THE DUAL STRUCTURE OF THE JAPANESE ECONOMY AND ITS GROWTH PATTERN

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Introduction

The co-existence of pre-modern and modern economic forms is a "dualistic" character commonly found in developing countries, not only in production and distribution methods but also in the mode of life. In this article, the dualistic character, mainly in the sphere of production methods, will be considered.

As far as the co-existence of pre-modern and modern methods of production is concerned, Japan and underdeveloped countries in Asia have something in common. In Japan, however, pre-modern and modern branches are unified in a national economy, whereas in Asia's underdeveloped countries they remain marked by the colonial economy and mono-culture economy. In the case of underdeveloped countries, the term "dualistic state" or "dualism," employed by A.O. Hirschman[1] should be used, distinguishing it from "dual structure," a concept which applies to Japan.

Unlike industrial development in Western Europe, where modernization delivered a frontal attack on pre-modern techniques, in Asian countries modernization may keep them alive for a long period. This particular tendency has been pointed out by A.O. Hirschman; in contradiction to many other authors, he maintains that dualism is "the reason for dualistic development,"[2] which has some compensating advantages and represents in a way an attempt by an underdeveloped country to make the best of its resources during a transitional phase. So long as wage differentials exist between the modern and pre-modern branches, "pre-modern" industries will probably have an opportunity of prolonging their life and thus creating a valuable period for transition to "modern" operation. On the other hand, existing pre-modern enterprises run little danger of being eliminated, since new enterprises usually emerge in an industrial group which is entirely different from the current

1. A.O. Hirschman, *The Strategy of Economic Development*, New Haven, Yale University Press, 1958, p. 126.
2. Hirschman, *op. cit.*, pp. 125–132.

native industry. This "dualistic state" could certainly be retained and utilized, but, as Hirschman conceded, pre-modern branches will sooner or later succumb to the modern production methods. It is, however, characteristic of Japan that not only did the above-mentioned adaptation in utilizing the dualistic state develop, but the process of adaptation in organizing complementary relations within the framework of the whole national economy developed as well.

Differentials in modern and pre-modern branches, which are found in Asian underdeveloped countries, produce a polarization, high income and low income. Moreover, these two branches have a strong tendency to coexist in a heterogeneous and unincorporative form. It is a main feature of underdeveloped countries, considered as a stereotype, that traditional and modern branches coexist without being mixed, like water and oil. However, in Japan, modern branches include pre-modern branches in the working mechanism of the national economy: large modern enterprises and traditional medium and small enterprises are in a complementary relation, the latter depending on the development of the former; on the other hand, large enterprises use the cheap-labour products of medium and small enterprises and regard them as a cushion against business fluctuations.

I. ECONOMIC GROWTH AND DIFFERENTIALS IN CAPITAL INTENSITY BY SIZE OF FIRM

1. Schema of Capital Concentration and Growth of Enterprises

Let us refer to R.F. Harrod's famous fundamental equation of economic growth, $GC=S$,[1] and apply it to the problem of the growth of enterprises by size of firm. As is proved by many statistical analyses, the larger the scale of enterprise, the higher the capital-output ratio (C), whereas the smaller the scale, the lower the ratio. Consequently, even in the case where medium and small enterprises would grow at the same rate as large enterprises, the required capital accumulation ratio (S) necessary for the realization of the growth rate (G) will be small because of the low capital-output ratio, while on the other hand, the high capital-output ratio of large enterprises makes the required capital accumulation ratio extremely large. This means that large enterprises cannot meet the high required capital accumulation ratio with retained earnings, even though they have a large amount of owned capital. As a result, they must depend upon outside capital to a con-

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[1]   R.F. Harrod, *Toward a Dynamic Economics*, London, Macmillan, 1949, in particular Lec. 3, esp. pp. 77ff.

siderable extent.

Such a tendency is of special relevance in an economy where, as in Japan, the ratio of owned capital to total capital is particularly low compared with the international level. Moreover, the continued high rate of growth after the war has strengthened this tendency. Large enterprises must now rely on outside funds to a greater degree than medium and small enterprises. Here we find a prime motive for the close connection between large enterprises and banks, and the consequent concentration of bank loans and discounts in enterprises of larger scale. However, there are some factors necessary for the realization of this motive. It is a fact that larger enterprises have a strong borrowing power as a result of their privileged position in regard to capital accessibility. This capital accessibility depends, after all, upon the power of owned capital in large enterprises. Generally speaking, the greater the owned capital, the better the credit rating, and large enterprises enjoy a favourable position especially in regard to borrowing long-term funds. Indeed, statistical data indicate that owned capital of large enterprises is greater than medium and small enterprises not only in absolute amount, but also in owned-capital ratio to working capital (the debit side in the balance sheet).

Even though large enterprises are thus able to actualize a high required capital-accumulation ratio, the high capital-output ratio itself constitutes an unfavourable condition. It means that capital efficiency or capital productivity is relatively unfavourable, and also that the depreciation cost and interest charge are high. However, these disadvantages are eliminated by a high productivity of labour.

In order to explain high labour productivity in the simplest form, let us consider a fundamental equation of productivity, $yc = k$, corresponding to Harrod's equation of economic growth. In this equation, y denotes the amount of output per worker, c the capital-output ratio (the average capital-output ratio) and k the capital intensity (that is, the amount of capital stock per worker).[1]
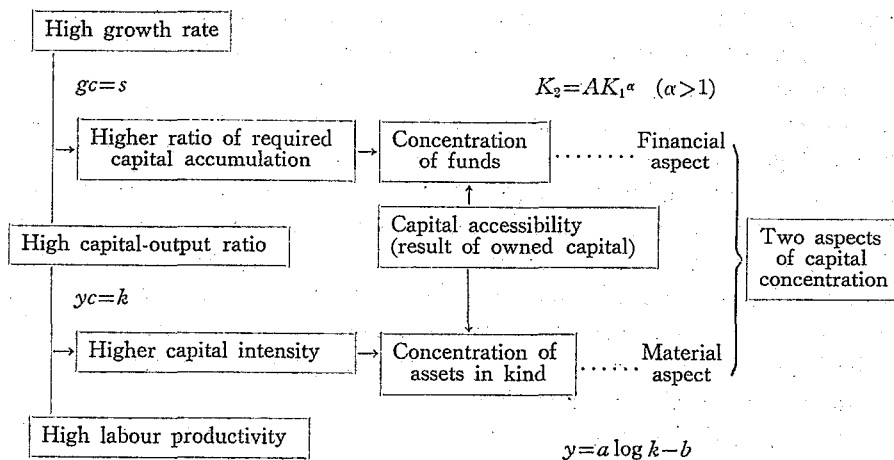
In order to improve in large enterprises the relationship of the capital-output ratio (c) and high labour productivity (y) which progresses at a greater rate than in medium and small enterprises, production methods must be adopted so that capital intensity (k) more than offsets the progress of (c), as indicated by the fundamental equation of productivity. Only then can higher productivity be achieved. In large

[1]   If O indicates net output, L labour, and K capital, then $yc = \dfrac{O}{L} \cdot \dfrac{K}{O} = \dfrac{K}{L} = k$

enterprises the adoption of high capital intensity means at the same time a high accumulation of capital stock; it corresponds to capital concentration on the financial side.

