The Journal of Gifu Keizai University, Vol. 29, No. 4 (1996)

An Assessment of the Relative Positions of Labor in Postwar Japan and the United States*) **)

By

Rebecca KALMANS

State University of New York, Old Westbury

(December 1995)

Introduction

A reoccurring theme in the Japanese literature on political economy is that the rate of surplus value, i.e., the Marxian measure expressing the ratio of surplus labor time to necessary labor time, is higher in Japan than in the United States. This input-output study, the first in the United States to compare the Japanese and U.S. rates of surplus value, presents an alternate view.

One of the initial works to show that Japan has a higher rate of surplus value than the United States was undertaken by Shah Riff

---

*) Acknowledgements:
Anwar Shaikh, New School for Social Research
Hiroshi Izumi, Osaka University of Economics

**) この寄稿論文は，1995年12月16日（土）に本学学会と経済統計学会関西部会との共催で行った研究会における報告論文である．

(1940). Comparing his 1937 measure of the rate of surplus value in Japanese industry to that of Varga (1931) for the United States, he concludes that the Japanese rate was five times as great. The later studies of Uesugi (1949), Shinohara (1952), Nonomura (1954) and Yamada (1954), all support Riff's conclusion that the rate of surplus value is higher in Japan than in the United States.[1]

Izumi (1983, 1992), on the other hand, provides estimates of rates of surplus value, calculated in labor values, that find the U.S. rate to be higher. He argues that this result does not contradict the previous estimates, since they are measured in prices. In fact, he provides comparative estimates of price rates of surplus value in which the Japanese rate of surplus value is above the U.S. rate. The price rates of surplus value encompass not only the surplus value produced by workers in capitalist enterprises but the value exploited from self-employed farmers as well; the labor value rates exclude the latter transfers of value. The labor value estimates and the price estimates are, thus, not measuring the same categories.[2]

In this work, by contrast, the measurement of both the price and value rates of surplus value incorporates the self-employed. Like Izumi (1983, 1992), it finds that in the manufacturing sector, the value rate of surplus value is, indeed, higher in the United States while the price rate is generally higher in Japan. The rate of surplus value measured in prices and the rate of surplus value measured in labor values may diverge within individual sectors, precisely because price-value deviations may be quite substantial on a sectoral level due partly to intersectoral transfers of value, like those from agriculture to industry, that occur during the process of capitalist competition. Unlike Izumi (1983, 1992), a different picture emerges for the economy as a whole. The rate of surplus value is higher in the United States than in Japan, regardless of whether it is measured in terms of labor values or prices. The aggregate price rate of surplus value approximates the aggregate value rate in both countries, suggesting that price-value deviations are insignificant.

The specific focus of this paper is the measurement of the rate of surplus value in Japan and in the United States from 1958 to 1980, using national input-output accounts. This introduction is proceeded by sections on the theoretical and methodological foundations of the work. The theoretical discussion centers on Marx's differentiation between productive and unproductive labor. This distinction is at the theoretical core of the study, because the rate of surplus value is the rate of exploitation of productive workers. The methodological section attempts to clarify the distinction between conventional input-output categories and Marxian categories. It presents the method of calculation of both the rate of surplus value in terms of labor values and prices, using input-output accounts that have been adapted for Marxian empirical research. The subsequent empirical analysis focuses, first, on the Japanese rate of surplus value and, afterward, on the U.S. rate. It winds up with an international comparison. The paper concludes with a summary, followed by an appendix which analyzes the data.

This study is the result of a painstaking effort to construct a Japan-United States input-output data base whose methodology and conventions are compatible. Also, the input-output accounts, based on conventional economic categories, have been adjusted so that they are more consistent with Marxian categories. This was a tremendous task, and the author holds herself responsible for any oversights, especially since all explanations of the Japanese data were limited to English translations.

Theoretical Foundations

The rate of surplus value expresses the relation between the surplus labor time and necessary labor time expended in production, i.e., between the unpaid and paid labor time. In Marx's own words, it is the ratio of surplus value to variable capital. Moreover, the rate of surplus value is a measure of the degree of exploitation

of *productive* workers, since they alone produce surplus value for which no compensation is received.

It is not the intent of this paper to undertake a rigorous theoretical investigation of the distinction between productive and unproductive labor. Still, it is necessary to concretize the definition of productive labor informing the analysis, since this category has a central influence on the measurement of the rate of surplus value. The theoretical conception of productive and unproductive labor in this work is based on an interpretation of Marx developed by Shaikh (1978) and Shaikh and Tonak (1994, Ch. 2). To summarize briefly this schema, productive labor cannot be considered independently of the logic of capitalist production, especially the accumulation of capital. Accumulation is contingent on the existence of a surplus product that must assume the peculiar form of surplus value to be the source of wealth in a capitalist economy. Consequently, for labor to be productive, labor power must, first, be directly exchanged with capital and, second, produce a commodity embodying surplus value (Marx 1977, p. 674).

Productive labor, therefore, has no association with the particular use value produced (Marx 1967, Vol. 1, p. 401). This interpretation differs from that of Hirota (1975), Yamada (1972) and Izumi (1980, 1983, 1992) who associate productive and unproductive labor with labor that produces goods and services, respectively. Also, it is different from Bullock (1974) and Hunt (1979) who define productive labor as labor employed by capital to make wage goods and means of production. Since use value is not the distinguishing characteristic, there is no reason why surplus value embodied in luxury goods or military goods is external to the process of the self-expansion of value. Finally, productive labor is not associated with the working class, as Wright (1977) contends, or with labor expended in goods and services required by a "rationally organized society," i.e., a socialist society, a notion identified with Baron (1957). Instead, the principal factor that differentiates productive labor from unproductive labor is, as stated above, its unique ability to create surplus value that can be transformed into money and converted into capital; the

exploitation of the productive worker by the capitalist underlies this process.[3]

By contrast, unproductive labor is involved in distribution, management of the production process and maintenance/reproduction of the social order, e.g., police, military and the executive, legislative and judicial activities of the state. Unproductive labor is intrinsic to the production and reproduction of capital, in spite of the social cost incurred. Furthermore, unproductive workers can be exploited in the sense of performing surplus labor above and beyond that necessary for their reproduction from one period to the next, but it does not create surplus value.

