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SOME ANALYTICAL ASPECTS OF THE JAPANESE "LIFETIME EMPLOYMENT" SYSTEM

*City University of New York* PH.D. 1980

# SOME ANALYTICAL ASPECTS OF THE JAPANESE "LIFETIME EMPLOYMENT" SYSTEM

by

KENSEI HIWAKI

A dissertation submitted to the Graduate Faculty in Economics in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

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Abstract

SOME ANALYTICAL ASPECTS OF
THE JAPANESE "LIFETIME EMPLOYMENT" SYSTEM
by
Kensei Hiwaki

Adviser: Professor Elliot Zupnick

The present study aims at an economic analysis of the Japanese "lifetime employment" system, in terms of its possible relations to the postwar growth of the Japanese saving propensity and output. First, it is hypothesized that the practice of the employment system is related to establishment or reinforcement of a mutual interest of labor and management in rapid growth and prosperity of their relevant firms. Secondly, it is hypothesized that the establishment or the reinforcement of the common interest is related to a higher rate of the representative firm's internal saving and investment, via a decline of the representative worker's time-preference rate.

The study adopts the Fisherian intertemporal consumption framework, in conjunction with the bilateral-

monopoly framework and an interdependent-utility framework, for the theoretical analyses of the employment system. For the empirical analyses, the study utilizes a graphical survey of the relevant wage shares (or the wage/value-added ratios) in the manufacturing industries for the period between 1952 and 1975 and the simple least-square regression regarding the relevant changes in the representative worker's time-preference rate. Both the theoretical and the empirical analyses point to significant relations between the employment practice and the decline of the representative worker's time-preference rate, on one hand, and between the former and the growth of the value-added per worker, on the other hand.

A main implication drawn from the present study is that either a prolonged stagnation of the economic activities or a rapid modification of the employment system tends to increase the representative worker's time-preference rate and induce a further unfavorable effects on the saving propensity and output in the long run. This suggests that the Japanese government should encourage a rapid economic growth, while the relevant management should moderate its efforts for modification of the "lifetime employment" system.

To unfailing friendship

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A broad-minded guidance is essential for an economic analysis of the multifaceted institution, namely, the Japanese "lifetime employment" system, which is rooted in the cultural environment drastically different from that of the western world. For such guidance I wish to thank Professors Elliot Zupnick, Herbert J. Geyer and Eugene Rotwein. At nearly every step from a vague inception of the dissertation topit, Professor Zupnick provided advice, encouragement and invaluable comments. Professor Geyer has helped me to see the employment system from a "public good" viewpoint and provided many important suggestions. Professor Rotwein, despite my "eleventh-hour" request, has willingly participated in the supervisory committee and offered keen criticism and helpful suggestions.

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Also, I am grateful to my dear friend, Silvia Nava, who has encouraged me over many years of my graduate studies and offered to type this final draft. I also would like to thank our mutual friend and economist, Ronald Blackwell, for editing and proofreading the dissertation.

Further, my appreciation is due also to my mother and sister Nariko for their willingness to sacrifice so many things over my long drawn-out studies away from home. Their sacrifices due to the absence of the "man-in-the-house" must have been enormous, in view of the particular social setting of Japan.

Finally, I wish to express my appreciation to the unfailing friend of mine, Seiji Kaku. Without his encouragement of my extended graduate work and his continuous assistance in the financial matters of my family for over thirteen years, this dissertation could not have been finished. In admiration of such unsurpassed quality of human relations the present work is dedicated to this kind of unfailing friendship.

Kensei Hiwaki

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# INTRODUCTION

The postwar rise of the Japanese savings propensities, along with her economic growth, is impressive by any international standards.[1] Equally impressive is the existing variety of hypotheses as explanations for the dynamic aspect of the personal savings.[2] As for the long-term growth of the corporate savings, however, room remains for exploration of theoretical and empirical explanations. Thus, the present thesis aims at suggesting a new approach to the postwar growth of the corporate savings, namely, an approach based on some functions of the "lifetime employment" system. In relation to this new approach, the following theoretical and empirical discussions will also touch on some of the relevant economic phenomena, such as, the postwar economic growth, capital formation, wage shares, time preference, etc.

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1. For examples of international comparison, see Ryutaro Komiya, "The Supply of Personal Savings," Postwar Economic Growth in Japan, edited by Komiya, University of California Press, Berkeley (1966), p. 158; Henry and Mable Wallick, "Banking and Finance" (Chapter 4), Asia's New Giant, edited by Hugh Patrick and Henry Rosovsky, The Brookings Institution, Washington, D.C. (1976), p. 257; and Andrea Boltho, Japan: An Economic Survey, 1953-1973, Oxford University Press, London (1975)m p.84.
2. Good summaries of explanations for Japanese personal savings are found in: Boltho, pp. 84-93; Komiya,

## A. The Hypothesis

The hypothesis of the present thesis can be stated, as follows:-

Adoption in the postwar Japan of Shūshin-koyō Seido (the "life employment" system) by relatively large firms significantly lowered the time-preference rates of their workers and contributed, to an important degree, to the high growth rates of corporate savings These corporate savings, in turn, were at least partially responsible for the rapid capital formation and economic growth for the larger part of the post-war era.

There are several important assumptions directly related to the hypothesis. A first assumption refers to the relationship between the "lifetime employment" system and the decline in the average time-preference rates. The assumption runs, as follows:-

The newly adopted employment system helped to establish between workers and employers of individual firms a

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"The supply of Personal Savings"; Tuvia Blumenthal, Saving in Postwar Japan, Chapter 4, East Asia Research Center, Harvard University, Boston (1970); Toshiyuki Mizoguchi, Personal Savings and Consumption in Postwar Japan, Chapter, Kinokuniya, Tokyo (1970); and Miyokei Shinohara, Structural Changes in Japan's Economic Development, Chapter 2, Kinokuniya, Tokyo (1970).

common interest in the corporate savings and investments, in expectation of the long-term mutual benefits to be derived from survival and growth of their respective firms. This common long-term interest, once firmly established, tended to supress or supersede the conflicting short-term interests. Formation of this type of common interest implies some postponement of the current wages and consumption for potentially greater wages and consumption in the future. This postponement, in turn, implies a decline in the time-preference rates.

In a rapidly growing firm, however, this postponement does not immediately imply an absolute reduction in the current wages and consumption. They on balance tend to grow, but not as fast as the growth of the firm's value-added. This manner of the wage-consumption postponement is relatively painless, and it can be repeated each year over a long period of time, as long as the common interest is reinforced by profit sharing, and as long as the workers' optimism regarding the future prospects of the firm is reinforced by its trend growth.

Secondly, it is assumed that, when the time-preference of a firm's constituents declines over time, it is manifested by a steady expansion of the property share relative to the labor share in the

growing value-added of the firm. The labor (or wage) share is defined here as the ratio of total cash compensations for employees to the firm's value-added, while the property (or profit) share refers to the ratio of the residual to the value-added.[3] The relative growth of the property share tends largely to contribute to the growth of the corporate saving ratios, since the property share includes, among other things, retained earnings, depreciation allowances, and postponed labor cost.

It is assumed thirdly that the postwar posture of the Japanese economy, namely, the almost single-minded quest for its growth, made it largely responsible for a successful incorporation of the "lifetime employment" system into its private sector, especially its manufacturing industries, where a great

3. In Census of Manufacturers (Kōgyō Tōkei-hyō), whose data will mainly be used in the present thesis, the total cash compensations for employees include wage compensations, bi-annual bonuses and retirement-and-discharge allowances, while the value-added refers to its "gross" value, which includes the total of the annual value of sales and other revenues minus the domestic consumption tax, and the cost of purchases from other firms e.g. raw materials and fuels, electricity and commissions, etc. See Masao Baba, "Economic Growth, Labor Unions, and Income Distribution," Postwar Economic Growth in Japan (edited by Ryutaro Komiya), University of California Press (Berkeley, 1966), p. 138 Thus, the "gross" value-added includes all the cash compensations for workers, interest payments, inventories of goods, semi-finished goods, depreciation allowances, net profits, etc.

potentiality existed for beneficial management of the employment system. This incorporation or institutionalization in the private sector, in turn, fed back growth stimuli through an acceleration of corporate savings and investment, at least in 1950s and 1960s.[4] At this point it becomes important to stress that the favorable effects of the "lifetime employment" system on saving and income tended to rely on the trend of rapid income growth. This implies that a prolonged stagnation of economic activities may potentially retard the favorable effects or may even give rise to unfavorable effects on saving and income. Then, some limitation is presupposed as to the effective duration of the employment system.