In sum, a high capital-output ratio in large enterprises has two aspects, financial and material/technical, and these can be disposed in a schema of capital concentration in larger enterprises. (Figure 1)

Figure 1.   SCHEMA OF CAPITAL CONCENTRATION IN LARGE
             ENTERPRISES

High growth rate

$gc=s$ $K_2=AK_1{}^\alpha$ $(\alpha>1)$

→ | Higher ratio of required capital accumulation | → | Concentration of funds | ········ Financial aspect

↑ Capital accessibility (result of owned capital)

| High capital-output ratio | Two aspects of capital concentration

$yc=k$

→ | Higher capital intensity | → | Concentration of assets in kind | ········ Material aspect

| High labour productivity |

$y=a\log k-b$

In regard to finances, the high capital-output ratio means an increase in the ratio of required capital accumulation, and this provokes a concentration of funds. On the other hand, in regard to the technical aspect of production, the high capital-output ratio means an increase in capital intensity needed for achieving higher productivity, which leads to a concentration of capital stock. This double concentration is made possible because large enterprises enjoy capital accessibility. Mathematical formulas can be used, but more elements of analysis are needed first.

2.   *Differentials in Wages and Capital Intensity*

Looking at capital concentration from the technical aspect, what is the basic support of the dual structure of the Japanese economy? Various economic, social, institutional, and historical factors with different influences are at play. If one is missing, the remaining factors are insufficient to give the full picture. Although there is a real danger in going to extremes, let us concentrate on two fundamental factors:
1. the pressure of excess labour force or of potential unemployment,

and 2. the unequal distribution of capital accessibility.

It is a well-known fact that wage differentials in Japan are greater than in other countries, and the explanation is mostly given from the viewpoint of the special character of the labour market. On the supply side of labour, there exists the pressure of excess supply, causing a search for employment at low wages. On the demand side, medium and small enterprises plan production with low-wage labour, whereas large enterprises are able to obtain better labour at wages relatively higher than the difference in quality. On the labour market itself, labour immobility is characteristic of large enterprises; they have a seniority wage system with automatic increases according to service years, on the premise of life-long employment. There is some turnover from large enterprises to medium and small enterprises, but the contrary movement is out of the question. Under these circumstances, wages in medium and small enterprises subjected to the pressure of excess labour are low, and their employees cannot receive the same wages as in large enterprises, even in cases of long service. The result is wage differentials by size of firm.

Table 1. PRODUCTIVITY, CAPITAL INTENSITY, CAPITAL-OUTPUT RATIO AND WAGE RATE BY SIZE OF FIRM (1957)

| Size by Number of Employees | Number of Firms | Productivity | | Capital Intensity K/L (thousand yen per employee) | Capital-Output Ratio | | Wage Rate W/L (thousand yen per employee) |
		Value added O/L (thousand yen per employee)	Turnover T/L (thousand yen per employee)		Value added K/O	Turnover K/T	
1 1– 9	300,374	186	541	69	0.371	0.128	114
2 10– 29	77,644	289	904	78	0.270	0.086	136
3 30– 49	13,332	348	1,140	91	0.261	0.080	145
4 50– 99	8,460	420	1,392	120	0.285	0.086	157
5 100– 199	3,146	492	1,548	166	0.337	0.107	172
6 200– 299	981	564	1,716	209	0.371	0.122	187
7 300– 499	645	696	2,088	309	0.445	0.148	205
8 500– 999	441	780	2,328	408	0.523	0.175	230
9 1,000–1,999	222	922	2,886	589	0.639	0.204	259
10 2,000–4,999	135	1,078	2,872	687	0.669	0.245	301
11 5,000–9,999	46	866	2,393	558	0.729	0.233	287
12 10,000 or more	28	897	2,643	651	0.727	0.245	329
Total	405,424	516	1,560	289	0.560	0.185	194

Source: The data are taken from Ministry of International Trade and Industry, *Chūshō-Kigyō Sōgō Kihon Chōsa* (Basic Survey on Medium and Small Enterprises), 1957.

Note: Manufacturing industry only. Includes both incorporated and unincorporated firms.

This view certainly grasps one of the key points of the problem. However, it has not taken into consideration the conditions of production found at the origin of the capacity of large enterprises to pay higher wages and does not explain Japan's high rate of economic growth and the permanence of the dual structure. Differentials in productivity and the underlying differentials in the composition of capital accumulation must be examined.[1]

Table 1 gives a summary of the main indicators; their relationship is corroborated in Figure 2.

The upper part of this figure indicates that by locating capital intensity (tangible fixed assets per employee) by size of firm on the

Figure 2. RELATION BETWEEN CAPITAL INTENSITY AND PRODUCTIVITY BY SIZE OF FIRM
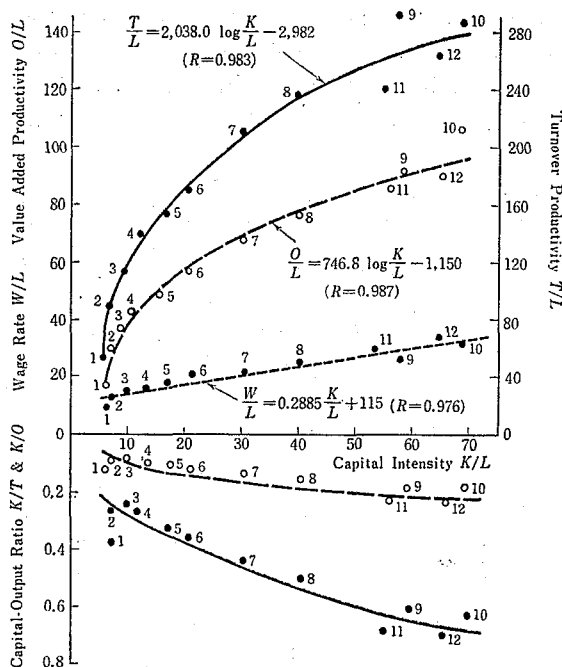
Source: Figure 2 is based on the analysis conducted by the author at the Economic Research Institute, Economic Planning Agency. See "Capital Structure by Firm-Size," *Economic Bulletin* (in English), No. 6, edited by the Economic Research Institute, Economic Planning Agency, Tokyo, 1961. For original data, see Table 1.