The empirical measurement of productive and unproductive labor requires the preliminary step of dividing the input-output tables into production and nonproduction sectors. Following Shaikh and Tonak (1994, Ch. 3, p. 41), production involves activities which create use values or transform certain properties that define the objects as socially useful. It includes agriculture, manufacturing, construction, transportation, communication and utilities, personal services and social services. The nonproduction sectors, alternatively, encompass trade and real estate and rental. Also, business services, i.e., advertising and legal services, and finance and insurance are nonproduction royalty sectors, since from a Marxian perspective, royalty payments are social claims on the flows of revenue and profit of the production sectors.[4]

The production sectors are comprised of both productive and unproductive laborers in this work, in contrast to certain studies that assume all labor in the production sectors is productive (Okishio 1959; Okishio and Nakatani 1985). Alternatively, all laborers in the nonproduction sectors are considered unproductive. Occupation by industry matrices facilitate the measurement of productive and unproductive labor. Workers in agricultural, transportation and communication, mining and production process occupations are productive for the reasons stated above. Also, this category includes professionals such as engineers and technicians, health and medical workers, writers and teachers, and service occupations such

as barbers and beauticians, cooks, dry cleaners, etc. Unproductive workers, by contrast, consist of managers and directors as well as workers in the following categories: trade, real estate and rental, finance, insurance, security and defense, clerical and other management support occupations, sales and professional and service occupations like accountants, lawyers and advertisers.

Self-employed workers are included in the empirical measurement of the rate of surplus value in this study. They, too, must be categorized as productive or unproductive of capital. From a theoretical standpoint, self-employed labor engaged in production activities in a capitalist economy (in contradistinction to petty commodity producers articulating with but outside the circuit of capital) is a hybrid case. The self-employed person may be viewed both as a capitalist as well as a productive worker. He or she owns the means of production and controls the production process but, nonetheless, produces a product embodying surplus value. While it is quite possible to isolate these distinct functions on a conceptual level, it is not possible empirically.

In the conventional input-output accounts, all income of the self-employed shows up in value added as profit-type income and hence would be counted as part of surplus value from a Marxian point of view. This national income accounting procedure, therefore, poses problems for Marxian empirical research. So, in this study self-employed labor's income is divided between a "wage equivalent," which is assumed to be equal to productive workers' wages, and profit-type income.

The Calculation of the Rate of Surplus Value

The rate of surplus value in Japan and the United States is measured for the economy as a whole and the manufacturing sector. It is estimated in terms of both labor values and prices. The value rate of surplus value is equal to the ratio of surplus value produced to variable capital; on the other hand, the price rate of surplus value is equal to the ratio of surplus value realized to variable capital. The

price rate, therefore, encompasses not only the value and surplus value produced domestically, or within a sector, but, also, transfers of value into and out of the economy, or of that sector. It reflects value flows between the economy and the rest of the world through international trade, the capitalist and semi-capitalist sectors and the private and public sectors.

The measurement of both the value and price rates of surplus value entails, as a preliminary step, the calculation of Marxian value added and, afterward, that of variable capital. Surplus value is, then, derived from the subtraction of the latter measure from the former.

First, with regard to the value rate, Marxian value added (va*) is equal to total productive employment of the production sectors (nqp). This is an elaboration of Morishima and Seton (1961) in which the value of national product is shown to equal total employment. We have,

$$va^* = nqp \qquad 1$$

where n is employment, q is the production sectors and p is productive workers.

Variable capital (v) is the product of

$$v = \lambda \; bqp \qquad 2$$

where λ is a row vector of labor values and bqp is a column vector of the bundle of production outputs consumed by productive workers. λ is, in turn, computed as

$$\lambda = l(I - (A + D))^{-1} \qquad 3$$

where l is a row vector of direct labor required to produce one yen (dollar) of output; A is an nxn matrix of circulating constant capital inputs whose elements a_{ij} represent the amount of commodity i used to produce a yen's (dollar's) worth of output of the j^{th} production industry;[5] and D is a nxn matrix whose elements d_{ij} represent the fixed constant capital inputs used up per yen (dollar) of commodity j.

Ideally, the direct labor requirements should be adjusted for skill differentials; however, comparable data are unavailable for both Japan and the United States. Relative wage coefficients are sometimes used as a proxy for skill adjusted labor coefficients. Although this procedure has been criticized for biasing the estimates of labor values, it is not obvious that there is a problem at very broad sectoral levels such as those employed in this study since the discrepancies might cancel one another out. But, then, there is the additional caveat of the wages of agricultural workers. As Shaikh and Tonak (1994) maintain, the use of wage coefficients is problematic in countries in which workers in the agricultural sector are underpaid relative to their skill level. It is widely recognized that self-employed farmers are in a particularly weak economic position in Japan. Consequently, the substitution of wage coefficients for skill coefficients would likely underestimate the labor values of consumption goods and variable capital in this country. Labor coefficients are, therefore, left unadjusted for skill differentials.

Still focusing on variable capital, certain standard assumptions are made to estimate the production outputs consumed by productive workers. One such assumption is that a worker's wage basket is the same across sectors. This implies that consumption patterns do not differ significantly among workers in different sectors. Another assumption is that money wages reflect real wages, which is often justified on empirical grounds. For example, Shaikh (1978) and Wolff (1987) argue that total consumption expenditures are close to total wages in the United States. One may question, on the other hand, how this assumption may be reconciled with the high savings ratio of Japanese workers. A plausible answer is the so-called bonus hypothesis. This popular explanation for Japan's high personal savings ratio, supported by Mizoguchi (1970), Shinohara (1983), and Ishikawa and Ueda (1984), maintains that Japanese worker households save mainly from their semiannual bonuses rather than from regular wages. Their evidence documents a strong covariation between the proportion of bonuses in total annual earnings and the household savings ratio.[6]

Based on the above assumptions, let us divide the consumption column (con) into consumption bundles of production outputs (bq) and nonproduction outputs (bnq). We have,

$$\begin{matrix} con = & bq \\ & bnq \end{matrix} \qquad 4$$

Insofar as only use values produced in the production sector are consumed in the process of reproducing labor power, bq interests us. Specifically, we want to estimate bqp, representing the productive consumption of production workers. To obtain bqp, it is necessary to multiply bq by R, the ratio of the employee compensation of productive workers to total consumption,

$$bqp = bq * R \qquad 5$$

Variable capital is, in turn, equal to

$$v = \lambda \ bqp$$

Surplus value (s) is found by subtracting variable capital from value added, or

$$s = nqp - (\lambda \ bqp) \qquad 6$$

The measurement of the value rate of surplus value in manufacturing follows the same procedure as above except that variable capital is restricted to the consumption bundles of productive workers in the manufacturing sector. In this case,

$$v_j = \lambda \ bqp_j \qquad 7$$

where the notation j represents the j^{th} production sector such as manufacturing.