Also, it is assumed that a timely adoption of the "lifetime employment" system in the early postwar period was instrumental to the favorable effects on the growth of saving ratios and the rapid economic development. The timely adoption, however, did not come by deliberate and systematic planning, but did come by a mixture of necessity and luck in the aftermath of the collapse of the war economy and the

4. The Japanese economy grew rapidly with some cyclical fluctuations until 1970, and stagnated with the 1971-73 recession and the so-called "oil shock" of 1973 until about 1977.

resultant mass unemployment. Also, a strong desire and hope for a long-term peaceful coexistence, rooted in both the domestic and the international atmospheres, seems to have given an added incentive to adoption of such a long-term employment strategy as the "lifetime employment" system. The extremely low wage rates amid the mass unemployment were undoubtedly conducive to the postwar reformulation of Nenkōjoretsu Chingin (the "seniority-based" wages) on the living wage" principle,[5] which became an important component of the employment system. Further, an appeal toward solidarity for survival tended to be taken by workers more seriously in such a difficult period unprecedented in modern history of Japan, and the time was ripe for formation of the "enterprise" unionism, which also became an important component of the employment system.

It is well known that in Postwar Japan high investment ratios stimulated economic growth and thereby pulled up savings ratios, rather than high savings inducing an equivalent flow of investment.[6] The high growth rates of savings, then, are usually seen as a consequence of the rapid growth of national income, which, in turn, is seen as a result of the

5. For a detailed description, see Kōji Taira, Economic Development and the Labor Market in Japan, Colombia University Press, New York(1970)pp.183-186.
6. Boltho, op. cit., p. 94.

rapid growth of capital formation. The rapid growth rates of income, investment and savings, however, are assumed mutually interdependent in the long-term context of this thesis. For one thing, a rapid growth of capital formation over a long period of time under the condition of nearly full employment, without a similar growth of savings, becomes highly inflationary so as to hinder a fast growth of real income over time. Then, it is reasonable to argue that in Postwar Japan the rapid long-term growth of savings also facilitated the rapid long-term growth of capital formation and, indirectly, contributed to the rapid long-term growth of national income.

B. The Scope

Both theoretical and empirical analyses in this thesis will be limited to the potential effects of the "lifetime employment" system upon the growth of corporate savings and the associated growth of private capital formation, gross value added of manufacturing industries, and national income. Thus, a complex issue relating to its welfare effects on total or partial labor forces among others, which may have an important ramification to labor economics and sociology, exceeds the scope of the present thesis

and will be intentionally avoided.

Also, both microeconomic and macroeconomic inferences will be attemped based upon theoretical and empirical analyses. These inferences, however, will be extended only to major elements in the subject matter, namely, corporate and personal savings, interest rates, capital formation and income growth.

The theoretical discussion will center upon an analytical framework which accommodates the stated hypothesis. Such a framework will be fashioned on the basis of Fisher's intertemporal-consumption theory[7] and made capable of accommodating changes over time in saving ratios, attributable to changes in time-preference rates. This framework will be supplemented by the framework of bilateral monopoly, where an average large firm and its counterpart, namely, the "enterprise" union, are respectively assumed as monopsonist and monopolist of the services of the relevant "permanent" workers. Both of these frameworks will facilitate comparative analyses of the two alternative employment practices, namely, the "competitive employment" and the "lifetime employment", in

7. Irvin Fisher, The Theory of Interest, Kelly and Kelley and Millman, New York (1954).

terms of the saving-and-consumption behavior and the income-share changes.

The empirical discussion, in an attempt to test the present hypothesis, will focus on different long-term patterns of wage shares in relevant gross value-added between firms with the alternative employment practices, relationship between changes in wage shares and changes in value-added per worker (or gross value-added divided by the number of workers), and relationship between changes in time preference attributable to the "lifetime employment" system and changes in wage shares, value-added per worker and wage per worker. The related statistical analyses will be confined to fourteen 2-digit manufacturing industries for the period between 1952 and 1975 based on availability of the relevant data.[8]

In the beginning only a preliminary discussion of Shūshin-koyō Seido or the "lifetime employment" system will be attempted just enough to facilitate a straightforward theoretical framework. Further information about the employment system will be provided

8. Kōgyō Tōkei-hyō (Census of Manufactures), Ministry of International Trade and Industry, Tokyo, for the years starting 1952 and ending 1975.

later when necessity arises in the course of the empirical discussion. As mentioned above, however, such information will be limited to economic questions directly relevant to the subject matter.

C. A Working Definition of the "Lifetime Employment" System

The "lifetime employment" system, when narrowly defined, may only imply tacit understanding between labor and management that a worker, once he joins a company as its regular employee, will stay with it until the stipulated retirement age and that his employer, on his part, will not discharge the worker, until he reaches the retirement age, except under extreme circumstances.[9] When it is widely interpreted, on the other hand, the employment system can encompass, in addition to the above tacit understanding,[10] the seniority-based wage structure, the

9. Katsumi Yakabe, Labor Relations in Japan, International Society for Educational Information, Inc. Tokyo (1974), p. 1.

10. The tacit understanding implies voluntary commitment between worker and his employer. The voluntary commitment on the part of employer is an essential condition, but the worker's commitment is not a necessary condition, since the"lifetime employment" system tends to induce over time a strong identification with his firm through an ever-increasing opportunity cost of quitting, owing to the practice of seniority-based promotion and wage determination.

"enterprise" unions, the practices of annual lump-sum employment of new school graduates, continuous on-the-job training and gradual-and-orderly promotion strictly from and among the respective firms' employees, the paternalistic attention to the welfare of workers and their families, and the arrangement of profit-sharing for the labor.[11] The latter interpretation, which presents a realistic description of the multi-faceted employment system, indicating an intricate arrangement of many socio-economic institutions, will be adopted in this thesis as its working definition of the "lifetime employment" system.

This working definition is important for its suggestion of the ingenious employment arrangement conducive to solidarity between labor and management and harmonious "communal" relations among the firm's constituents. The solidarity and the "communal" relationship tend to induce the aforementioned common long-term interest between workers and employers for the respective firm's survival, prosperity and growth; to overcome the conflicting short-term interests,

11. The benefits from the firm's prosperity and growth tend to be distributed to the workers through Shōyo (biannual bonuses) and Teiki Shōkyū (annual increment to base wages) in the short run, and through Taishoku-kin (lump-sum retirement allowance) at retirement.

and to encourage stepped-up capital formation and embodiment of technological advance, in order to enhance the future prospects of the firm.

D. Explanations for the Postwar Growth of Saving Propensities

In Japan: An Economic Survey, 1953-1973, Andrea Boltho sums up explanations for the growth of personal and corporate savings, respectively, as follows:[12]

> ... the combinations of motivations for voluntary saving, encouraged by the form of income payments and by the lack of insufficiency of certain social services, with the involuntary savings imposed by price rises or made inevitable by rapid growth seem to be the main factors behind the very high, and rising share of savings in Japanese household income.
>
> They (corporate savings) rose very rapidly over the period, as well as marked pro-cyclical fluctuations. This suggests that they were mainly a result of the economy's growth and of the need tc retain as large as possible a share of business income in view of the pressure to invest. But despite their size and upward trend, they remained insufficient to finance the corporate sector's investment requirements and massive recourse was made to the savings of households.

Both personal and corporate savings in Japan are noteworthy especially for their spectacular growth in the postwar era. Gross household savings rose from 11 per cent to 17 per cent of G.N.P. and from 15 per cent

12. Boltho, pp. 85-86 and 93.

cent to 26 per cent of personal disposable income over the period between 1953-5 and 1970-2.[13]

On the other hand, corporations over the years supplied gross savings equal to approximately one-third of the national gross savings, and something over 35 per cent in 1972.[14] Given the fact that the government savings as a percentage of G.N.P. remained fairly constant about 7-8 per cent over the relevant years,[15] corporate savings grew at a pace slightly behind personal savings.

An international comparison for the period between 1953 and 197] shows that Japanese gross savvings as a percentage of G.N.P., all in terms of total, household, corporate and government savings, were among the highest, scoring the period average of 36.9%, 15.8%, 13.5% and 7.8%, respectively.[16] After the above comparison among nine industrialized nations, including Japan, France, West Germany, Italy, United Kingdom, United States, Finland, Netherlands and Switzerland, Boltho points out that "it is the size and growth of household savings which accounts for most of the differences between Japan and other countries."[17]

13. Ibid., p. 86.
14. Henry and Mable Wallich, op. cit., p. 262.
15. Boltho, op. cit., p. 85.
16. Ibid., p. 84.
17. Ibid., p. 86.

Owing to the apparent importance of the growth in household savings and due to the lack of convincing theoretical expositions regarding corporate-saving growth,[18] this section is totally devoted to plausible explanations of the growth of household saving ratios, specifically explanations related to Friedman's permanent-income hypothesis, the consumption-lag hypothesis, the growth-and-inflation-oriented consumption-lag hypothesis.[19]

18. Henry and Mable Wallich interpret the high corporate savings, as follows:- "The high volume of corporate saving has its roots principally in the comparatively high level of corporate profits since 1968 and a moderate rate of taxation, as well as in substantial depreciation accrued. The dividend policy of the large corporation does not appear to have been particularly restrictive, but for the entire corporate sector, a large part of which consists of closely held corporations, dividend payout has been low and retentions consequently have contributed importantly to corporate saving." op. cit., p. 262.