Note: The numbers represent the size of the firm based on the number of employees: the size increases as one goes up from 1 to 12.

[1] See Miyohei Shinohara, *Nihon Keizai no Seichō to Junkan* (The Growth and Cycles of the Japanese Economy), Tokyo, Sōbunsha, 1961. pp. 103–109.

horizontal axis, and labour productivity (value added per employee or turnover per employee) on the vertical axis, correlating points (represented by white or black points on the curves) can be plotted according to the size of firm.

In enterprises of the smallest size (employing less than 10 persons), value added productivity is ¥180,000 and capital intensity ¥70,000, whilst in the largest (employing 1,000 or more persons), value added productivity is ¥900,000 to 1,000,000 and capital intensity ¥600,000 to ¥700,000. The difference in capital intensity is 9 to 10 times, causing a difference in productivity of 5 to 6 times. Between these extremes, enterprises of the sizes 2,3,4,.... in order of capital intensity form a convex curve of productivity moving from the lower left to the upper right. As shown in the figure, the semi-logarithmic formula $y = a \log k - b$ fits the productivity curve, and Cobb-Douglas logarithmic formula is also satisfactorily verified, but the curve fits the semi-logarithmic type better. The realization of high productivity in large enterprises is assured by a greater increase in capital intensity than the increase in capital output ratio as a result of enlargement of size (as illustrated in the lower part of the figure).

Wage differentials are also found in Figure 2. Locating average annual wages per employee on the vertical axis, the amount is ¥100,000 in the smallest class and ¥300,000 in the largest, the difference being 3 times. When the average annual wages are correlated with capital intensity in the direct form (black points on the straight dotted line), a clear linear correlation appears. Thus, considerable differentials in productivity are a cause of wage differentials, and differentials in capital intensity are a cause of differentials in productivity. As shown by the linear correlation formula indicated in the figure, in marginal terms, when the differential in capital intensity increases by ¥100,000 as a result of an increase in scale, wage differentials increase by ¥28,000 and more. The strong capital accessibility of large enterprises makes possible the adoption of high capital-intensive production methods, which in turn make possible high productivity and high-wage capacity. On the other hand, medium and small enterprises are forced to adopt labour-intensive methods with a low technical level (or low capital intensity), due to their weakness in regard to capital accessibility; this disadvantage is covered by low wages, due to the pressure of an excess labour force and potential unemployment.

3. *Permanence of the Dual Structure*

A hypothetical interpretation in regard to the above situation is given in Figure 3, where differentials in the sphere of production are supposed to be indicated by the distance between two dotted curves, namely, the production function in large enterprises (f_a) and the production function in small enterprises (f_b). For simplicity's sake, differentials in costs are supposed to be represented mainly by wage differentials. Wage rates of large and small enterprises are given on the vertical axis by points a and b respectively, the difference ab representing the wage differential.

Figure 3. HYPOTHETICAL GRAPH OF THE PERMANENCE OF DIFFERENTIALS
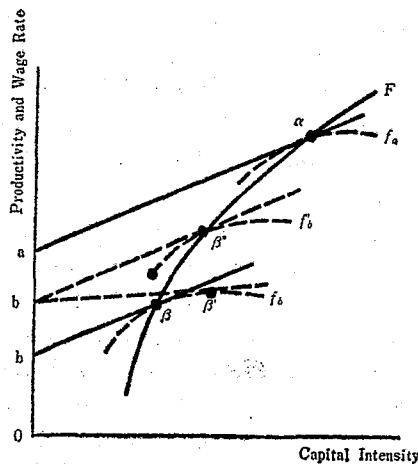
In this case, the production point of maximum profit rate in large enterprises (obtained by drawing a tangent line from a to the production function f_a) is α, and in small enterprises β. Consequently, the observed productivity curve is F (curve of the actual line); it is considered to correspond to the actually observed productivity curve by size of firm illustrated in Figure 2. In Figure 3, the profit rate of large and small enterprises (the slope of the tangent line) is supposed to be equal; but even if differentials are supposed, there is no change in the situation.

If we suppose that, for some reason or another, wage differentials are narrowing, the difference in cost points ab declines to ab'. In this case, the production point of small enterprises shifts from β to β', resulting in a decline in the profit rate (the slope of the tangent line).

Consequently, if small enterprises intend, under the new wage rate, to obtain the same rate of profits as in the past, there is no other means but to adopt high-grade production techniques f_b', and raise the production point to β''. If the wage differential ab' narrows to "zero", and f_b' coincides with f_a as all enterprises achieve an almost identical level of production, this level would coincide with the production function of the original J. Robinson type.[1] The reason why J. Robinson succeeded in producing a productivity curve for the economy as a whole is due to the fact that she tacitly presupposed a homogeneous economy where various differentials are almost negligible. The actual conditions in Japan, however, do not warrant such a presupposition.

The first fundamental condition to be considered is the existence of differentials in capital accessibility. Owing to their extreme weakness in capital accessibility, small enterprises relying on their own strength cannot raise their capital intensity to a point corresponding to β'', nor adopt new techniques (f_b'). Under such circumstances, and though many more complex factors will be at work, in substance there are four possibilities : (1) to survive, being contented with a low profit rate at point β', and generating differentials in profit rate; (2) remain at point β or thereabout by hiring new cheap labour, and failing to narrow the wage differentials; (3) when the above two cases are impossible, small enterprises may disappear or (4) receive assistance, financial and technical, by subcontracting for large enterprises, and adopting new techniques β''.