Proceeding to the price rate of surplus value, its measurement is based on an approach formulated by Shaikh (1975), elaborated by Khanjian (1988) and developed in detail in Shaikh and Tonak (1994, Ch. 4). Again, the first category under consideration is Marxian value added (VA*) which in price terms is equal to the value of the gross product (the necessary and surplus products)

produced by productive workers, i.e., to variable capital and surplus value. Marxian value added encompasses orthodox value added net of depreciation. This incorporates, for example, employee compensation, profits, other profit-type income such as the income of self-employed, indirect taxes, current subsidies and consumption outside household (in Japan only).[7] Marxian value added, also, comprises the output of the trade sector, i.e., wholesale and retail trade, distributive transportation, and the rental of produced commodities.[8] The trade sector is a component, since all costs of circulation, including the commercial capitalists' profits, is supported out of the surplus value originating from productive workers. Additionally, Marxian value added consists of the payments made by capitalists in the production sector to the royalty sectors, i.e., finance and insurance and business services. The royalty payments, which the input-output accounts treat as costs of products purchased from these sectors, are, as indicated before, social claims on the revenue and profit generated in production. In other words, from a Marxian perspective, royalty payments are a form of surplus value and, therefore, must be included in Marxian value added. Hence Marxian value added includes

$$VAm^* = VA_q - D_q + RY_q + T \qquad 8$$

where VAm is Marxian value added, VA_q is the conventional value added of the production sectors, D_q is the depreciation of the production sectors, RY_q is the royalty payments made by capitalists in the production sectors and T is the gross output of the trade sector. The notation * represents the money form of Marxian value categories.

Next, variable capital (V^*) is calculated as the employee compensation of productive laborers, which includes wages and wage supplements, minus their royalty payments. We must omit the latter, because, from a Marxian perspective, consumer royalty payments are transfers of value. Hence,

$$V^* = W_p - RY_p \qquad 9$$

where W_p is employee compensation of productive workers and RY_p is productive workers (consumer) royalty payments.

Lastly, surplus value (S^*) is estimated as

$$S^* = VAm^* - V^* \qquad 10$$

The calculation of the manufacturing rate of surplus value proceeds similarly to the aggregate rate with some modifications. For an individual production sector j, Marxian value added equals its value added minus depreciation, plus its royalty payments and the trade (and rental) margins on the sales of its output. That is,

$$VAm^*_j = VAq_j - Dq_j + RYq_j + T_j \qquad 11$$

Variable capital is estimated as the employee compensation of all productive workers in the sector minus the consumer royalty payments paid by these individuals, or

$$V^*_j = W_{pj} - RY_{pj} \qquad 12$$

Once again, surplus value (S^*_j) is the residual. Accordingly,

$$S^*_j = VAm^*_j - V^*_j \qquad 13$$

Empirical Results

The measurement of the rate of surplus value in Japan is carried out from 1960 to 1980 at five year intervals. In the United States it is estimated for 1958, 1963, 1967, 1972 and 1977. The study is restricted to those years in which benchmark input-output tables are published in the two countries.

The Rate of Surplus Value in Japan

Table 1 shows the Japanese value rates of surplus value in the economy as a whole and the manufacturing sector, while Table 2 contains measures of the aggregate and manufacturing price rates.

Table 1

The Value Rate of Surplus Value in Japan

(Thousands of Worker Years)

	Total				
	1960	1965	1970	1975	1980
VA	23,086	24,820	26,562	25,933	26,289
V	8,034	8,504	8,340	8,714	8,322
S	15,051	16,316	18,222	17,218	17,967
S/V	1.873	1.918	2.185	1.976	2.159
	Manufacturing				
VA	8,155	9,433	11,289	10,403	9,953
V	2,960	3,189	3,619	3,389	3,264
S	5,195	6,220	7,669	7,014	6,897
S/V	1.754	1.958	2.118	2.070	2.113

The rate of surplus value in Japan ranged from about 180 to 220 percent, leaving aside the manufacturing price rate, to which we will return briefly. Also, according to Marx's predictions, the rate of surplus value had an upward trend during the 1960–1980 period in Japan. The aggregate value rate rose about 15 percent, while the aggregate price rate went up 8 percent. The manufacturing rate of surplus value, both in value and price terms, increased 20 percent. There was a noticeable rise in the rate of surplus value until 1970, the year that marked the end of the era of high speed growth, and particularly during the 1965–1970 period, which coincided with the Izanagi boom lasting from November 1965 to July 1970.[9]

Table 2

The Price Rate of Surplus Value in Japan

(Millions of Yen)

	1960	1965	1970	1975	1980
Total					
VAm*	13,874,898	28,156,168	63,852,709	133,238,88	215,882,44
V*	4,829,236	9,950,129	19,915,989	47,020,525	71,267,043
S*	9,045,661	18,206,038	43,936,819	86,218,356	144,615,40
S*/V*	1.873	1.830	2.206	1.834	2.029
Manufacturing					
VAm*	20,880	43,057	106,104	73,389,944	121,428,40
V*	1,771,327	3,760,536	8,635,720	18,292,234	27,695,451
S*	5,745,470	11,739,981	30,692,294	55,097,709	93,732,956
S*/V*	3.244	3.122	3.423	3.012	3.384

It immediately meets the eye that the magnitude of deviation of the aggregate price rate from the value rate was quite small. This suggests that price-value deviations were minor over the period. Ochoa (1984) examines this issue empirically for the United States. He reveals that during the 1947–1972 period, the average deviation of market (producer) prices from values was approximately 12 percent, while average Sraffian prices of production deviated from values by 15 percent. Insofar as the difference between the aggregate price and value rates of surplus value is a measure of the effect of price-value deviations, Table 1 and Table 2 indicate that they were negligible in Japan, also. The deviations ranged from 0 to 6 percent, even less than in the United States.