19. There are many other hypotheses: those related to the Pigou Effect, the life-cycle income, insufficiency of social securities, the role of self-employed, the property-income relation, the size distribution of income, etc. See note 2. Also some other summaries are found in: Shigeto Tsuru, Gendai Nippon Keizai (Modern Japanese Economy), Asahi Shinbun-sha, Tokyo (1977), p. 95: Hisao Kanamori, Nippon Keizai O Domiruka (How to Interpret Japanese Economy?), Nippon Keizai Shinbun-sha, Tokyo (1973), pp. 89-106; Toshio Shinshido, Nippon Keizai No Seichoryoku (Growth Capacity of Japanese Economy), Diamond, Tokyo (1977), pp. 96-101; and K. Bieda, The Structure and Operation of the Japanese Economy, John Wiley and Sons Australasis Pty. Ltd., Sydney (1970), pp. 48-49.

D.1. Explanation Related to Friedman's Permanent-income Hypothesis

Friedman's permanent-income hypothesis assumes, among other things, that there is no relation between transitory consumption and transitory income.[20] Being a random fluctuation around permanent incomes, a sudden addition of transitory income will not contribute immediately to "consumption," which, as opposed to "consumer expenditure," includes purchases of nondurable goods, services and the "use" of durable goods measured by depreciation and interest cost.[21] In his assumption of zero correlation between transitory income and transitory consumption, Friedman suggests that, if a transitory or windfall income is used to purchase a durable good, this would not appreciable affect current consumption.[22] When this

20. Milton Friedman, A Theory of the Consumption Function, Princeton University Press, Princeton (1957), p. 26.
21. William H. Branson, Macroeconomic Theory and Policy, Harper and Row, New York (1972), p. 184.
22. Ibid., p. 184. In his own words, Friedman states: "The common notion that savings, or at least certain components of savings, are a "residual" speaks strongly for the plausibility of the assumption. For this notion implies that consumption is determined by rather long-term considerations, so that any transitory changes in income lead primarily to additions to assets or to the use of previously accumulated balances rather than to corresponding changes in consumption... If the latter definition (i.e., consumption is in terms of the value of services)

hypothesis is applied for explanation of the postwar growth of household savings, however, the important distinction between "consumption" and "consumer expenditure" tends to be largely ignored or bypassed, due mainly to statistical difficulty in actual distinction.

One example of early application of the permanent income hypothesis as an explanation of the postwar household-saving growth is found in "The Supply of Personal Savings"[23] by Ryutaro Komiya. He defines "extra income" to include "bonuses, overtime allowances, extra-work allowances, and other income paid only in a given month --- but it consists largely of bonuses."[24] Komiya, then, compares annually the ratios of real extra income to real disposable income and the ratios of real savings to real disposable income for the period between 1953 and 1960 for "all cities" and 24 major cities in Japan, and finds a close relationship between the amount of total extra

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is adopted, as seems highly desirable in applying the hypothesis to empirical data---though unfortunately I have been able to do so to only a limited extent---much that one classifies offhand as consumption is reclassified as savings. Is not the windfall likely to be used for the purchase of durable goods? Or, to put it differently, is not the timing of the replacement of durable goods and of additions to the stock of such goods likely to some extent to be adjusted so as to coincide with windfalls?" (p. 28).

23. Komiya, op. cit., pp. 169-172.
24. Ibid., p. 170.

income earned by workers and the amount of their savings in a given year. Komiya, however, appropriately cautions the reader that his "extra income" be taken differently from Friedman's "transitory income,"[25] because, for one thing, a bonus in Japan is a rather fixed and anticipated element in the total annual income of workers.[26] He also warns the reader: "We cannot argue that the rate of savings for workers' households is high in Japan because the transient-income is large, since "it is probable that the annual income of Japanese workers fluctuates far less than it does in the United States and other countries," owing to the existing "lifetime employment" system and its seniority-based wage determination working for

25. Friedman, op. cit., pp. 21-22. Cautioning about the presence of some arbitrariness in the division, Friedman differentiates the permanent income and the transitory income as: "The permanent component is to be interpreted as reflecting the effect of those factors that the unit (consumer unit) regards as determining its capital value or wealth: the nonhuman wealth it owns; the personal attributes of earners in the unit, such as their training, ability, personality; the attributes of the economic activities of the earners, such as the occupation followed, the location of economic activity, and so on. It is analogous to the 'expected' value of a probability distribution. The transitory component is to be interpreted as reflecting all 'other' factors, factors that are likely to be treated by the unit (consumer unit) affected as 'accidental or chance' occurrences, though they may, from another point of view, be the predictable effect of specifiable forces, for example, cyclical fluctuations in economic activities."
26. Komiya, op. cit., p. 171.

stabilization of the employment relationship as well as wage levels.[27]

In a similar analysis Miyokei Shinohara concludes that the postwar Japanese data fitted a consumption function based on the permanent-income hypothesis better than those based on other hypotheses and shows evidence of a close correspondence between growth of transitory income (similar to Komiya's "extra income") ratios and that of household saving ratios for the 1951-1960 period and paralleling cyclical changes of transitory income ratios and the household savings ratios for the 1955-1960 period.[28] Also, in a similar approach, Kang Chao asserts the important role of bonuses for explanation of the postwar growth of savings ratios and attempts to demonstrate that "there were some moderate dis-savings in the months immediately following the bonus distribution dates, but no sign indicates that the special cash receipts were spread out to 12 months for consumption."[29] This attempt seems to be his response to the usual criticism to the effect that, since bonuses are not unanticipated transitory income, they tend to be spread out for consumption in the months following

27. Ibid., p. 172.
28. Miyohei Shinohara, Growth and Cycles in the Japanese Economy, Kinokuniya, Tokyo (1962), pp. 235-6.
29. Kang Chao, "Labor Institutions in Japan and her Economic Growth," Journal of Asian Studies, Nov., 1968, pp. 14-5.

bonus receipts.

As cautioned by Komiya, there is a difficulty in associating bonuses with Friedman's transitory income, which suggests a non-recurring windfall. Bonuses in Japan became firmly institutionalized in early postwar years and have come to be regarded by most workers as a normal component of their total earnings from about 1955 onwards.[30] In a closer analysis, then, the above explanation of the postwar growth in personal-saving ratios tends to employ so-to-speak "pseudo-transitory income" ("extra income" in Komoya's terminology) and does not strictly apply Friedman's permanent-income hypothesis. This "pseudo-transitory income" approach may increase its explanatory power if the ever-increasing retirement allowances are included in the pseudo-transitory income.

In relation to the above approach, Komoya is of the opinion that an unanticipated economic growth can be considered as an windfall. He explains this, as follows:-

> "In the case of Japan after 1955, income has risen faster each year than was generally anticipated, and each year the high rate of growth has been considered as temporary phenomenon, In such a situation the increased portion of income is not regarded by the consumers as part of their "permanent income" a la Friedman, and therefore their saving is prone to increase. In this sense we may hold that the higher-than-anticipated growth

30. Boltho, op. cit., pp. 91-2.

rate raised the level of saving, which in turn helped economic growth."[31]

This explanation of personal-saving growth is closer to the heart of Friedman's permanent-income hypothesis. It, however, also points to a second explanation, namely, an explanation related to the consumption-lag hypothesis, which will be dealt with next.

D.2. Explanation Related to the Consumption-lag Hypothesis

After demonstrating the relationship between "extra income" and household savings, Komiya qualifies the finding: "The recent rise in workers' saving should perhaps be best interpreted as a reflection of the expanding lag in the level of consumption relative to income, for in the course of Japan's accelerated growth the extra-income ratio has increased at a persistently rapid pace along with a faster-than-anticipated increase in real income."[32] This qualification can be considered as a dynamic interpretation of Keynes' marginal propensity to consume,[33] i.e., consumption expenditure (C) tends to

31. Komiya, op. cit., pp. 169-70.
32. Ibid., p. 172.
33. John Maynard Keynes, The General Theory of Employment, Interest, and Money, Harcourt, Brace & World, Inc., New York (1964), p. 248. "... an increase (or decrease) in the rate of investment will have to carry with it an increase (or decrease) in the

lag behind the growth of income. This assumption is neatly summarized by Boltho:

> Rather than $C_t$ being a unique function of $Y_t$, it may well be influenced by past consumption pattern ($C_{t-1}$) as well. The stronger the impact of the second factor and the faster the growth of income the more rapid the increase in savings.[34]

This approach to personal-saving growth, however, runs into an empirical difficulty, for "it is almost impossible to disassociate the two elements ($Y_t$ and $C_{t-1}$) in econometric estimates since both usually have high explanatory powers."[35]

The consumption-lag hypothesis may provide some explanation of, or at least a good insight into, the rapid growth of the Japanese personal savings, in view of the fact that even the official forecasts grossly underestimated the economic growth rates during the phase of rapid growth, namely, the 1956-1971 period. Out of the seven official forecasts after the economy's independence the G.H.Q. control the first five markedly underestimated the actual economic growth, while the remaining two grossly overestimated the actual results.

