.8 points in Japan and 3.4 points in the United States. This observation has two important meanings. The first is that the American home production rates are higher than in the Japanese case whichever the criterion may be, DTHPR or VAHPR. The second is that Japan's difference between DTHPR and VAHPR become closer (from 5.5 points to 4.8 points), while that of the United States grew wider (from 2.3 points to 3.4 points). The declining trend of Japan's domestic input rates was comparatively weaker than the American case, thus, as a result, Japan's VAHPR is growing closer to America's.

Next, we will see the change of DTHPRs of individual industrial sectors. Let us begin with picking up industries where American DTHPR is higher than Japan's by three points or more in 1970. The industrial sectors which fall in this criterion are 3) Food, beverages & tobacco, 4)Textiles, apparel & leather, 5)Wood products & furniture, 9)Petroleum & coal products, 11)Non-metallic mineral products, 13)Non-ferrous metals, 22)Aircraft, 25)Electricity, gas & water. A similar tendency for these industries has been maintained in 1990[5]. That clearly expresses the characteristic of American capitalism where the first 5 sectors have comparative advantage thanks to resource endowment and where aircraft also has comparative advantage owing to its technological superiority. On the other side, the industrial sectors where Japan's DTHPR is higher than America's in 1970 are such 11 sectors as 6)Paper, paper products & printing, 14)Metal products, 15)Non-electrical machinery, 16)Office & computing machinery, 18)Radio, TV & communication equipment, 19)Shipbuilding & repairing, 20)Other transport equipment, 21)Motor vehicles, 23)Professional goods, 24)Other manufacturing, and 26)Construction. But the differences (Japanese superiority) with their counterparts in America are as relatively small as 0.6, 2.6, 1.0, 0.0, 0.9, 2.0, 3.1, 3.2, 1.0, 4.3 and 0.5.

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5 We want to stress that a 1% difference is considerably large since this 1% means 1% of the whole value of output of each industry.

However, the situation changes in 1990. Especially, the Japan – USA differences in 16)Office & computing machinery and 21)Motor vehicles expand to 9.4 and 8.9 points in 1990. And differences in 18)Radio, TV & communication equipment and 19)Shipbuilding & repairing also increased to 5.5 and 2.9 points respectively in 1990. These results relate how quickly the comparative advantage structure changed during these 20 years. These results are also informative in a political economic point of view since we can compare quantitatively element endowment rates with comparative advantage and classify changing patterns of comparative advantage and types of capitalism.

The third point that we should take into consideration as to Table 6-2 and Table 6-3 is how to handle the last country of the processing. The higher DTHPR is, the higher the share of domestic input is. And the lower the value-added rates of domestic input are, the larger the difference between DTHPR and VAHPR is. In other words, a large difference between DTHPR and VAHPR means that the intermediate input of this industry brings in a relatively large portion of value-added from foreign countries.

As we have seen before, Japan's difference between DTHPR and VAHPR in all industry average is larger than America's in both 1970 and 1990, but Japan's difference became closer during these 20 years, while America's grew wider.

Also in each industry, in 1970 there are many industrial sectors where Japan's difference is wider compared to America's. For example, Japanese DTHPR is larger than its VAHPR by as much as 4 points in 1970 in almost all industrial sectors except 8)Drugs & medicines and 9)Petroleum & coal products. We can also observe the same tendency in 1990. Namely Japan keeps its high local contents rate only at "the last step of the processing"

The difference between DTHPR and VAHPR in Japan's main industries decreased slightly in 1990. This is because VAHPR did not change much during these 20 years while DTHPR declined by a couple of points. However, taking into consideration that the level of production grew remarkably in this period, we can guess that the absolute value of value-added itself that leaked abroad was also huge accordingly. That is to say, these figures can be interpreted to show that domestic production capacity simultaneously advances with internationalization of production.

On the other hand, the situation in the United States is a little different. There are only 4 industries where DTHPR is larger than VAHPR by four points in 1972. These are 13) Non-ferrous metals, 14) Metal products, 20) Other transport equipment, and 21)

Motor vehicles. But, in 1990, the number of industries that falls in the same criterion increased to 13. They are, other than the above mentioned industries, 4)Textiles, apparel & leather, 7)Industrial chemicals, 9)Petroleum & coal products, 10)Rubber & plastic products, 12)Iron & steel, 16)Office & computing machinery, 17)Electrical apparatus, nec., 18)Radio, TV & communication equipment, and 22)Aircraft. Moreover, these differences have widened in contrast to the Japanese case. It is interesting to know that the rate of local contents of American input decreased in the United States. Because of this we can imagine that multi-national enterprises, which are ruling the main industrial sections in the United States, advanced intra-corporate division of labor by out-sourcing or further internationalization. In other words, a knockdown method leaks a large part of value-added abroad because domestically it does only the final assembling process, sometimes with a little intermediate processing, of parts and components imported through an intra-enterprise division of labor of multinational enterprises. It namely means a decrease of local contents in the United States and an increase of leakage of value-added abroad. Especially in such sectors as 16)Office & computing machinery and 21)Motor vehicles, the difference between DTHPR and VAHPR is respectively widening 2.6 to 4.2 points (62% increase) and 4.2 to 6.5 points (54% increase) during the period of 1972 to 1990. We may say that the American economy has been caught in a trap which IBM and the Big-three automobile companies brought about in completing their network of world production and sales.