A different picture emerges when we observe the relationship between the value and price rates of surplus value in the manufacturing sector. The price rate was consistently higher than the value rate. The estimates of the price and value rates of surplus value in manufacturing reflected price-value differences of about 45 percent to 60 percent from 1965 to 1980, and as high as 85 percent in 1960. These deviations were substantial but not surprising for Japan.

The divergence between value and price rates of surplus value in the manufacturing sector suggests a complex circuit of value transfers among sectors of the private economy and between the public and private sectors, as well as international transfers of value among nations. For example, in the process of the formation of the general rate of profit, value is transferred from sectors such as agriculture that have low organic compositions of capital to others like manufacturing that have higher organic compositions (Marx 1967, Vol. 3, pp. 173–99). Okishio (1959), Izumi (1980, 1983) and Okishio and Nakatani (1985) maintain that value transfers from agriculture to industry are significant in Japan, in light of the relatively low level of capitalist development in the former sector. The results of this study support their view.

In addition, transfers of value occur via foreign trade. Shaikh (1980, pp. 49–50) argues that the *net* transfer will be the sum of an efficiency effect within the same industry internationally and a transformation effect between industries. One would expect, for instance, producers in Japanese industries such as automobiles, electronics, heavy machinery, optical instruments, drugs and medicine, iron and steel (particularly blast furnaces and open and electric furnaces) to be high efficiency producers from an international perspective and these industries to have relatively high organic compositions of capital. It is thus plausible that there is an inward net international transfer of value into these leading manufacturing industries. However, this does not necessarily ensure a net international value transfer into manufacturing as a whole. While it is beyond the scope of this paper to investigate the effect of transfers of value on the measurement

of the rate of surplus value in a more detailed and systematic manner, it is an intriguing area for future empirical research.

The differential between the value and price rates of surplus value in Japanese manufacturing implies that, from a sectoral point of view, the level of the price rate was not a valid index of the level of the value rate. However, the trends of the two measures were similar. By contrast, the levels as well as the trends of the produced and realized rates approximated one another in aggregate terms.

The Rate of Surplus Value in the United States

The aggregate and manufacturing rates of surplus value are

Table 3
The Value Rate of Surplus Value in the United States

(Thousands of Worker Years)

	Total				
	1958	1963	1967	1972	1977
VA	30,664	31,783	34,638	35,551	38,744
V	9,096	9,367	9,725	9,729	10,576
S	21,568	22,416	24,913	25,822	28,168
S/V	2.371	2.393	2.562	2.654	2.663
	Manufacturing				
VA	12,733	13,498	15,370	14,737	14,958
V	4,465	4,662	4,538	4,239	4,281
S	8,466	8,836	10,831	10,498	10,677
S/V	1.851	1.895	2.387	2.477	2.494

Table 4

The Price Rate of Surplus Value in the United States

(Millions of Yen)

	Total				
	1958	1963	1967	1972	1977
VAm*	159,253,400	180,570,240	241,081,920	290,676,715	362,874,016
V*	43,066,440	56,133,000	71,095,680	85,373,788	105,775,571
S*	96,186,960	124,437,240	169,986,240	205,302,927	257,098,445
S*/V*	2.233	2.217	2.391	2.405	2.431
	Manufacturing				
VAm*	77,045,040	100,914,480	136,818,000	155,914,527	190,031,474
V*	21,112,920	27,668,880	34,341,840	37,327,886	44,144,464
S*	55,932,120	73,245,600	102,476,160	118,586,641	145,887,010
S*/V*	2.649	2.647	2.984	3.177	3.305

shown in value terms in Table 3 and in price terms in Table 4. Like in Japan, both the value and price rates of surplus value had increasing trends, signifying a rising rate of exploitation of productive workers. The value rate rose 12 percent in the aggregate and 35 percent, almost triple, in the manufacturing sector. Similarly, the price rate increased about 9 percent economywide and 25 percent in manufacturing.

For the economy as a whole, the difference between the levels of the two sets of rates of surplus value was minor once again. However slight the deviation, the price rate was, nonetheless, consistently below the value rate. Khanjian (1988, pp. 109–113) formally demonstrates this reflects the fact that in the United States trade margins on

the sales of consumer goods were higher than those on the average bundle of goods in net output. The relatively higher mark-up tended to make purchasers' prices greater than labor values and, therefore, the price form of variable capital higher than the value of labor power. This, in turn, led to a price rate of surplus value that was less than the value rate. Still, the differences between the two sets of measures were small, ranging from only 6 to 10 percent. In the United States the aggregate price rate of surplus value was a sound index of both the level and trend of the value rate. However, the relationship between the two measures was even stronger in Japan.

In the manufacturing sector, the levels of the price and value rates were disparate again. The price rate of surplus value was higher than the value rate by about 25 percent to 43 percent, but the magnitude of the deviation was much smaller than in Japanese manufacturing. This suggests that the contrast between the level of capitalization in the agricultural and industrial sectors was not as pronounced in the United States. Hence, transfers of value from agriculture to manufacturing were not as significant as in Japan.

A Comparative Perspective

Table 5 imparts that the Japanese aggregate value rate of surplus value was consistently *lower* than the U.S. rate from 1958 to 1980. The difference between the two sets of aggregate measures ranged from 18 percent to 34 percent. Also, the value rate of surplus value in Japanese manufacturing was lower than its U.S. counterpart, the exception being in 1963/65. The 1965 measure in the manufacturing sector in Japan was about a mere 4 percentage points above the 1963 U.S. measure. In other years, the U.S. rates ranged from 4 percent to 20 percent above the Japanese rates.

Regarding the trends, the value rate of surplus value was increasing in Japan and the United States, both on an aggregate and sectoral level. From 1958/60 to 1977/80 the rate of surplus value was growing somewhat faster in Japan, that is, 15 percent in comparison to 12 percent in the United States. By contrast, during this

Table 5

A Comparison of the Value Rates of Surplus Value in Japan and the United States

	Total				
	1958/60	1963/65	1967/70	1972/75	1977/80
S/V_J	1.873	1.918	2.185	1.976	2.159
S/V_{US}	2.371	2.393	2.562	2.654	2.663
	Manufacturing				
S/V_J	1.754	1.958	2.118	2.070	2.113
S/V_{US}	1.851	1.895	2.387	2.477	2.494

Table 6

A Comparison of the Price Rates of Surplus Value in Japan and the United States

	Total				
	1958/60	1963/65	1967/70	1972/75	1977/80
S^*/V^*_J	1.873	1.830	2.206	1.834	2.029
S^*/V^*_{US}	2.233	2.217	2.391	2.405	2.431
	Manufacturing				
S^*/V^*_J	3.244	3.122	3.423	3.012	3.084
S^*/V^*_{US}	2.649	2.647	2.984	3.177	3.305

same period the U.S. rate of surplus value in manufacturing increased 34 percent, which was double the growth rate in the Japanese manufacturing sector. U.S. manufacturing workers were at a disadvantage relative to their Japanese counterparts.