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rate of consumption; because the behavior of the public is, in general, of such a character that they are only willing to widen (or narrow) the gap between their income and their consumption if their income is being increased (or diminished). That is to say, changes in the rate of consumption are, in general, in the same direction (though smaller in amount) as changes in the rate of income."

34. Boltho, op. cit., p. 92.
35. Ibid., p. 92.

A comparison of the respective forecasts and results are shown, as follows:[36]

| Plan | Forecasts | Results |
|---|---|---|
| Economic Independence 5-year Plan (1956-1960) | 5.0% | 9.1% |
| New Long-range Economic Plan (1958-1962) | 6.5% | 10.1% |
| National Income Doubling Plan (1961-1970) | 7.2% | 10.9% |
| Intermediate Economic Plan (1964-1968) | 8.1% | 10.8% |
| Economic Society Development Plan (1967-1971) | 8.2% | 10.9% |
| New Economic Society Development Plan (1970-1975) | 10.6% | 5.3% |
| Economic Society Basic Plan (197301977) | 9.4% | 1.5% (1973-1975) |

Saying nothing about the advisability of methods used for the above forecasts, the consistent wide-margin forecasting errors imply not only a difficulty of forecasting the postwar economy of Japan but also off-the-mark consumption adjustment to the unexpected results of the income growth. One intriguing piece of evidence remains, however,

36. Toshio Shishido, Nippon Keizai No Seicho-ryoku (Growth Capacity of the Japanese Economy), Diamond-sha, Tokyo, pp. 21-29. For a critical evaluation of the economic forecasts, see Tsunehiko Watanabe, Geidai No Keizai Seisaku (Modern Economic Policy), Iwanami Shoten, Tokyo, (1977), pp. 102-126.

While the official forecasts gradually narrowed the margin of forecasting errors, the consumption-lag expanded for the 1956-1971 period, i.e., the ratios of personal savings to disposable income increased from 14.4% in 1956 to 20.0% in 1971.[37] Also, another possible contradiction to the hypothesis is found in the period between 1971 and 1974: While, due to the compounding effects of the 1971-1973 stagnation and the so-called "oil shock," the growth of real income was substantially reduced, personal-saving ratios to disposable income rapidly increased from 20.0% in 1971 to 24.9% in 1974.[38]

D.3. Explanation Related to the Growth-and-Inflation-oriented Consumption-lag Hypothesis

The aforementioned contradictions can be partially removed, if changing inflation rates are taken into consideration together with the fluctuating income growth rates. It would be more difficult for households to adjust real consumption if inflation rates and income growth rates fluctuate over time without any apparent coordination, since consumer

37. The Economic Planning Agency (Keizai Kikaku-cho), Gendai Nippon Keizai No Tenkai (Evolution of the Modern Japanese Economy), Okurasho Insatsu-Kyoku, Tokyo (1976), p. 581.
38. Ibid., p. 581.

expectations tend to be often betrayed. Then, the rapid growth in personal saving ratios during the 1971-1974 period can be attributed to the unusual changes in the consumer-price indexes, namely, 4.8% for 1971-1972, 11.8% for 1972-1973 and 22.6% for 1973-1974,[39] and the extraordinary decline in economic growth rates.

As Boltho puts it, "it is possible that in a situation of accelerating inflation households may have continued to increase their consumption expenditures in money terms at roughly the same pace as before without perceiving, at least in the short run, the erosion of their real consumption standards."[40] This argument indicates that growth rates of nominal consumption tend to be more stable than those of real consumption. In support for this explanation, Boltho contends that the standard deviation and the coefficient of variation for quarterly seasonally-adjusted percentage changes in the value of consumption was a good deal lower than that for changes in volume for the period between 1962 and 1972, during which both consumer prices and saving ratios were rising.[41] Placing a strong emphasis on this hypothesis, Boltho points to a preliminary empirical confirmation of the

39. Ibid., p. 618
40. Boltho, op. cit., pp. 92-3.
41. Ibid., p. 93.

validity of the hypothesis provided by the O.E.C.D. (Economic Outlook, Dec. 1974, pp. 108-9), which shows that, between 1956 and 1972, the difference between actual and "expected" inflation exerted a highly significant (positive) influence on savings, and argues eloquently, as follows:-

> In the case of Japan such a conclusion may be more justified than elsewhere. In a very rapidly growing economy, tastes and patterns of demand are constantly changing and the concept of "real" consumption may be inappropriate, if only because spending patterns are less fixed than in conditions of slower growth and the "volume" of new goods (or, increasingly, services) consumed out of additional income cannot really be appreciated by the purchaser. In other words, money expenditure is raised regularly, as a function of both present disposable income and past money value of consumption; and, either because of money illusion or because of changes in consumption patterns, it is not perceived that these increases in nominal consumption result in smaller increases in real consumption. Thus, as incomes respond to inflation, because of trade union action or high corporate profits or both, they are increasingly allotted to savings."[42]

E. A Preliminary Note on an Alternative Explanation

In contrast to the aforementioned explanations for the personal saving growth, the present hypothesis for the postwar growth of saving ratios refers to the corporate savings and primarily emphasizes the relationship between the "lifetime employment" system and a postwar decline in average

42. Ibid.

time-preference rates and relationship between the latter and the growth of corporate saving ratios. These relations are assumed to be directly relevant to the rapid economic growth of Postwar Japan. The rapid growth is assumed to be responsible for an easy incorporation of the employment system into the economy's private sector and a painless accommodation of a continuously accelerating postponement of potential consumption. This postponement, namely, saving, is in turn considered accountable for accommodation of an accelerated capital formation without exorbitant inflation, to enhance economic growth. Further, the rapid economic growth is asasumed to be responsible for the continuous reinforcement of the "lifetime employment" system through a growing confidence and an ever-increasing participation in the system, and a resultant growth of corporate saving ratios.

The above association of the rapid economic growth with reinforcement of the "lifetime employment" system and a resultant decline in average time-preference rates, however, indicates also an opposite association, namely, a decline or stagnation of economic activities with disintegration or modification of the employment system and a consequent rise

in average time-preference rates. Indeed, it is highly probable that a prolonged decline or stagnation of economic activities would cause a serious damage to effectiveness of the employment system and a lagged rise in average time-preference rates. In this sense, favorable effects of the "lifetime employment" system on saving ratios are deemed conditional to a rapid economic growth, and the relevant duration for such favorable effects is assumed to be limited.

In order to proceed to theoretical and empirical analysis of this alternative explanation, it becomes crucial to understand the contents of the working definition of the "lifetime employment" system. A task of a preliminary description of the employment system, namely, a sketch of the main characteristics and evolution of the system, will be attempted in the following chapter for the purpose of summarizing the internal arrangement of socio-economic institutions within the "lifetime employment" system and paving the way to a subsequent theoretical discussion.

## CHAPTER I

## A PRELIMINARY DISCUSSION OF THE "LIFETIME EMPLOYMENT" SYSTEM

As stated above, the "lifetime employment" system is assumed to be responsible for establishment of a long term common interest between workers and employers within their individual firms, and, subsequently, reduction over time of their average time-preference rates, conducive to a growing share of internal saving and investment in their value-added for survival and prosperity of the respective firms. The long-term common interest and the subsequent decline in average time-preference rates can be considered closely related to reduction in wasteful labor costs, potentially arising from high turn-over rates and prolonged labor strifes in an alternative employment system, enhancement of potential long-term gains from on-the-job training, and rapid embodiment of technological advance into both labor and capital for further growth of the respective firms.

The present argument, then, is based upon a dynamic and positive view of the "lifetime employment" system, as opposed to a static and passive view which asserts that such an employment system is counter-productive, due to the potential hinderance to ef-

ficient allocation of labor resources and the presumed rescission of work motivation for job security. The latter view tends to represent a theoretical inferrence from a "pure" model (namely, the model implying complete guarantee of life-long employment and perfectly automatic promotion and wage hike according to length of service) and an extreme lack of comprehension and imagination regarding the actual working of the "lifetime employment" system within the context of "living" people in a dynamic economy.[43]

In such a dynamic society as Postwar Japan with its historical and cultural backgrounds drastically different from its western counterparts, the employment system based on a tacit understanding between labor and management can have many positive benefits. In addition to the aforementioned benefits relating to cost reduction and benefit enhancement, the "lifetime employment" system may have facilitated rather clear-cut information regarding wage-and-promotion prospects, discouraged excessive and harmful competition (namely, cut-throat and/or leg-pulling competition) among employees, provided a long-term stability

43. James C. Abegglen in Management and Worker: The Japanese Solution, Sophia University, Tokyo (1973), argues for economic efficiency of the employment system, pointing to the system's flexible allocation of human resources within the relevant firms, pp. 30-33.

and security of core employees, and enhanced worker satisfaction and solidarity based on the "communal" interactions, among the respective firms' constituents. Further, it can be argued that all these benefits put together reinforced the employment system for about two decades and reduced painlessly the average time-preference rates in the environment of rapid income growth.