Which of these possibilities has the highest probability ? The disappearance of small enterprises, possibility (3), is of common occurrence; their survival at the cost of a low profit rate, possibility (1), can also be expected in many cases. But in view of the pressure of a surplus in the labour force, as obtained for a long period after the war, the survival of small enterprises at a low production point, possibility (2), can be said to have been the most probable case. A recent trend, however, points toward possibility (4). In some categories of industry, large enterprises undergoing technical innovation tend to develop subcontracting medium and small enterprises, by giving them assistance in raising funds, providing technical guidance, lending disused machinery, etc. This results in an improvement in the dual structure. However, two qualifications must be added here. Technical innovations are in-

[1]   J. Robinson, "The Production Function and the Theory of Capital," *Review of Economic Studies*, Vol. XXI, No. 2, 1953–54, pp. 81-106. See also by the same author, *The Accumulation of Capital*, London, Macmillan, 1956, pp. 101 ff.

troduced into the large enterprises themselves which provoke the development of the subcontracting system.   The result is that, according to Figure 3, the shift to the upper right of the production function in large enterprises f_a precedes the shift to the upper right of f_b caused by the modernization of medium and small enterprises.   Consequently, the trend toward possibility (4) will not necessarily be sufficient to bridge the gap in the dual structure.   Furthermore, there are second, third, and more subcontractors.   When large enterprises force a reduction of unit price, the burden will be passed on further down the line.

Thus, even if possibility (4) makes progress, differentials will never be improved as a whole, as long as unequal distribution of capital accessibility and pressure of excess labour force remain.   The slowing down of the rate of population increase is a favourable factor, and worthy of attention.   Let us, however, turn to the problem of capital accessibility.

II. DIFFERENTIALS IN COMPOSITION OF FUNDS AND INTEREST RATES

1. Funds of Enterprises and Capital Accessibility.

In Figure 3, capital accessibility related to the owned capital of the enterprise is presented as one of the shift parametres of the productivity curve f_a, f_b.   Based on available data in Table 2, the correlation between owned capital K_1 and long-term debt K_2 (the amount per person based on the number of workers by size of firm) is obtained, and amounts to $K_2 = 0.0667 \ K_1^{1.303}$.   The elasticity of the long-term debt to owned capital is 1.30.   Elasticity greater than 1.00 means that, in accordance with the expansion of owned capital following the enlargement of size, long-term debts register a greater increase than owned capital.   In other words, when owned capital rises by one per cent following enlargement of size, long-term debts increase by 1.3 per cent. It may be concluded that, for an enterprise the size of owned capital indicates its degree of capital accessibility,[1] and that the competitive position of a firm in the capital market is limited by the amount of owned capital.

Since the size of owned capital is the fundamental factor for capital accessibility, the larger the amount of owned capital, the more capital-intensive methods of production are adopted due to the realization of

[1]   This kind of view is also maintained by M. Kalecki (*Theory of Economic Dynamics*, London, G. Allen & Unwin, 1954, pp. 91-95) and J. Steindl (*Maturity and Stagnation in American Capitalism*, Oxford, Basil Blackwell, 1952, pp. 40 ff).

Table 2. DIFFERENTIALS OF CAPITAL INTENSITY, OWNED CAPITAL AND LONG-TERM BORROWINGS BY SIZE OF FIRM

Size of Firm (total assets) (¥ *million*)	Long-term Capital per Employee K_1+K_2	Owned Capital per Employee K_1	Long-term Borrowing per Employee K_2	Capital Intensity (tangible fixed assets per employee)
0– 2	70.2	65.6	4.6	58.7
2– 5	68.3	60.2	8.1	60.2
5– 10	95.7	83.9	11.8	102.0
10– 30	167.7	143.2	24.5	142.6
30– 50	186.0	121.0	65.0	182.2
50– 100	226.9	188.8	38.1	186.0
100– 500	459.7	375.8	85.2	334.8
500– 1,000	640.7	425.8	214.9	533.0
1,000– 5,000	1,014.8	685.7	329.1	739.9
5,000–10,000	1,589.2	1,186.6	402.6	1,018.6
10,000–	1,316.7	1,015.3	301.4	988.9
Average	708.0	529.9	178.1	525.3

Source : Data are based on Ministry of Finance, *Hōjin-Kigyō Tōkei Nempō* (Yearbook of Corporate Enterprise Statistics), 1957. Manufacturing industry only. Unincorporated firms are not included.

Note : Long-term capital＝Owned capital＋Long-term borrowings.

Owned capital＝Capital＋Capital surplus＋Earned surplus (including net profit and loss for the current term).

Long-term borrowings＝Corporate debenture＋Long-term borrowings from financial institutions.

high productivity and inclination towards high capital accumulation. Such a view is not sufficient to explain the high capital intensity in large enterprises. If in Japan the low wage-level is due to the pressure of excess labour force, the adoption of labour-intensive methods of production through utilization of cheap labour would be profitable even to large enterprises, or at least differentials would not be as large as actually experienced. Nevertheless, capital intensity in large enterprises is high. Why? Various factors must be considered. For instance, the Japanese enterprises manifest strenuous efforts for attaining the advanced technical level of developed countries. However, on the financial side, a cause is the fact that the price of capital (interest rate) is relatively cheap for large enterprises.

2. *Differentials in Interest Rates on Borrowed Funds and Cost of Funds*

Adequate data of differentials in interest rates according to the size of enterprises are not easily available. In 1958, small enterprises with a capitalization of ¥ 5 million and less bore an average interest rate of 17 per cent, whilst large enterprises with a capitalization of ¥ 100

Table 3. AVERAGE LEVEL OF INTEREST RATES ON BORROWINGS
BY SIZE OF FIRM

Years	—Size classified by paid-in capital—					
						(unit : per cent)
	–¥2 *million*	¥2–5 *million*	¥5–10 *million*	¥10–50 *million*	¥50–100 *million*	¥100 *million*
1956	15.36	14.52	14.28	14.19	13.35	12.24
1957	12.79	15.11	14.40	14.79	12.59	10.23
1958	17.38	17.80	16.49	13.84	13.62	11.15

Source: Based on published data in Ministry of Finance, *Hōjin-Kigyō Tōkei Nempō*
(Yearbook of Corporate Enterprise Statistics), 1956–58.
Figures are obtained by dividing yearly interest payments by the outstanding
amount of borrowed funds at the end of the year (long-and short-term borrow-
ings plus corporate debentures).