Table 6 shows the aggregate and manufacturing price rates in Japan and the United States. With regard to the aggregate measures, the relationship between their levels and rates of growth mirrored that of the produced rates, because, as discussed above, deviations between price and value were minor in both countries. On the other hand, the generally higher price rate in Japanese manufacturing in comparison to U.S. manufacturing was due to the relatively larger transfers of value from the agricultural sector.[10]

Summary

The results of this study present a novel view that the rate of surplus value, in terms of both labor values and prices, was higher in the United States than in Japan during the 1958–1980 period. Based on methods of calculation of value and price rates of surplus value that are compatible with Marxian categories, and based on input-output data that has been adjusted for methodological consistency between Japan and the United States, the aggregate price rate of surplus value mirrored the level and trend of the aggregate value rate in Japan as well as in the United States. This suggests that price-value deviations were minor in each country. Prices deviated from values by 6 to 10 percent in the United States, and the deviations were even smaller, 0 to 6 percent, in Japan. Therefore, the price rate of surplus value was a robust index of the value rate in the aggregate.

On a sectoral level, value and price rates of surplus value may diverge due to net transfers of value into and out of a sector. In the United States the price rate of surplus value in manufacturing was higher than the value rate by about 25 to 43 percent while in Japan the discrepancy was even greater, approximately 45 to 85

percent. In light of such substantial price-value deviations in Japan, it is not surprising that in the manufacturing sector the price rate of surplus value could be higher in Japan, even though the value rate was generally higher in the United States. However, the price rate of surplus value in the manufacturing sector in each country was, clearly, not a strong index of the value rate, which represents the real rate of exploitation of manufacturing productive workers. Accordingly, this study concludes that in the manufacturing sector, as in the aggregate, the rate of surplus value was higher in the United States.

NOTES

[1] Hiroshi Izumi, "A Survey of Estimations of the Rate of Surplus Value in Japan," Unpublished Manuscript.

[2] Hiroshi Izumi, "Estimation of the Rate of Surplus Value Using Labor Values, " *Keizai*, 193, May 1980; *Empirical Research on the Rate of Surplus Value : An Analysis of the Japanese, Korean and U.S. Economies Using Labor Value Calculations* (1992).

[3] See Anwar Shaikh and E. Ahmet Tonak (1994, Ch. 2), for a comprehensive discussion of the theoretical interpretation of productive and unproductive labor that informs this study.

[4] The input-output tables, additionally, include dummy and special industries which for the most part cannot be classified as either production or nonproduction. These sectors do not have any impact on the calculation of the rate of surplus value except for the U.S. special industry, inventory valuation adjustment.

[5] The A matrix includes both domestic goods and imports. Imports are grouped together with domestically related products in both the Japanese and U.S. input-output tables. In Japan there are import matrices that separate out the imported goods, but equivalent tables are not readily available in the United States. Consequently, imports are valuated in the same manner as domestic commodities.

[6] Kazuo Sato, "Saving and Investment" in Yamamura and Yasuba (1987), pp. 155–56 and p. 607. For additional information on the bonus hypothesis, see Toshiyuki Mizoguchi, *Personal Savings and Consumption in Japan* (1970); Miyohei

Shinohara, "The Determinants of Postwar Savings Behavior in Japan," in Franco Modigliani et al., eds. *The Determinants of National Saving and Wealth* (1983), pp. 201–18; and Tsumeo Ishikawa and Kazuo Ueda, "The Bonus Payment System and Japanese Personal Savings," in Masahiko Aoki, ed., *The Economic Analysis of the Japanese Firm* (1984).

[7] To make the Japanese and U.S. measures of Marxian value added more consistant, consumption outside households is subtracted from the value added sector of the Japanese input-output tables, since these expenditures are not recorded in value added in the U.S. accounts. Also, the inventory valuation adjustment, which appears in the U.S. input-output tables as a special intermediate industry, is applied to profit-type incomes in value added, following the National Income and Product Accounts, to make the charges against GNP consistent with GNP.

[8] Rental activities are treated here as an integral part of the trade sector, since they are simply a piecemeal way of selling commodities. In the case of commodity rentals such as equipment rentals, etc., they appear in the business service sector in the conventional input-output accounts. The depreciation of commodity rentals is, therefore, deleted from the value added of the trade sector in the adjusted accounts to treat the rental of commodities more like a trading activity.

[9] It is intriguing that the rate of surplus value decreased in Japan during the 1970-1975 conjuncture when the country was in a deep recession following the OPEC oil embargo. One plausible explanation is that Japanese workers scored a 33 percent increase in basic wages in 1974, on the basis of wind-fall profits created by "crazy prices" following the 1973 OPEC price hikes. According to Uchino (1983), this wage increase occurred at a time when management was in an unusually vulnerable position due to widespread public criticism of the corruption of large corporations. The gain in nominal wages, coming on the heels of a significant 24 percent increase in 1973, fed into a rise in real wages which outstripped increases in productivity (Kalmans 1992); hence, the rate of surplus value fell. In the 1970–1975 period, however, the rate of surplus value was on the rebound. This implies that the gains that Japanese productive workers had won were temporary. Tatsuro Uchino, *Japan's Postwar Economy: An Insider's View of Its History and Its Future*, Trans., Mark A. Harbison (1983), p. 133.

[10] The temporary fall in the Japanese manufacturing price rate of surplus value below the U.S. rate in 1972/75 reflected the real wage increases won by workers in Japan.

APPENDIX: SOURCES

Japan

1. Input-Output Tables

The empirical measurement of the rate of surplus value in Japan is carried out for 1960, 1965, 1970, 1975 and 1980 using 33-sector link input-output tables based on the official Japanese tables published by the Management and Coordination Agency (MCA), formerly referred to as the Administrative Management Agency. Specifically, the 1960, 1965 and 1970 tables are aggregations of the flow tables which appear in the 1960-1965-1970 Link Input-Output Tables. Tables for all three years are adjusted according to 1970 methodology. The 1975 and 1980 flow tables are repilations of those which appear in the 1975 Input-Output Tables and the 1980 Input-Output Tables.