In the following a brief sketch will be attempted regarding the evolution and major characteristics of the "lifetime employment" system for a preliminary and broad understanding of its actual practice.

A. The Evolution of the "lifetime Employment" System

The so-called "lifetime employment" system (Shushin-Koyo Seido) seems to have come into existence as a measure to restrict labor's inter-firm mobility, when a severe shortage of skilled workers developed between the two world wars.[44] This system, however,

44. Although scholars differ in their opinions about the system's social origin, there seems to be a general agreement on its budding period and its initial purpose. Some historical discussions can be found in: Hiroshi Hazama, Nippon-teki Keiei (The Japanese-style Business Administration, Nippon Keizai Shinbunasha, Tokyo (1975): Kenji Kojima, Nippon No Chingin (Japanese Wages), Iwanami Shoten, Tokyo (1975; Nagateru Tomiyasu, Shushin-Koyo To Nenko-Joretsu (The "Lifetime

was not practiced widely during the period and had to undergo many twists and turns before it emerged in the postwar form. The wartime (World War II) government policy against job-hopping,[45] the strifes in the early postwar period of labor unions against dismissal,[46] and the system's potentially rational function in the rapidly growing economy can be pointed out as factors conducive to the postwar evolution of the employment system. Also, the concurrent developments of "enterprise" unions, seniority-based wage structure on the "living wage" principle, seniority-based promotion practice, annual lump-sum employment of fresh school-graduates, bonus and retirement-allowance payments,

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Employement" System and the Seniority-based Wage and-promotion determination), Rodo-Hogaku Shuppan, Tokyo (1973); Kuniyoshi Urabe, Nippon Teki Keiei O Kanagaeru (A Thought on the Japanese-style Business Administration), Chuo Keizaisha, Tokyo (1978); Koji Taira, Economic Development and the Labor Market in Japan, Columbia University Press, New York (1970); and Robert J. Ballon, "Lifelong Remuneration System," The Japanese Employee, edited by Ballon, Sophia University, Tokyo (1969).

45. Kojima, op. cit., pp. 154-155; and Mitsuhaya Kajinshi, Nippon Keizai-Shi (Economic History of Japan), Ochanomizu Shobo, Tokyo, (1970), pp. 235-236.

46. Walter Galenson and Kenosuke Odaka, "The Japanese Labor Market," Asia's New Giant, edited by Hugh Patric and Henry Rosovsky, The Brookings Institution, Washington, D.C. (1976), p. 614; and Hiroshi Hazama, "Historical Changes in the Life Style of Industrial Workers," Japanese Industrialization and its Social Consequences, Edited by Hugh Patric, University of California Press, Berkeley, (1976), p. 44.

to mention a few, must have played important supportive roles to the evolution. In fact, all these institutions and practices, including the employment practice itself, tended to reinforce one another over their respective developments and became components of one another. Because of these mutually inter-dependent relationship, the present thesis can not be isolated from those supportive institutions and practices without doing some significant injustice to the multi-dimensionality of the system, as indicated by the working definition of the employment system.[47]

A.1. The Prewar Trace of the "Lifetime Employment" Prototype

After the middle part of Meiji Era (1868-1912) the growth of the heavy industries in Japan and the consequent growth of demand for skilled workers far outstripped the expansion of their supply.[48] This rapid industrial development, especially from the Sino-

47. This definition is similar to the one made by James C. Abegglen in his classic book on Japanese labor relations, The Japanese Factory, The Free Press, Glencoe, Ill. (1958) Abegglen's definition is summarized in Kuniyoshi Urabe, op. cit., pp.8-10

48. Skilled workers were composed of those who had undergone many years of training as apprentices at the government's vocational schools, military workshops, and factories of private enterprises. In order to increase the supply of skilled workers, many workers upon acquisition of adequate skills played the role of trainers of new apprentices. Kojima, op. cit., pp. 147-148.

Japanese War (1894-1895) to the First World War (1914-1918) induced a cut-throat competition among firms for the badly-needed skilled workers.[49] This led to a rapid increase in wages (both nominal and real) and high turnover rates of the skilled workers. Against this background, employers of large firms developed the counter-measures, such as Taishokukin Seido (a retirement-allowance system), Nenko-Joretsu Seido (a seniority-based wage and career-advancement system) and Yoseiko Seido (and enterprise-based training system), for the purpose of maintaining an adequate quantity of skilled workers loyal to their respective firms.[50]

The enterprise-based training system aimed at producing an adequate quantity of skilled workers best fit to the production processes of individual firms, isolating workers from the industry-wide labor movement, and avoiding a rapid rise of wages and frequent job changes.[51] In co-ordination with the training system, a seniority-based wage system was introduced. Its main purposes were to set the initial wages of the enterprise-trained workers at a level adequate for subsistance of individual workers and to

49. Taira describes the modes of labor recruitment during the period of a severe labor shortage. Taira, op. cit., pp. 107-127.
50. Kojima, op. cit., p. 149; and Taira, op. cit., pp. 157-159.
51. Kojima, op. cit., p. 150.

arrange the subsequent wages in accordance with their growth in experience and the expansion of their family sizes.[52] This, reinforced by the seniority-based promotion practice, was intended to fortify against the workers' job-hopping and to encourage their loyalty to and solidarity with, their respective firms. In this respect, it should be pointed out that the practice of lump-sum employment fresh from schools, which became generalized about the time of World War I, made it easier to adopt the seniority-based wage and promotion system. Further, a retirement-allowance system heavily weighting the length of service was introduced to encourage a life-long career in the respective firms. All these measures tended to emphasize the opportunity cost of job changes and urge the skilled workers to stay with their initial firms for the entire work-life.

This movement toward the seniority-based employment system, namely, a prototype of the postwar "lifetime employment" system, however, was rudely disrupted by a severe economic downturn. When a financial panic began in 1927 and resulted in the Japanese version of Great Depression in 1929, workers, both skilled and unskilled, experienced massive unemployment, reduction in nominal-and-real wages, and

52. Ibid., p. 151.

outright oppression of the labor movement. The so-called "Sangyo Gorika Seisaku" (Industrial Rationnalization Policy) adopted by the Hamada Cabinet encouraged mergers, reduction of small and medium-size firms, dismissal of workers, reduction of wages, and increase of the workload.[53] For the purpose of cutting wages and increasing the work-load, the policy recommended the so-called "Kindai-teki Noritsu-kyu" (the Modern Efficiency Wages), based mainly upon the "Halsey Plan" and the "Taylor System of Management".[54] This recommendation was founded on the rationale that the prevailing wage structure based on the length of service, which tended to increase the wage burden over time, was harmful to the economy when labor was cheaply available.

53. Ibid., pp. 93-94 and 152-153; and Taizo Takahashi and Shiro Masuda (eds.), Taikei Keizaigaku Jiten (A Systematic Economic Dictionary), pp. 830-831. Halsey Plan is an efficiency plan often referred to as gain-sharing plan or premium plan and expressed as: $W=Rh \times Ha + \frac{1}{X} (Hs-Ha) \times Rh$, where W= wage, Rh = an hourly wage rate, Ha= number of hours worked, $\frac{1}{X}$ = a certain fraction, such as 1/2 or 1/3, and Hs= standard-hours required for an actual volume of work.
54. Kojima, op. cit., pp. 95-98; and Takahashi and Masuda, op. cit., p. 817. Taylor System is often referred to as "scientific management" and aims at labor efficiency. It emphasizes determination of a standard work-volume per day (task)based on a meticulous time-study called"elementary time-study."

A.2 The Wartime Government Regulations

As Japan started to invade China (1937) and, subsequently, plunged into World War II, its military industries rapidly expanded. Accordingly, demand for labor accelerated. Again, labor mobility among firms started to rise, together with real wages. Sensing an unfavorable effect on its war efforts of the prevailing labor instability and wage hike, the government issued regulations in quick succession to stop job-hopping and wage hike, and to encourage wage determination based on age, sex, function and experience.[55] The main aim of the regulation on wage determination was to alleviate the difficulty of older workers with large numbers of dependents and to lower the real wages to the life-supporting minimum for all workers and their families.[56]

The wartime government policy, as a consequence, generalized and solidified the prewar seniority-based wage system, in an attempt to reduce labor consumption to a subsistence level for the all-out war efforts. Also, the wartime restriction of job changes and the reinforcement of the seniority-based wage system gave a further push toward the postwar formulation of the "lifetime employment" system.