Note: The average interest rate in the manufacturing industry=the sum of interest
payment discount÷(short-term borrowings from financial institutions+long-term
borrowings+corporate debentures).

million and over used borrowed funds bearing the relatively low average
interest rate of 11 per cent as shown in Table 3.

Figure 4 gives the cost schedule of raising funds. Attention is
given mainly to the solid line curve I in the centre. The imputed cost
of funds is measured on the vertical axis. On the horizontal axis, total
funds employed are measured, and are considered to have been put in
the order of advantageous sources of investment funds, namely (a)
internal funds (retained net earnings, depreciation allowances, etc.), (b)
borrowings of various kinds, and (c) equity issues.

Figure 4. COSTS SCHEDULE FOR INVESTMENT FUNDS
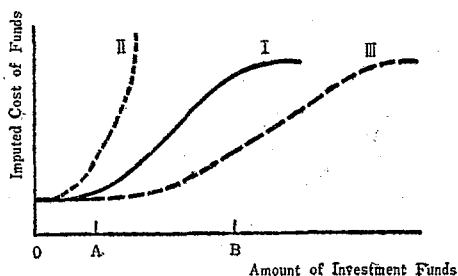
1. Since internal funds may be used freely by the enterprise, their
investment does not incur any cash cost. However, if these funds are
invested outside, earnings corresponding to the interest rate would be
obtained. In this sense, the internal investment of these funds means

the sacrifice of such external earnings, a so-called opportunity cost. If
the enterprise has internal funds to the amount of *OA*, the accumula-
tion would be made with nearly perfect elasticity to its opportunity cost.

2. In case an enterprise is forced to raise external funds, the use of
funds raised through borrowings from financial institutions and the issue
of debentures is accompanied by a cash cost in terms of interest pay-
ments, as well as imputed costs. This brings about the rise of cost
per unit of funds raised up to the point *B*. Real interest rates (cash
cost plus imputed cost) rise with the increase in the amount of debts,
because risk premiums are charged.

3. The raising of funds through the issue of stock costs more than
other sources of funds, because of the expenses for issuing, the care
taken to protect the market prices of the existing stock, disadvantages
as to taxation, etc. However, as long as enterprises accept this high
cost, the raising of funds through the issue of equities would not be
so inelastic as in the case of borrowed funds; it may even be con-
sidered as quite elastic. The shape of the curve I on the right side
of point *B* represents this fact.

This is the graph of the cost schedule for investment funds as
shown by J. Dusenberry.[1] It must, however, be revised in an economy
with a dual structure, because the cost schedule for investment funds
shows a great difference according to sizes of enterprise.

Going back to Figure 4, in medium and small enterprises, owned
capital is small in absolute figures; therefore, as indicated by the
broken line II on the left side, the gradual increase begins early. In
addition, the weakness of medium and small enterprises in raising funds
results certainly in a rapid advance of imputed costs of borrowing, and
will steepen the slope of the upward curve. Further, the raising of
funds through the issue of stock and debentures runs into prohibitive
difficulties, due to peculiarities of the Japanese capital market. Con-
sequently, the cost schedule for investment funds II ends by being
entirely inelastic.

The cost schedule for investment funds of large enterprises is
represented by the broken-line curve III on the right side of Figure 4.
The amount of internal funds and the slope of the upward curve are
not independent of one another. It may be said that the larger the
internal funds, the slower the slope of the upward curve, because, owing
to the capital power of large enterprises, borrowed funds can be raised

1   J. Dusenberry, *Business Cycles and Economic Growth*, New York, McGraw-Hill,
1958, pp. 93–99.

at lower costs. Moreover, as large enterprises in Japan have little thought of risk attendant upon the borrowing of external funds, it must be considered that this upward part is more elastic than is illustrated, and the slope will be nearly horizontal. Further, under the existing circumstances, the cost of expanding net worth through the issue of stocks being fairly high for large enterprises, it is plausible that the right-hand part of the curve III, rather than being continuous as in the Figure, will in fact be discontinuous and jump to a certain higher level. At any rate, it is clear from Figure 4 that the difference between large and small enterprises in the cost schedule for investment funds causes a marked disparity in the average cost of raising funds per unit of total capital employed. Relatively higher interest rates are paid by small enterprises, and relatively lower rates by large enterprises.

In Japan, an almost institutionalized relationship exists between the different sizes of enterprise and various types of financial institutions in accordance with the capital accessibility of the enterprise. Figure 5 establishes the fact.

This Figure may be called the X-type intersection of borrowed

Figure 5. COMPOSITION OF BORROWED FUNDS
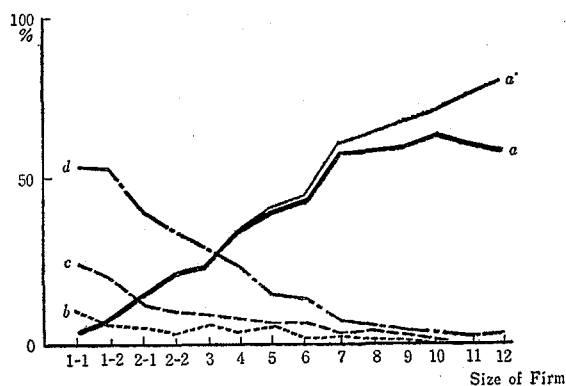
Source: Same as Figure 2.

Notes: 1. The size of enterprises on the horizontal axis is measured by the number of employees, increasing from 1 (1–10 employees) to 12 (10,000 and more employees).

2. This chart shows the ratio of loans from each lending institution to total loans:

a —city banks

a' —city banks plus long-term credit banks and trust banks

b —customers

c —b plus money-lenders, relatives, and acquaintances

d —c plus financial institutions for medium and small enterprises.

funds of enterprises by size of firm. Enterprises by size of firm are measured on the horizontal axis, and ratios of borrowed funds by lenders to total borrowed funds on the vertical axis. The ratio a (city banks) can be considered as an indicator of the borrowing power of enterprises in each size group: it increases regularly as the size of the enterprise becomes larger; it declines a little at the point of the largest size, but if borrowed funds from long-term credit banks and trust banks are added (a'), it shows a smooth upward line.