The 1960-1965-1970 link input-output tables have fifty-nine sectors, aggregated from a basic sector classification of 541 rows by 405 columns. The 1975 and 1980 tables, respectively, have sixty-one sectors, aggregated from 558 rows by 405 columns, and seventy-two sectors, aggregated from 541 rows by 406 columns. These tables are further reduced to thirty-six sectors by Kimio Uno of the Statistical Data Bank Project (SDBP), Institute of Socio-Economic Planning, the University of Tsukuba. The SDBP tables are, in turn, adjusted to thirty-three sectors in this paper.

Various adjustments are performed on the Japanese flow tables to make them methodologically compatible with those of the U.S. For example, in the final demand sector government investment is combined with government consumption and the new residential building construction component of private investment is transferred to private consumption.

The intermediate section of the flow table has undergone various adjustments, also. To cite a few, iron and steel materials, iron and steel products and nonferrous minerals are merged. These sectors are aggregated to conform to the SDBP occupation by industry matrices, used to compute productive labor. Similarly, motor vehicles and other transport equipment are combined into one sector. On the other hand, private services

is disaggregated into business and rental services and personal services. The former is divided further into independent business services and rental services sectors, and the latter is likewise divided into amusement services, broadcasting, eating and drinking places and other services to households. Eating and drinking places and rental services are, then, reclassified as part of the trade sector. It is, also, necessary to break down finance, insurance and real estate into finance and insurance and real estate dealing.

The latter must be further disaggregated into real estate agency, which includes the fees of agents of real estate dealing, and real estate rents, which covers the commercial rent of stores, buildings, warehouses, etc., in order to separate out the owner-occupied housing subsector of house rents. This is required to reverse the owner-occupied housing imputation which is incompatible with Marxian national income accounting. The Japanese accounts, like those of the United States, treat private homeowners as firms that rent out their houses to themselves. This creates on the value side a fictitious component of the total output of house rents, which is the sum of the intermediate inputs, i.e., the estimated home maintenance expenditures of private homeowners, and an entirely fictitious value added. On the use side, the fictitious total output is a constituent of the house rents element of the personal consumption column. The intermediate inputs of home owners are transferred to personal consumption where, from a Marxian point of view, they rightly belong. Also, the fictitious value added is deleted, and the total output of owner-occupied housing is subtracted from its cell in the personal consumption column. Finally, the adjusted house rents sector is merged with real estate dealing, resulting in a reformulated real estate sector.[1]

2. Total and Productive Employment

Total employment figures are based on MCA supplementary tables published along with the input-output accounts. Productive labor estimates, additionally, utilize occupation by industry matrices, published by the Statistical Bank Project. The SDBP's 36-sector industrial classification and occupational groupings are, in turn, aggregations of Japanese Population Census. The SDBP matrices are adjusted to a 33-sector industrial classification utilizing the Population Census data to disaggregate the finance, insurance and real estate sector and the services sector.

3. Total and Productive Compensation

The MCA input-output accounts include a table on employee compensation, which is compatible with the value added sector of the input-output tables. The employee compensation tables are aggregated to the 33-sector Japanese classification used in this study and adjusted to correspond to the alterations performed on the input-output tables.

Productive workers' earnings are obtained from the employee compensation tables based on the assumption that the average earnings of regular and temporary and day productive workers approximate those of nonsupervisory unproductive workers.[2] Wage supplements of productive workers are estimated by multiplying total supplements by the ratio of regular workers' wages to total wages of regular employees and paid directors and managers. It is assumed that temporary and day workers do not receive benefits on a usual basis.[3]

With regard to self-employed workers, in all industries except agriculture the wage equivalent is estimated to be equal to the average combined wage of regular and temporary and day workers,[4] plus wage supplements, since in Japan most self-employed workers receive some wage supplements.[5] The earnings of self-employed farmers in the agricultural sector are derived from the Employment Status Survey.

United States

1. Input-Output Tables

The U.S. input-output tables are based on the benchmark tables published by the Bureau of Economic Analysis (BEA). They have been adjusted for methodological consistency by Juillard (1988) and Cooney (1989) and, additionally, aggregated to thirty-four sectors. Tables are available for 1958, 1963, 1967, 1973 and 1977.

2. Total and Productive Employment

Total employment measures are obtained from employment compatible with output measures from the 1967, 1972 and 1977 input-output accounts. This data is presented by Coughlin (1978), Crane (1982) and Yuskavage (1985), respectively, and modified by Khanjian (1989) to reverse

the force account construction adjustment. Employment measures for 1958 and 1963 are taken from Khanjian.

The total employment measures are altered to include the self-employed. Since the BEA studies do not provide information on self-employment, it is necessary to refer to NIPA data, which is adjusted to the industrial classification and total employment figures used in this paper.

Productive labor estimates for the United States utilize occupation by industry matrices that are published as special reports of the 1960, 1970 and 1980 Population Censuses. Howell (1987) adjusts the tables for consistency of occupational classification so that the 1960 and 1980 matrices are compatible with the 1970 matrix of 267 occupations and 64 industries. Also, he adjusts the Census data for compatibility with the BEA input-output accounts. Building on his work, occupation by industry matrices are interpolated for the years of the input-output benchmark studies. The subsequent delineation of productive and unproductive occupations follow the guidelines discussed in the article.

3. Total and Productive Compensation

Total compensation comes from the identical sources as total employment. The average annual compensation of a productive worker is obtained for each industry by dividing the total compensation of productive workers by the number of productive workers in the industry, using Khanjian's data. Afterward, these sums are multiplied by the estimates of productive workers (including self-employed workers) obtained from the occupation by industry tables.

NOTES TO THE APPENDIX

[1] Data is not directly available for the owner-occupied housing component of the house rents sector in Japan. The ratio of the number of tatami per households living in owned houses to the number of tatami of households living in owned houses and rented houses owned privately is used as a proxy. (Two tatami are equivalent to 3.3m.)

[2] To check the validity of this assumption, the per capita wage of a regular employee (excluding paid directors and managers) in mining and manufacturing,

given in the employment compensation tables, is compared to the average cash earnings of a regular production worker, based on the Monthly Labor Survey that is published in the *Yearbook of Labor Statistics*.