55. Kajinishi, op. cit., p.236.
56. Kojima, op. cit., p.155.

A.3. The Postwar Labor Movement and the Institutionalization of the "Lifetime Employment" System

Due to the consistent efforts of the Japanese government to discourage and oppress the labor movement up to and including World War II,[57] labor organization began a fresh start in the immediate postwar period under the auspices of the Occupied G.H.Q. In spite of the American advocacy of trade unionism, however, the Japanese workers chose to form "enterprise" unions. Robert J. Ballon explains this choice, as follows:

> ...in Japan, even today, the industrial identification of an employee does not come from what he does but from where he does it; the workplace is what identifies him. (If you ask a child in Europe, "What does your father do?" the answer will be, "Daddy is a banker," or "Daddy is a truckdriver." But in Japan the answer will be, "Daddy works at Toyota," or the like.) Consequently, when told to organize, Japanese employees established not trade unions but enterprise unions.58

He also characterizes the relationship between labor and management in Japan, as follows:

> An enterprise in Japan is like a coin that, as all coins, has two sides. Each side is different, but one cannot exist without the other. The

57. Taira, op. cit., pp.143-144; Kajinishi, op. cit., p. 232; and Galenson and Odaka, op. cit., pp. 267-268.

58. Robert J. Ballon, "A European Views the Japanese," The Wheel Extended, Toyota Motor Sales Co., Ltd. (Special Supplement No. 2: Summer 1978), p. 2.

> reality is the coin, the enterprise. Labor is one side and management is the other. But because one side is different from the other, conflict may arise; and in a Japanese enterprise there is always great concern about the harmony, the balance between the two sides. Here is the source of the enterprise's dynamism. 59

The emphasis of harmonious labor-management relations, in a sense, guided the workers to choose the form of "enterprise" unionism, which had a softening effect on management's antagonism against labor movement and attracted even enthusiastic support from some employers.[60] An "enterprise" union, as the name suggests, limited its membership to employees of a given enterprise, and the membership in a final form of "enterprise" union usually included all the regular workers except the administrative personnel.[61]

Such "enterprise" unions were set up predominantly in large firms[62], and lacked the sense of

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59. Ibid.
60. K. Okochi, B. Karsh, and S.B. Levine, (eds.) Workers and Employers in Japan, Princeton University Press, Princeton (1974), "The Historical Introduction" by Mikio Sumiya.; and Kojima, op. cit., p. 2.
61. Taira, op. cit., p. 180. Taira observes that the 1949-1950 deflation in Japan was instrumental in limiting union membership to only regular workers for the purpose of protecting such workers from unemployment.
62. Ibid., p. 194; Taishiro Shrai, "Prices and Wages in Japan: Towards an Anti-Inflationary Policy?", International Labor Review (March, 1971), p. 234; and Tadashi Hanami, Labor Relations in Japan Today, Kodansha International, New York (1979), pp. 90-91. Unionization by size of firms are

solidarity among themselves. This is probably due to the fact that members of an "enterprise" union shared a closer interest with the enterprise's management than with other "enterprise" unions, since "ability-to-pay" considerations of the respective enterprises largely determined the outcome of their wage negotiations. In this connection, Kōji Taira states:

> The rhetoric of both union and management in wage bargains revolves around the firm's ability to pay, each party justifying its demand for higher wages, or refusal to grant wage demands, by its own estimate of ability to pay. No other criteria in Japanese collective bargaining seem to have the same power of persuasion as ability to pay. The Japanese type of collective bargaining necesarily makes the union so conscious of the business conditions of the firm that the enterprise union is, for all practical purposes, just another management in the firm. 63

This manner of union behavior in the early postwar period contributed without doubt to institutionalization of the "lifetime employment" system in the private sector. This employment system, in turn, reinforced the union behavior by creating a sense of

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as follows:

| | (Number of Employees) | | | |
|---|---|---|---|---|
| Year | 500 or more | 100-499 | 30-99 | 29 or fewer |
| 1956 | 81.3% | 42.6% | 21.4% | 2.5% |
| 1960 | 70.6 | 40.7 | 9.7 | 2.1 |
| 1963 | 69.0 | 42.9 | 12.4 | 1.9 |
| 1966 | 78.7 | 35.8 | 11.4 | 2.1 |
| 1969 | 76.5 | 38.9 | 10.9 | 1.5 |

(private manufacturing firms only)

63. Taira, op. cit., p. 169.

community within a firm, and encouraged the union members to tie their economic well-being to their firm. Once the institution of "lifetime employment" became a dominant feature of large firms in the mid-1950's, the labor market practically disappeared, as far as these firms and their regular workers were concerned,[64] except one for fresh school-graduates and temporary workers.

Also, the "enterprise" unions strengthened the "lifetime employment" system by vigorously objecting to dismissal of their respective members and eagerly subscribed to a reformulation of Nenkō-Joretsu Chingin (seniority-based wages) on the "living wage" principle. In exchange for guarantees of uninterrupted employment of the so-called "permanent regular" workers, who were the only ones automatically admitted to the union after the 1949-1950 deflation, "management acquired unrestrained freedom in hiring and firing of "temporary workers" in response to changes in the business conditions of the firm and in paying whatever was necessary to obtain their services."[65] Nenkō-Joretsu Chingin, on the other hand, have undergone gradual

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64. Ibid.
65. Ibid., p. 180.

changes over the postwar era, in terms of its weights: the weighting emphasis has shifted from "age" in the early days to "length of service" in the period of high economic growth, and to the present "ability".[66]

The "lifetime employment" system, which became firmly rooted among large firms during 1950s and 1960s has gone through a trying ordeal in the less dynamic economy of 1970s, feeling the increasing burden of the seniority-based wage and career advancement system. A major question that Japanese employers and union leaders are asking today is: How can the employment system be maintained with certain modifications in the seniority system and without alienation of the core employees from their respective firms?

## B. Potential Merits and Demerits of the "Lifetime Employment" System

### B.1. Merits

The most frequently-mentioned attribute of the "lifetime employment" system is its potential effect on the promotion of "community spirit" among a firm's members.[67] In other words , the employment system tends

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66. Mikio Sumiya, Nippon-jin No Keizai-Kōdō (The Japanese Economic Behavior), Toyo Keizai Shinbun-sha, Tokyo (1972), p. 149.
67. Tomiyasu, op. cit., pp. 130-135; Hanami, op. cit., p. 28; and Urabe, op. cit., pp. 220-243.

to encourage solidarity and common interests between labor and management within a firm. Such a "community spirit" can be argued to have an important bearing with the prevailing worker identification with an individual firm and cooperative labor-management relations.[68] Also, through this "community spirit", the "lifetime employment" system potentially induces stability in a firm's core manpower over a long duration of time, secures almost full return on the firm's human-capital investment, including some external economies of such investment, reduces indirect labor costs, such as expenses related to recruiting and training, encourages human-and-physical capital formation, facilitates an easier and faster embodimemt of technological advance into both human and physical capitals.[69] All these

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68. O.E.C.D. (translated by the Ministry of Labor, Japan), OECD Tainichi Rodo Hokokusho (OECD Reviews of Manpower and Social Policies: Manpower Policy in Japan), Nippon Rodo Kyokai, Tokyo (1972), pp. 5 and 35.
69. Urabe, op. cit., p. 21; O.E.C.D., op. cit., p. 36; and Mikio Sumiya, "Implication of Technological Change in Industrial Relations in Japan," British Journal of Industrial Relations (July, 1965), pp. 210-218.

potentially increase value-added per worker and/or reduce labor cost per worker.

Similarly, Kuniyoshi Urabe points out four favorable effects of the "lifetime employment" system: it tends to enhance a worker's sense of identity with his firm, encourage growth of the firm, facilitate introduction of technological innocation, and reduce indirect labor costs. His explanation for these effects is roughly, as follows.[70] Under the "lifetime employment" system, once a man joins a company after schooling, he can pursue his career at the firm up to the compulsory retirement age. Then, his well-being, in terms of both living standard and promotion opportunities, is closely tied with the firm's growth. So, he, instead of being opposed to introduction of new technology, welcomes it as a favorable factor for the firm's growth. Also, since his well-being is closely related to the length of service, he tends to work for the firm longer years than otherwise, and, as a result, the firm's indirect labor cost tends to decline.

One salient feature of these merits, then, is an implied relationship between the employment system and the relevant firm's growth. Taking the supply side alone, an increase in investment both in human and physical capital, including embodiment of technological innovation, is

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70. Urabe, op. cit., pp. 28-30.

directly related to growth of the firm's productivity. If the firm's growth is a common interest shared by labor and management, an appropriate effort tends to be made jointly for an increased allocation of the firm's value-added for such capital formation in the long run.

In a dynamic economy, such as the one in Postwar Japan, this "common interest" and the consequent rise of the saving-investment share in the firm's value-added might have been the key to survival and growth of individual firms. A high rate of investment with growing allocation to internal savings, including depreciation allowances, retained earnings and postponed labor cost, probably was vital to enhancing the competitive position of firms in the long run. Especially, if development of new technology and its embodiment into human and physical capital are viewed as part of capital formation, a growing share of the saving-investment in the value-added tends to become more important for the firms' long-term strategy in a dynamic economy. Then, the merits of the "lifetime employment" system can very well be symbolized by its potential effect on promotion of "community spirit" and establishment of the long-term "common interest" in the relevant firms' growth.