Ratio b (funds borrowed from customers) can be considered as an indicator reflecting in part the subcontracting relationship. The curve is high in the case of medium firms as a reflection of the recent tendency of medium and small enterprises to come under the control of large ones. Ratio d (funds borrowed from various medium and small financial institutions) shows a smooth downward line. The weak borrowing power of medium and small enterprises is manifested by their high degree of dependence on these small financial institutions. The X-type intersection of lines a and d is a clear reflection of the dual structure viewed from the financial angle. In other words, small enterprises survive by depending for a considerable part of their funds on money-lenders, customers, relatives and acquaintances, who can be termed "marginal suppliers of funds." On the other hand, large enterprises subsist in dependence on the role of the Bank of Japan as a "marginal supplier of funds," namely by its advances through the intermediary of city banks to the extent corresponding to the firms' liquidity position. Such a situation has practically institutional value in Japan.

3. Differentials in Interest Rates and Unequal Distribution of Loans

Differentials in interest rate and composition of funds, examined above from the borrowing side, must now be investigated from the lending side.

Table 4 indicates the average rates of interest by type of financial institutions. The average interest rate of financial institutions for medium and small enterprises (mutual loans & savings banks, credit associations) are considerably higher than those of city banks and local banks for loans (loans on deeds, loans on bills) and discounts (discount of bills): differentials spread from 7.98 per cent p.a. for city banks to 12.47 per cent p.a. for credit associations. These are averages, of course; rates vary also according to borrowers.

Large enterprises are able to select the lender banks, which is then

Table 4. DIFFERENTIALS IN AVERAGE RATES OF INTEREST BY
TYPE OF LENDING INSTITUTIONS (1957)

	Loans % p.a.	Discounts % p.a.
City banks	7.98	8.42
Local banks	8.54	9.10
Long-term credit banks	9.41	7.87
Trust banks	8.03	8.11
Mutual loans & savings banks	10.75	10.40
Credit associations	12.47	12.47

Source: The Bank of Japan, *Hompō Keizai Tōkei* (Economic Statistics of Japan),
1957.

forced to put up with interest rates at "competitive prices," whilst for medium and small enterprises lenders are in a monopolistic position, selecting borrowers and charging interest at "monopolistic prices." If it were possible to suppose some "equilibrium interest rate" which equates with supply and demand of total funds of all financial institutions, banks as a whole would extend loans to large enterprises at lower interest rates than the equilibrium rate, and make up the deficits thus incurred by higher rates on loans to medium and small enterprises. However, as regards loans to medium and small enterprises, there is an economic law that the cost of a loan for an individual financial institution is higher when the risk is greater and the amount smaller.

Returning again to Table 4, let us compare the average rate of interest on loans and the average rate of discount. The textbook argument would be that loans are longer credit than discounts; therefore rates are to be higher in the former than in the latter. However, we find that the average rate of discount is higher than the average rate of interest on loans in the case of city banks, local banks, and trust banks. We may call this a "reverse phenomenon," to be explained as follows. The proportion of loans of these banks to large enterprises is high, and these loans are extended at relatively low interest rates, whilst as to discounts, the weight of medium and small enterprises is high, and these discounts are made at relatively high interest rates. Such a tendency is strongly reflected in the general average. Thus, large banks are able to extend loans to large enterprises at relatively low interest rates, because of the high interest rates on loans to medium and small enterprises. Furthermore, banks can maintain their liquidity of assets by offering only short-term loans to medium and small enterprises. On the other hand, the average rate of interest in long-term credit banks, mutual loans and savings banks, and credit associations is higher for

loans than for discounts, as textbooks usually maintain. The reason is that customers of these financial institutions are limited mainly to either larger enterprises (in case of long-term credit banks) and medium and small enterprises (in case of mutual loans and savings banks and credit associations). In this case there is no reverse phenomenon.

Thus, loans of long-term credit banks and others to large enterprises form one pole, and loans of small financial institutions to medium and small enterprises another; in the middle, discriminative loans of city banks and local banks to large and small enterprises produce the above-mentioned reverse phenomenon. This situation can be ascertained by the difference in the distribution pattern of loans by various types of financial institutions.

Figure 6. DEGREE OF CUMULATIVE CONCENTRATION OF LOANS
BY SIZE OF FIRM
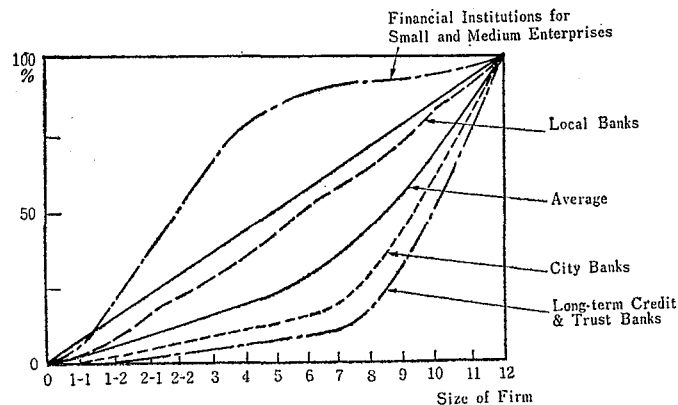
Source : Same as Figure 2.
Note :   The vertical axis indicates the cumulative frequency curve, and the horizontal axis the size of enterprises by the number of employees.

Figure 6 shows the distribution of loans to different sizes of enterprise by various types of financial institutions, based on data used for Figure 5. The curve indicated "average" is a cumulative frequency curve for total loans of all financial institutions, including small financial institutions such as money-lenders and government financial institutions, which are not listed in the Figure. The uneven downward development indicates that the distribution of funds as a whole is unequal.

Since in the survey method loans of long-term credit banks and trust banks cannot be separated, it is regretted that Figure 6 is inconsistent with the data of Table 4. However, it appears that the curves of city banks and of local banks are located between the most uneven

curve of long-term credit banks and trust banks inclining towards large enterprises and the curve of financial institutions for medium and small enterprises (mutual loans & saving banks, credit associations, credit co-operatives, etc.). The above-stated argument on the "reverse phenomenon" in differentials in interest rate on loans corresponds perfectly to such a distribution.

III. STRUCTURAL PECULIARITIES OF CAPITAL CONCENTRATION

1. *Factor Proportion and Differentials in Wages and Interest Rates*

So far, a series of differentials in wages, productivity, capital intensity and interest rate have been observed on the ground of unequal distribution of capital accessibility. Let us now re-examine the facts from the technical side of the production structure.