Using 1970 as a test case, the average annual total cash earnings of a production worker in mining is 0.876 million yen and in manufacturing 0.753 million yen. According to the 1970 input-output study, the average annual compensation of regular employees in mining is 0.874 million yen and in manufacturing 0.793 million yen. The two sets of estimates are quite close. There is a slight differential in manufacturing, but it is insignificant. (Mining: $0.876/0.874 = 1.002$; manufacturing: $0.753/0.793 = 0.950$)

[3] While some of the larger companies might offer temporary and day workers certain wage supplements, this is not the general case. Temporary and day workers, like all people in Japan, are eligible for national health insurance and annuity insurance; however, this is not factored into value added and, therefore, does not concern this study.

[4] Regular employees are under contract for at least one month or employed for eighteen days or more in each of the two months prior to the survey. Temporary and day employees are under contract for less than a month or daily employed. Japan Management and Coordination Agency, 1980 Input-Output Tables, English Summary (1984), p. 483.

[5] A simple test shows that in 1980, for instance, the rate of surplus value is 2.158 when benefits are incorporated in the wage equivalent of self-employed workers and 2.219 when they are omitted. Clearly, their effect on the rate of surplus value is negligible ($2.158/2.219 = 0.973$).

REFERENCES

Baron, Paul. 1957. *The Political Economy Of Growth*. New York: Monthly Review Press.

Bullock, Paul. 1974. "Defining Productive Labour for Capital." *Bulletin of the Conference of Socialist Economists*, Autumn, 1–15.

Boddy, Raford and James Crotty. 1975. "Class Conflict and Macro-Policy: The Political Business Cycle." *Review of Radical Political Economics*, 7, no. 1, 1–10.

Cooney, Paul. 1989. "Competition vs. Monopoly: An I-O Analysis of Profit Rates and Markups for the U.S. Economy, 1958–1977." Ph.D. Dissertation, New School for Social Research, New York.

Crane, Jane-Ring. 1982. Employment and Employee Compensation in the 1972 Input-Output Study." BEA Staff Paper No. 38. Washington, D.C.: Bureau of Economic Analysis.

Glyn, Andrew and Bob Sutcliffe. 1972. *British Capitalism, Workers and the Profit Squeeze*. London: Penguin Books.

Hirota, Jun. 1975. "Estimation of the Rate of Surplus Value in the Main Industries in Japan Using National Income Statistics and Input-Output Tables." *Keizai*, 132, April.

Hunt, E. K. 1979. "Productive and Unproductive Labor." *Science and Society*, Fall, 303–25.

Ishikawa, Tsuneo and Kazuo Ueda. 1984. "The Bonus Payment System and Japanese Personal Savings." In *The Economic Analysis of the Japanese Firm*, Ed. Masahiko Aoki. Amsterdam: North-Holland.

Itoh, Makoto. 1980. *Value and Crisis in Japan*. New York: Monthly Review Press.

Izumi, Hiroshi. 1980. "Estimation of the Rate of Surplus Value Using Labor Values." *Keizai*, 227, March.

———. 1983. "International Comparison of the Rate of Surplus Value Using Labor Values." *Keizai*, 193, May.

———. 1992. Trans., *Empirical Research on the Rate of Surplus Value: An Analysis of the Japanese, Korean and U.S. Economies Using Labor Value Calculations*. Kyoto: Horitsu-Bunka-Sha.

———. "A Survey of Estimations of the Rate of Surplus Value in Japan."

Manuscript.
Japan Administrative Management Agency. 1975. *1960-1965-1970 Link Input-Output Tables* (Showa 35-40-45nen Setsuzoku Sangyo Renkanhyo). Zenkoku Tokei Kyokai Rengokai.
———. 1979. *1975 Input-Output Tables* (Showa 50nen Sangyo Renkanhyo). Zenkoku Tokei Kyokai Rengokai.
———. 1984. *1980 Input-Output Tables* (Showa 55nen Sangyo Renkanhyo). Zenkoku Tokei Kyokai Rengokai.
Japan Bureau of Statistics, Office of the Prime Minister. 1962. *1960 Population Census of Japan.* Vol. 2, One Percent Sample Tabulation, Part 4, Occupation.
———. 1965. *1965 Population Census of Japan.* Vol. 2, One Percent Sample Tabulation Results, Part 3, Occupation.
———. 1974. *1970 Population Census of Japan.* Vol. 5, Results of Detailed Tabulation (Twenty Percent Sample Tabulation), Part 1, Whole Japan, Division 1. Tokyo: Nihon Tokei Kyokai.
———. 1978. *1975 Population Census of Japan.* Vol. 5, Results of Detailed Tabulation (Twenty Percent Sample Tabulation), 1978.
———. 1984. *1980 Population Census of Japan.* Vol. 4, Results of Detailed Tabulation (Twenty Percent Sample Tabulation), Part 1, Whole Japan, Division 1.
Japan Ministry of Labor, Statistics and Information Department. 1971. *Yearbook of Labor Statistics,* 1970 (45).
———. 1976. *Yearbook of Labor Statistics*, 1975 (50).
Juillard, Michel. 1988. "Un Schema de Reproduction pour l'Economie des Etats-Unis: 1948–1980. Tentative de Modelisation et de Quantification." Ph.D. Dissertation, Universite de Geneve, Geneve.
Kalmans, Rebecca. 1992. "The Relative Positions of Japanese and U.S. Workers in the Postwar Period: An Input-Output Study." Ph.D. Dissertation. The New School for Social Research, N.Y.
Khanjian, Ara. 1988. "Measuring and Comparing the Price and Value Rates of Surplus Value in the U.S., 1958–1977." Ph.D. Dissertation, New School for Social Research, New York.
Marx, Karl. 1977–1981. *Capital.* 3 vols. Trans., David Fernbach. New York: Vintage Books.
Mizoguchi, Toshiyuki. 1970. *Personal Savings and Consumption in Japan.* Tokyo: Kinokuniya-Shoten.

Nonomura, Kazuo. 1954. "Sengo no Kokumin-Shotoku." *Nihon-Sihonshugi-Koza*, V. 8.

Ochoa, Edward. 1984. "Labor Values and Prices of Production: An Interindustry Study of the U.S. Economy, 1947–1972." Ph.D. Dissertation, New School for Social Research, New York.