6. Change in Home Production Rate and Rules of Origin

When we reconsider the discussion in the previous section taking into account the recent international controversy on rules of origin, we recollect that this controversy began with the increasing leakage of the American value-added to foreign countries[6]. Therefore, we can say that estimating home production rate is almost the same as describing a production structure in each period of each economy as its own base. The reason we used the word "base" is that this report treats the domestic vs. foreign share of "value" (more accurately value-added) that the national economy produced. And the result we obtained here shows a clear decreasing trend of home production rate for the whole national economy. Therefore, we can conclude that this result may indicate an upgrading integration of production in contemporary capitalism and that it also

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6 Some readers may remember when "the net cost method" in NAFTA was adopted

proves the process of economic globalization is set on a non-returnable track.

We think this result may also clarify that becoming anachronistic is a concept of "national economy" with a balanced reproduction structure or "world economy" as a set of self-concluding national economies (VAHPR has something to do with a reproduction theory of primary input). Indeed, there could be a possibility that inter-enterprise division of labor, which is built in as the reproduction structure of multinational enterprises, would be harmful to the macro reproduction structure of a national economy. Some researchers assert that an ideal type of national economy should have a balanced and harmonious structure of reproduction, and that deviation or distortion from that should be recognized as the ringleader of failure or as a difficulty for the national economy. But, it is not necessarily the case that economic liberalization or internationalization should be regarded as a disturbance factor for a reproduction structure. We, therefore, think that the principle of national economy, whether a nation state may be developing or advanced, should not be "independence" but "autonomy". Autonomy in an era of globalization by multi-national capitalism means that each national economy selectively absorbs the fruits of internationalization according to its development stage and voluntarily adopts its policies based on their applicability to international circumstances.

However, some readers might recollect that the concept of "independent national economy" was used in the almost same context as "enclave" or "autarky". Autarky can enjoy neither economy of scale nor the economic effects given by international division of labor or introduction of foreign capital and technology since autarky is subject to an economy of small amount production with many varieties. That is why recently many researchers use a concept of surrounding areas (the middle between center and periphery), and the World Bank as well as local governments tends to promote cooperation between multinational enterprises and governments of developing countries. Moreover, we think that the fruit of a regional integration like ASEAN or ASEAN Free Trade Aria (AFTA) was achieved by the renunciation of narrow-mindedness that co-exists within the slogan: "independent national economy".

7. Concluding remarks

We, in this report, have discussed such economic topics as home production rate, national economy, reproduction structure, and economic autonomy along with a natural theoretical order. Here, we would conclude this report by introducing an example

where economic autonomy does away with the concept of "national economy". As is well known, EC is presently in the process of market integration toward currency unification. The Maastricht Treaty required EU member countries to fulfill the following four criteria by 1997 in order to join the European Monetary Union (EMU)[7]

1. the achievement of a high degree of price stability: the average rate of inflation, observed over a period of one year before the examination, should not exceed by more than 1.5 percentage points that of, at most, the three best performing Member States in terms of price stability;

2. the sustainability of the government financial position : the government deficit should not exceed 3% of gross domestic product (GDP) unless the ratio has declined substantially and continuously and reached a level that comes close to 3%, or alternatively, if the excess over 3% is only exceptional and temporary and the ratio remains close to 3%. In addition, the public debt should not exceed 60% of GDP, unless the ratio is sufficiently diminishing and approaching 60% at a satisfactory pace.

3. the observance of the normal fluctuation margins provided for by the exchange rate mechanism of the European Monetary System (EMS) for at least two years, without severe tensions ;

4. the durability of convergence : the average nominal long-term interest rate, observed over a period of one year before the examination, should not exceed by more than 2 percentage points that of, at most, the three best performing Member States in terms of price stability.

The countries that fulfilled the above conditions are the following 11 countries: Germany, France, Italy, Spain, Netherlands, Belgium, Luxembourg, Portugal, Finland, Austria, and Ireland. On January 1 in 1999, they participated in EMU that is based on the non-national and artificial currency EURO[8].

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7 The URL of EU is http://europa.eu.int. The condition to join the EMU is described in the section of "EURO".

8 Nikkei, February 28 in 1998. Afterwards, this change was finally approved in EU summit conferences on May 2. As a result, a new market with a unified currency will be born and it will have a population of 300 million and a 6.9 trillion dollar GDP (in 1996). For reference, American population and GDP are respectively 260 million and 7.3 trillion dollars, while the Japanese counterparts are respectively 130 million and 4.6 trillion dollars. Among EU's 15 countries, Britain and Denmark postponed their participation while Greece and Sweden were not able to satisfy the Maastricht requirement. However, participation of these four countries is expected by the year 2002 when EURO notes and coins start circulating. The exchange rates between EURO and currencies of non-EU countries are equivalent to the present European Currency Unit (ECU). Therefore, member countries agreed that the exchange rate between EURO and each participant's currency is fixed at the central price of exchange rate

This movement is none other than an example of harmonization in the management of national economies, while formulation of EMU theoretically means a process of a breaking-up of national economies leading to regional unification through standardization of economic policy.   Taking this example in EU into consideration, we might need to change our attitude that takes it for granted that an "economic model" has its base in a nation state (or a certain kind of nationalism).

mechanism (ERM) as of January in 1999, i.e. 1 DM = 3.3538 FF = 990.002 IL.   That is, as of April 1998, 1ECU=1.98 DM =145 yen =1.1 USD.   Dutch banker Mr.Duisenberg, former president of the European Monetary Institute and known as an inflation killer, was appointed to be the first president of the European Central Bank (Nikkei, May 3 in 1998)

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