The decision concerning the degree of combination of the two factors of production, capital, and labour (capital intensity) depends on their relative price which an individual enterprise faces in the factor markets. In Figure 3, a theoretical graph of the permanence of differentials, each enterprise's capital intensity is a function of factor prices. Medium and small enterprises choose labour-intensive methods of production with a low capital intensity, in order to cope with rela-

Figure 7. ISO-QUANT CURVE OF PRODUCTION
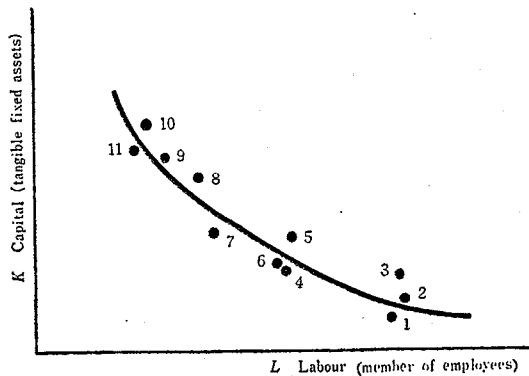
Source : Data are based on Ministry of Finance, *Hōjin-kigyō Tōkei Nempō* (Yearbook of Corporate Enterprise Statistics), 1957. Covering manufacturing industry only.
Note : Enterprises are classified by asset holdings :

1.	less than ¥2 million	7.	¥100–500 million
2.	¥2–5 million	8.	¥500–1,000 million
3.	¥5–10 million	9.	¥1,000–5,000 million
4.	¥10–30 million	10.	¥5,000–10,000 million
5.	¥30–50 million	11.	over ¥10,000 million
6.	¥50–100 million		

tively high interest rates and relatively low wages. On the other hand, large enterprises adopt capital-intensive methods of production with a high rate of capital intensity to cope with relatively low interest rates and high wages. This situation can be analyzed by the method of " iso-quant curve of production."

Let us suppose that the production of enterprises of different sizes is enlarged to the production level of the largest enterprises (with assets of over ¥10 billion), and the same magnification applies to capital (tangible fixed assets) and labour (the number of employees) without change in the initial ratio of factor combination. The resulting combination of labour and capital is shown in Figure 7.

Starting from the most labour-intensive combination 1 (enterprise with less than ¥2 million assets), various combinations 2, 3, 4.... are determined up to the highest capital-intensive combination 11. If enterprises of different size are acting under the principle of minimum expenses with a production curve identical to the observed iso-quant curve, the ratio at the tangent line to the various production points on the curve should indicate relative prices of capital and labour. The textbook argument would be that the greater the slope of the tangent line, the smaller the capital expenses (interest rates), and the more advantageous it is to replace labour by capital, and vice versa. Nevertheless, the iso-quant curve in Figure 7 is, to the end, an *observed* curve of production; it is not the *schedule* adopted by enterprises of different size as basis for their behaviour. The tangent line ought to apply to the individual schedules, but not to the observed curve. Consequently, it is meaningless to measure the ratio of relative prices of labour and capital by size of firm from this observed curve.[1] The conclusion is the following: enterprises of different size have as schedule different iso-quant curves, and the contact points of these respective iso-quant curves and the price lines of each size of enterprise generate the observed iso-quant curve shown in Figure 7. This interpretation is identical to that of the observed productivity curve illustrated in Figure 2.

Since the measurement of the iso-quant curves as schedule is difficult, the structure of the ratio of labour and capital prices by size of firm must be obtained by other means. Table 5 shows that the dif-

[1]   Such measurement has been tried: the Douglas type production function was measured from the basic data of Figure 7, and the condition of minimum expenses added. Then the values of differentials in interest rates were arrived at by substituting the values of differentials in wages obtained from data using the minimization equation. However, the values thus obtained could not be judged significant compared with the actual ones.

ferentials in the average rate of interest on borrowed funds (see Table 3) can be converted into an index number taking the interest rate of the smallest enterprises as 100. The same can be done for the differentials in wages.[1] The ratio of both indices is given as the difference in relative prices.

Table 5. DISPARITY OF RELATIVE PRICES OF WAGES AND INTEREST RATES BY SIZE OF FIRM

Size of Firm (paid-in capital) (¥ million)	Differentials in Wages (¥1,000)	(1)	Differentials in the Average Rate of Interest (%)	(2)	Differentials in the Ratio of Wages and Interest Rate (3)
− 2	139	100.0	17.4	100.0	1.000
2– 5	172	123.5	17.8	102.3	0.828
5– 10	173	124.5	16.5	94.8	0.761
10– 50	200	143.5	13.8	79.3	0.553
50–100	231	165.9	13.6	78.2	0.471
100–	348	249.9	10.2	64.4	0.258

Source: Same as Table 3.
Notes: (1) Index number of the average wage per employee.
(2) Index number of the discount rate of interest expenses divided by the total of long-term and short-term borrowings from financial institutions plus debentures.
(3) (2)÷(1).

The difference in the ratio of relative prices is evident; the ratio of interest rates to wages is 0.258 for the largest enterprises with a paid-in capital of over ¥100 million, whereas it is 1 for the smallest enterprises with a capital of less than ¥2 million. Considering the difference in relative prices in connection with Figure 7, it may be supposed that the price line of the ratio of interest rates and wages (as the reciprocal) grows steeper from small to large enterprises.

Different in this from wage differentials, differentials in interest rates are also common in other advanced countries, because of the risk connected with the borrower. In Japan, however, structural aspects are more important. A fairly evident type of combination is found between the different sizes of enterprise and various types of financial institutions. Secondly, the interest rate has an important connection with a special feature of capital concentration in Japan, namely that a firm depends on outside capital rather than on owned capital as in other advanced countries. Consequently, differentials in interest rates influence considerably and directly the formation of the dual structure.

[1] The differentials in wages are obtained from the Corporate Enterprise Statistics cited in Table 3.

The 1.00 to 0.258 disparity in relative prices of interest rates and wages (see Table 5) is fairly large, and it may be concluded that it contributes to the further widening of differentials in capital intensity.

To analyse the decision of factor ratios by relative prices is a static approach. There are also dynamic factors causing differentials in prices and in capital intensity.