It should be kept in mind, however, that the above-mentioned merits are closely related to high

growth rates of demand, aggregate and specific, over a long duration of time. Without this favorable demand condition, it is very difficult to keep the "community spirit" and the long-term "common interest" alive. In other words, motivation for an increasing allocation of a firm's value-added toward the saving-investment share tends to lose its force and meaning without a rapid demand growth, both actual and expected.

B.2. Demerits

Among demerits of the "lifetime employment" system, it is often pointed out that the employment system tends to induce retention of outdated and/or inefficient manpower, increase the difficulty of placing the right man in the right post, spread a peace-at-any-price principle, and take precedence of human relations over individual workers' abilities.[71] These demerits, however, can be alleviated to a great extent by some appropriate measures, such as continuous on-the-job training (which is, in fact, one of the important characteristics of the "lifetime employment" system), improvement of the allocative mechanism for labor resources within the respective firms, and betterment of the rewarding practice. Such alleviation of the existing demerits is part of the

71. O.E.C.D., op. cit., p. 37; Tomiyasu, op. cit., pp. 130-135; and Urabe, op. cit., pp. 31-34.

"common interest" of all concerned under the employment system, since any reduction or elimination of the existing demerits implies an increase in the relevant firm's value-added and/or a decrease in its labor cost, which, in turn, implies a greater allocation toward its saving-investment share, and, consequently, greater potential gains for the firm's constituents in the long run. Also, mitigation of such demerits tends to be easier in a dynamic and growing economy, since in such an economy continuous training , personnel transfers and regulatory changes can be taken as routine affairs.

Under the condition of a prolonged stagnation or decline of demand, however, it becomes immediately apparent that the employment system tends to induce some major burdens to those firms and industries heavily affected by the unfavorable economic conditions. Due to the fact that a large portion of labor costs tends to be the fixed cost of the respective firms under the "lifetime employment" system, an automatic downward adjustment of production becomes more difficult than otherwise.[72] As a result, these firms and industries tend to suffer from over-production on one hand and a rising proportion of the fixed cost on the other. Consequently, business conditions for them tend to deteri-

72. Urabe, op. cit., p. 32.

orate explosively.

Now, it goes without saying that profit rates of these firms and industries tend to decline drastically under these circumstances. Then, the wages and purchasing power of the employees, not to mention the unemployed, tend to stagnate or decline. Further, motivation for new capital formation tends to weaken among these firms and industries. Thus, these situations might work as an added downward pressure on the overall economy, and the economic climate may worsen to unduly prolong the stagnation of demand.[73]

B.3. Summary

The above discussion of merits and demerits strongly indicates the importance of a rapid demand growth for the favorable effects of the "lifetime employment" system. According to the existing and anticipated long-term demand conditions, the employment system seems to work for acceleration or deceleration of output growth, whether it is of individual firms, industries, or the overall economy.

## C. Conditions Favorable for the "Lifetime Employment" System

In a discussion of favorable conditions for the "lifetime employment" system, it is convenient to

73. Ibid, pp. 33-34.

divide them into (1) economic conditions and (2) socio-political conditions. Such classification may suffer from over-simplification or separation of the inseparable. Thus, some flexible cross-over between the two categories will be accomodated when necessity arises.

C.1 Economic Conditions

In addition to the above-indicated condition regarding demand, namely, a high trend growth of the aggregate demand and the specific demands (specific to the products of individual firms), major economic conditions favorable for the "lifetime employment"system include a keen competition in the product market, generally low market wages, and an anticipated labor shortage in the long run. Without a high rate of demand growth, both actual and expected, it is difficult to adopt and maintain the employment system, especially in view of its seniority- based wage system. For , a year-by-year increase in wages implies that, ceteris paribus, the wage shares in the value-added of the relevant firms tend to rise over time at the sacrifice of the corresponding profit shares. To put it another way, a stagnant demand for the firms' products means a potentially stagnant average wage or a slow wage growth relative to the other firms in a growth-oriented economy. Then, even if it is adopted by the firms with stagnant

product demands, the employment system in such firms tends to be unstable over time, due to discontentment of the workers and/or the employers. Moreover, an increase over time of the fixed labor cost tends to endanger even the survival of these firms.

If, on the other hand, the economy indicates a steep growth trend, offering a similar growth trend in the demand for the firm's products, their respective management may very well be interested in the "lifetime employment" system in fear of a future labor shortage. They may try to secure a long-term labor requirement through the employment system.

Further, if low wages generally prevails, the temptation to adopt the employment practice tends to be even stronger, since they may be able to fashion a seniority wage structure with a low initial pay-scale. Under the circumstances, the workers may be equally eager for the employment system, since it offers a long-term uninterrupted employment and a steady growth of future wages.

Finally, if the firms are facing a keen competition in their product market, they may be compelled to search for a way of strengthening their competitive positions. Then, many will tend to be attracted to the "lifetime employment" system for its potential function, namely, encouragement of rapid

capital formation.

C.2. Socio-Political Conditions

One important socio-political condition, which may effectively persuade management into adopting the "lifetime employment" system, is an impeding threat of trade unionism or similar industry-wide labor movement. An inter-firm unionization of labor on the basis of job categories or a labor movement toward tightly federated unions poses a threat of outside interference in the conduct of individual managements, especially in the matters of labor conditions and wage determination. This kind of outside intervention is feared by the employers for its potential disregard of the individual firms' prevailing business conditions and also for its potential undermining of their autonomous planning for the respective firms' long-term goals. Such a menace may compel the respective managements into exploring means to deter such an industry-wide labor movement and establishing more harmonious (non-self-contradicting) labor-management relations. Then, an institution such as the "lifetime employment" system tends to attract their attention, since it is well suited to serve this purpose.[74] This microeconomic behavior of

74. Ibid., pp. 241-249; Makoto Sakurabayashi, "Enterprise Unionism and Wage Increases," The Japanese

employers is similar to their eager quest for monopoly and monopsony powers in the product and the labor markets, respectively, to avoid outside meddling which, in this instance, is "competitive" market forces.

An equally important condition favorable to the "lifetime employment" system is prevailing social environment conducive to harmonious group relations. In this respect, presence of an etthnic homogeniety characterized by common ancestry and cultural backgrounds tends to be helpful for such a "communal system. Especially, if a relevant population has long cherished the well-worn socio-political moral

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Employee, edited by Robert J. Ballon, pp. 130-133; Paul Timothy Chan, "The Labor Movement," also in The Japanese Employee, pp. 209-211; Naomi Maruo and Yasuhiko Nagayama, Sekai No Keiei-Sanka Wa Kokomade Susunda (Labor Participation in Administrative Decisions Have Advanced Thus Far in the World), Diamond-sha, Tokyo, (1975), pp. 291-292; Tadashi Mitsufuji and Kiyohiko Hagisawa, "Recent Trends in Collective Bargaining in Japan," International Labor Review, (Feb., 1972), p. 137; Ballon, " A European Views Japanese," p. 2; James D. Hodgson, "The Wondrous Working World of Japan," The Wheel Extended, p.7; Yusuke Fukada, "The Japanese View of Work," The Wheel Extended, p. 11; Nippon Rodo Kyokai, (eds.) Keiei-Sanka No Ronri To Tenbo, Nippon Rodo Kyokai, (1976), pp. 5-11; and Taira, pp. 167-169.

codes, such as "Wa"[75] (harmony), "Chu-Ko"[76] (loyalty and filial piety), and a more generalized "Giri-Ninjo"[77] (feudalistic social obligation and human feel-

75. "Wa o motte tattoshi to hashi, sakarau kotonaki o mune to nase," is the first sentence of the Seventeen-Article Constitution of Prince Shotoku, prepared by the Prince himself in 604 A.D. This sentence can be interpreted as: Respect harmony and aim at avoiding contradictions. It is also translated as: Harmony is to be valued, and an avoidance of wanton opposition to be honored. (See Rysakú Tsunoda, Wm. Theodore de Bary and Donald Keene, compiled, Sources of Japanese Tradition, Columbia University Press, New York, 1971, p. 50) The Constitution is said to be heavily influenced by Confucianism and Buddhism, and "Wa," when it implies "social harmony," is specifically derived from Buddhist thought. The ideal of "Social Harmony" and its opposite, "Contradictions," seem to have deeply penetrated in the daily Japanese behaviour over centuries, and their influence can be seen in their present day hesitation in uttering a direct refusal or denial, "No!" The code of behavior, namely, social harmony, is often viewed in the modern setting as equivalent to "team work", especially in the "communal" relations within individual firms. Thus, a self-centered individualistic behavior tends to be strongly discouraged within a firm, which to many workers is their "home" and "world", as a well-quoted expression goes, "Deru kugi wa utararu" ( A nail which sticks out must be pounded in.) In this connection, James D. Hodson, a former U.S. Ambassador to Japan, admits quite appropriately, as follows:

> To an American versed in employment and labor matters, Japan presents a remarkable learning experience, or perhaps more accurately, a disconcerting unlearning experience. In Japan an observer's accepted truisms regarding the behavior and aspirations of men and women in the workplace crumble and collapse one after another. My Japan experience forced me to the reluctant conclusion that most of the things we accept as gospel about what it

ings), such an all-inclusive "communal" setting as the "lifetime employment" system tends to be welcomed by both labor and management with an appropriate

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is that makes people work--- makes them work well and happily--- actually are true only in the context of our own culture..... Perhaps it is best to start by reflecting that our American society is underpinned first and foremost by that venerable Judeo-Christian objective of individual justice. The Japanese, however, spurn individual justice as a priority goal. Instead they seek something in many ways the opposite; they seek group harmony. We American justice seekers speak proudly of our rights. The harmony-minded Japanese stress not rights but relations. They reject our emphasis on individual rights as being divisive and disruptive. The distinction that emerges from all this may be capsulized simply. In American life the individual strives to stand out. The Japanese citizen, however, seeks to fit in. And fit in he does--- into his family, his schools, his company, his union, his nation. Japan is a nation where the parts fit. ("The Wondrous Working World of Japan: Making the Most of the Human Resource," The Wheel Extended, p.6. James D. Hodgson, Ambassador to Japan 1974-1977 delivered the text before the Industrial Research Council, at the Wharton School of Finance and Commerce, University of Pensylvania.)