———. 1988. "Values, Prices and Wage-Profit Curves in the U.S. Economy." *Cambridge Journal of Economics* 13.

Okishio, Nubuo. 1959. "Measurement of the Rate of Surplus Value." *Economic Review* (Hitotsubashi University, Institute of Economic Research), V. 10, October.

——— and Nakatani, Takeshi. 1985. "A Measurement of the Rate of Surplus Value in Japan: The 1980 Case." *Kobe University Economic Review*, 31.

Riff, Shah. 1940. (in Russian). *War and the Japanese Economy*. (trans. into Japanese, 1946)

Shaikh, Anwar. 1975. "I-O Tables and Marxian Categories." Mimeograph, New School for Social Research, New York.

———. 1978. "National Income Accounts and Marxian Categories." Mimeograph, New School for Social Research, New York.

———. 1987. "Exploitation," In *The New Palgrave: A Dictionary of Economic Theory and Doctrine*, Eds. J. Eatwell, M. Milgate and P. Newman. London: MacMillan.

——— and Ahmet Tonak. 1994. *Measuring the Wealth of Nations: The political economy of national accounts*. Cambridge and New York: Cambridge University Press.

Shinohara, Miyohei. 1970. "The Determinants of Postwar Savings Behavior in Japan." In *The Determinants of National Saving and Wealth*, Ed. Franco Modigliani et al. NewYork: St. Martin's Press.

Toda, Shintaro. 1969. "The Recent Organic Composition of Capital." *Keizai*. May.

Uchino, Tatsuro. 1978. *Japan's Postwar Economy: An Insider's View of Its History and Its Future*. Trans., Mark A. Harbison. Tokyo, New York and San Francisco: Kodansha International LTD.

United States Bureau of the Census. 1965. *U.S. Census of Population: 1960*. Subject Reports. Occupation by Industry. Final Report PC(2)-7C. Washington, D.C.: U.S. Government Printing Office.

———. 1973a. *U.S. Census of Population: 1970*. Subject Reports.

Occupation by Industry. Final Report PC(2)-7C.Washington, D.C.: U.S. Government Printing Office.

———. 1973b. *1970 Occupation and Industry Classification Systems in Terms of Their 1960 Occupation and Industry Elements*. Technical Paper No. 26. Washington, D.C.: Government Printing Office.

———. 1984. *U.S. Census of Population: 1980*. Subject Reports. Occupation by Industry. Final Report PC80-2-7C. Washington, D.C.: U.S. Government Printing Office.

———. 1986. *1970–1980 Census Comparability*. Unpublished.

United States Department of Commerce, Bureau of Economic Analysis. 1965. "The Transactions Table of the 1958 Input-Output Study and Revised Direct and Total Requirements." *Survey of Current Business*, 45, September, 22–49.

———. 1969. "The Input-Output Structure of the U.S. Economy: 1963." *Survey of Current Business*, 49, November, 16–47.

———. 1974. "The Input-Output Structure of the U.S. Economy: 1967." *Survey of Current Business*, 54, February, 24–56.

———. 1978. *Employment and Employee Compensation in the 1967 Input-Output Study* by Peter E. Coughlin. BEA Staff Paper No. 31. Washington, D.C.: U.S. Government Printing Office.

———. 1979. "The Input-Output Structure of the U.S. Economy, 1972." *Survey of Current Business*, 59, February, 34–72.

———. 1980. *Definitions and Conventions of the 1972 Input-Output Study* by Philip M. Ritz. BEA Staff Paper No. 34. Washington, D.C.: U.S. Government Printing Office.

———. 1982. *Employment and Employee Compensation in the 1972 Input-Output Study* by Jane-Ring Crane. BEA Staff Paper No. 38. Washington, D.C.: U.S. Government Printing Office.

———. 1984. "The Input-Output Structure of the U.S. Economy, 1977." *Survey of Current Business*, 64, May, 42–84.

———. 1986. *The National Income and Product Accounts of the United States, 1929–1982: Statistical Tables*. Washington, D.C. U.S. Government Printing Office.

United States Office of Management and Budget. 1972. *SIC Manual, 1972*. Washington, D.C.: U.S. Government Printing Office.

Uno, Kimio. 1984. *Industry-Occupation Matrices in Japan, 1950–1980—An Input-Output Analysis (3)*. Statistical Data Bank Project, Institute of

Socio-Economic Planning, University of Tsukuba, Japan.

———. 1989. *Input-Output Tables in Japan, 1951–1985*. Statistical Bank Project, Institute of Socio-Economic Planning, The University of Tsukuba, Japan.

Uesugi, Shoichiro. 1948. "Nihon Kogyo ni okeru Joyo-Kachi-Ritsu no Sisan," *Kindai-Keizaigaku-no-Kadai*. Tokyo-Daigaku-Shinbunsha-Henshubu.

Varga, E. 1935. *The Great Crisis and Its Political Consequences: 1928–34*. New York: International Publishers (reprinted by Howard Fertig, New York, 1974).

Weisskopf, Thomas. 1979. "Marxian Crisis Theory and the Rate of Profit in the Postwar U.S. Economy." *Cambridge Journal of Economics*, 3(4), June, 341–378.

Wolff, Edward N. and David R. Howell. 1987. "Labor Quality and Productivity Growth in the U.S.: An Input-Output Growth Accounting Framework." Research Report No. 87-11, C.V. Starr Center for Applied Economics, New York University.

Wright, Erik Olin. 1977. "Alternative Perspectives in Marxist Theory of Accumulation and Crisis." In *The Subtle Anatomy of Capitalism*. Ed. J. Schwartz. Santa Monica, California: Goodyear Publishing Company.

Yamada, Kishio. 1954. "Saiseisan to Sangyo-Renkanhyo." *Tochi-Seido-Shigaku*, No. 24.

Yamagishi, Kazuo. 1962. "Surplus Value and Profit in Manufacturing Industries in Japan: The Rate of Surplus Value, the Organic Composition and the Rate of Profit." *Keizai*, 1.

Yamamura, Kozo and Yasukichi Yasuba, Eds. 1987. *The Political Economy of Japan, The Domestic Transformation*, V. 1. Standford: Standford University Press.

Yuskavage, Robert E. 1985. "Employment and Employee Compensation in the 1977 Input-Output Accounts." *Survey of Current Business*, 65, November, 11–25.