2. Structural Peculiarities of Capital Concentration in Japan

Returning again to general points of view, one aspect has remained untouched in the above analysis. Since capital concentration is a phenomenon common to all capitalist economies, what are its Japanese peculiarities ?

Pressure of excess labour force and unequal distribution of capital accessibility have already been pointed out as the two fundamental supports of Japan's dual structure; they cannot be separated. As a result, capital concentration in Japan presents three peculiarities : capital concentration in a capital-short economy, the stimulus of the international environment, and co-existence of large and petty capital.

1. That capital concentration is related to the pressure of excess labour force means that capital is short in comparison to labour. Existing capital is insufficient in regard to the quantity necessary for the whole economy. As often pointed out, shortage of capital has been one of the fundamental factors restricting the development of the Japanese economy. Capital shortage means weakness in the accumulation of an enterprise's capital, and need to raise funds indirectly. Funds scattered in the private individual sector are collected through banks, postal savings and other financial institutions, which act as intermediaries between individuals and enterprises. Such indirect financing method, characteristic of the Japanese money and credit situation, finds its fundamental cause in the shortage of capital. Thus, the superiority of financial institutions is established, and an institutional background is provided for differentials in interest rates related to credit-standing of the borrower.

2. If low wages are due to the pressure of excess supply of labour, the adoption of labour-intensive methods of production would be advantageous even to large enterprises. This is common-sense taught by economic theory. Nonetheless, differentials in interest rates to the advantage of large enterprises exist, and are a reason for them to adopt high capital intensity. This fact alone does not explain, however, the existing marked differentials in capital intensity. They are backed by

a strong expansion mood and active inclination towards investments, that tend to make up for the shortage of capital, and are stimulated by the international environment which forced the Japanese economy to catch up rapidly with the technical level of developed countries. This peculiarity is supported in turn by the combination of large banks and large capital through loans to related enterprises; differentials in interest rate advantageous to large enterprises can be considered as cause or effect. In an economy short of capital, the greater the progress in concentration of loans to large enterprises, the wider the differentials in capital intensity between large and small enterprises. Moreover, large enterprises, in case of emergency, can depend heavily on the Bank of Japan as a "marginal supplier of funds" through large banks.

3. But what is the situation in regard to small enterprises? In theory, when capital concentration progresses, small capital will be defeated and disappear. In Japan, however, numerous businesses with small capital continue to exist. Several factors are at play. Medium and small enterprises offer a means of absorbing excess labour force. Large and small enterprises are in a complementary relation: large ones utilize materials manufactured by cheap labour in smaller enterprises through the subcontracting system and the formation of related enterprises under their control, and use medium and small enterprises as a cushion against business fluctuations. There is also, as already pointed out, the support "marginal suppliers of funds" can offer medium and small enterprises. The higher interest rate, due to the greater risk, is a disadvantage compensated by cheap labour. A last factor would be the high weight of "trade credit" in the composition of the total funds of medium and small enterprises, that have much recourse to bills and accounts payable.[1]

IV. CONCLUSION

In Japan, differentials in wages and interest rates, manifested by the utilization of relatively cheap labour in medium and small enterprises, and relatively low interest rates for large enterprises have solidified the dual structure of the Japanese economy. A slowing-down in the increase of the labour population is anticipated in the near future; the promotion of foreign trade liberalization puts pressure on pre-modern sectors. These two facts have now started a trend towards the abolition of the dual structure. It is sure that systematization and organization

[1]   This fact is confirmed by various business statistics.

of medium and small enterprises will be pushed.   The success depends greatly upon the adaptation and reorganization of capital accessibility and of the institutional structure of capital.

In Asia's underdeveloped countries, differentials in income and wages appear as an extreme difference between the upper and lower classes, somewhat as the division between two poles.   In Japan, differentials become wider continuously, from a high stratum to a middle stratum and from a middle stratum to a low stratum, forming a "continuous differential structure."[1]   The concept of Japan's "dual structure" must, therefore, be clearly distinguished from the "dualism" found in Asian underdeveloped countries.

Limiting ourselves to economic factors, the following points are of importance :

1.   Duality may characterize the initial stage of development, and be limited to the formation and utilization of the dualistic development explained by Hirschman, namely the polarized co-existence of modern and pre-modern branches. However, after the " take-off," described by Rostow[2] and especially in the case of rapid progress, pre-modern branches are to be combined with modern branches in a complementary fashion. This is the case of Japan, where subjective conditions have also effectively contributed to the adaptation of such a combination.

2.   Considering the national economy as a whole, concentrated utilization of scarce capital requires the promotion of capital-intensive and modern methods of production, while low wages due to an abundant supply of labour favour the existence of medium and small enterprises. But here again all depends on the stage of development.   That underdeveloped countries in Asia have a relationship between capital and labour resources different from that of developed countries is clearly reflected in the fact that modern production methods are shut out from various branches of commerce and industry.   To invest scarce capital in already existing production activities is too expensive ; for an effective use of capital, hope is placed in investments in industries which introduce new products.

Quite differently, at a more advanced stage of development, as in Japan, the introduction of capital-intensive methods is required only for

1   Kazushi Ōkawa, " The Differential Employment Structure in Japan," *The Annals of the Hitotsubashi Academy* (in English), Tokyo, Hitotsubashi University, April 1959, pp. 205–217.

2   W.W. Rostow, " The Take-Off into Self-Sustained Growth," *Economic Journal*, Vol. LXVI No. 261, March 1956, pp. 25–48.   See also by the same author : *The Stages of Economic Growth*, Cambridge, Cambridge University Press, 1960, pp. 36–58.

the improved efficiency of *existing* production, and if capital is scarce, its distribution among enterprises will be unbalanced.

3.   In the case of Japan, shortage of capital as compared to labour has two aspects.   From the international viewpoint, although capital intensity in large enterprises is said to be high, the level is still lower than in developed countries.   Therefore, these enterprises use a system whereby they complement a productivity relatively lower than the international level by low wages in subcontracting medium and small enterprises.   From the national viewpoint, the scarcity of capital brings about capital concentration in large enterprises in order to use more efficiently a scarce resource, and at the same time, it brings about the dependence of medium and small enterprises on labour-intensive methods of production, as well as an incentive to be subordinated to large-scale enterprises as subcontractors in order to escape the instability of management resulting from poor and outmoded methods of production.   In this case, the permanence of pre-modern production branches is fundamentally different from what happens in underdeveloped countries in Asia.

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