76. The concept of "Chu-ko" (loyalty and filial piety) in Han Confucianism was reinterpreted in the teachings of Chu Hsi (Shu-shi in the Japanese pronounciation) which flourished in the Sung dynasty of eleventh-and twelfth-century China, and the teachings of Chu Hsi, together with another philosophy derived from classical Confucian teachings, namely, the philosophy known by the name of its later proponent, Wang Yang-ming (Oyomei in the Japanese pronnunciation), firmly settled into the Japanese vocabulary and behaviorial pattern. This concept was further modified by the early Meiji

psychological attitude. This implies that the employment system must have been highly generalized in the Japanese economy. Indeed, most of the Japanese firms

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statemen, so that "chn" started to mean "duty" to the Emperor, the law, Japan, and "ko", "duty" to parents and ancestors. These duties are said to be unconditional, and the fullest repayment of these obligations is still no more than partial and there is no time limit. See: Ruth Benedict, The Chrysanthemum and the Sword: Patterns of Japanese Culture (Specifically its Chapters 5,6, and 7), New American Library, New York (1974); Arthur E. Tiedemann, (Ed.), An Introduction to Japanese Civilization, Columbia University Press, New York, (1974), pp. 106-111; and Tsunoda, de Bary and Keene, Sources of Japanese Tradition, Chapters XVII and XVIII. In the modern industrial relations, "chu" tends to represent "duty" to the respective "firm," and "ko","duty"' to the "employer," a parent figure.

77. Hiroshi Minami in Psychology of the Japanese People (Columbia University Press, New York, 1971) describes "Giri" as follows:

> The word giri has various meanings. In the widest sense, the character gi signifies that each individual acts according to the understanding of how he should be. The word giri simply means the reason for gi (right-doing). Therefore, giri or gi is a promise to act in a fitting manner according to where one stands in relation to others in the social structure. And the promise, unlike modern obligation, is not grounded in rights. Giri is rather a promise of a certain attitude or conduct toward all of the people who surround one. When the promise is widely interpreted, it becomes sekentei (social reputation, appearance) or giri to society. Although giri assumes varied forms depending on whether the relationship is between parent and child, man and wife, or a person and his relatives, friends, superiors, or inferiors, it demands, in

seem to be inclined toward this employment system and make a point of practicing it in their recruitment campaigns. A great majority of small and medium-size firms, however, tend to lack the credibility for an actual and continuous practice of the employment system. Unless the respective workers are fully convinced of their firms' capacity to honor such a comprehensive long-term obligation, they may not faithfully discharge their own obligation pertinent to the employment system. In the absence of any clear-cut information regarding such credibility of individual firms,

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any case, that a man accept the obligation as a long-established promise and act upon it as he should without asking for a logical explanation. ... love between parent and child and giri are fused, and giri and ninjo (human feeling) are usually undifferentiable. However, a child is required to show special respect and submission to his father as the head of the family.... the relationship of boss (parent status) and follower (child status) has adults of Japan playing the role of parent or child not only in the family but also in social groups. Since a majority of the Japanese are compelled to play the role of father or child in social groups other than the family, a tendency for domestic fussiness and indulgence becomes part of the psychology of the Japanese. A paternalism unique to human relationships is the result of this tendency. That is, a superior not only treats his inferiors with parental love, seeing them as his children and caring for them, but he also looks down upon them as mere children and is aware that he is supposed to love those around him from a step higher, train them, and initiate them. (pp. 157-163)

however, many workers, both incumbent and prospective, tend to assume the practice of the "lifetime employment" system as limited to large firms (those employing 1,000 or more workers). As a result, like a self-fulfilling prophesy, an official estimate indicates that the employment system is generally practiced only among such large firms.[78]

There are also other conditions which are directly related to the evolution of the employment system, as indicated above: They are institutions favorable for establishment of the "lifetime employment" system, such as the seniority-based promotion and wage-determination, the annual lump-sum employment from schools, the mandatory retirement age and the relevant retirement-allowance, and the"enterprise" unionism. Furthermore, the long-practiced employment system relevant to the governmental agencies, which was primarily based upon examinations and seniority, might have served as a useful model for the private sector's employment system pertinent to large organizations.

D. Economic Rationale of the "lifetime Employment" System

Any representative employer is, by definition, one who has already committed to his respective firm a combination, of his productive resources (namely,

78. Galenson and Odaka, op. cit., pp. 614-615.

financial, physical, human and psychic resources) on a long-term basis. Owing to this long-term commitment, he tends to have a strong vested interest in his firm's growth and prosperity. This vested interest, then, can be considered as his main source of motivation to adopt and maintain the "lifetime employment" system in view of its potentially favorable economic function in a rapidly growing economy. For one thing, the employment system tends to increase the workers' identity with the firm and solidarity with the management, as well as among themselves. This, in turn, tends to lower their turnover rates. The reduction in the turnover rates immediately reduces the recruiting cost and the cost of repetitive firm-specific training, and subsequently increases return on human capital investments. A higher return on human capital may come basically in two different ways; first, by keeping a higher percentage of workers trained on the job, and secondly, by making it possible to give a more continuous and cummulative training in the face of changing technology.

Similarly, a greater identification of the workers with their firm, as a result of the employment system, tends to establish a common long-term interest between the labor and the management for the

firm's growth and prosperity and shift the workers' time preference closer to that of the employers, encouraging the firm's internal savings and its higher rate of investment. Alternatively speaking, a greater allocation of the firm's value-added to the profit share (or the capital share) tends to be induced over time.

The tendency toward lower time-preference rates, together with the tendency toward a higher return on human capital, in turn, tends to encourage a faster embodiment of changing technology into both labor and capital. As a consequence, the firm's competitive position in a dynamic product market tends to be enhanced over time.

Furthermore, a greater identity of the workers with their firm and a greater solidarity with their employers make it possible to secure a sufficiently large and steady labor force on a long-term basis and prevent to a great extent the workers' participation in a militant inter-firm labor movements. As a result, among other things, the wasteful cost relevant to excessive labor strife tends largely to be prevented.

Then, adoption of the "lifetime employment" system seems to be mainly motivated by its favorable economic function in a fast-growing dynamic

economy and aim chiefly at increasing over time the internal saving and investment for a long-term prosperity and growth of individual firms, by taking full advantage of the aforementioned potential merits of the employment system. Such merits together tend to reduce over time the share of labor costs in the respective firms' value-added, by expanding the per-worker value-added (or gross value-added divided by the number of workers) faster than the per-worker labor cost (or total compensations divided by the number of workers)

The above mentioned factors seem to explain a microeconomic rationale for the "lifetime employment" system. In addition, a rationale for the employment system from a macroeconomic point of view can include its potential functions to reinforce an economic-growth trend through greater investment activities, enhance competitive position in the international market of the modern-industry sector of the relevant economy, reduce productivity loss relevant to labor discontentment and strife, and induce some countercyclical economic activities through rather stable employment, production, and consumption. A further macroeconomic rationale can be found in the system's inclination toward enhancement of the economy's savings, to avoid an excessive inflation in the face of accelerating investment activities.

## CHAPTER 2

## A THEORETICAL DISCUSSION OF THE LIFETIME EMPLOYMENT SYSTEM

### A. An Intertemporal Consumption-Saving Framework

An average employer is partial or whole owner of a firm, or representative of the owner, implying that he has already committed a bundle of his productive resources (such as, financial, physical, human, and psychic resources) to the particular firm on a long-term basis. In order to make such a long-term commitment, and forgo present consumption, he must have a relatively low rate of time preference, as well as a relatively large sum of the productive resources. It is reasonable to argue, therefore, that such an employer has a lower time preference and higher income than a representative worker. Indeed, a low time preference may not be separated from a high earning capacity, as indicated by the studies of consumption and saving.[79]

79. Irving Fisher, The Theory of Interest, Kelly and Millman, New York (1954); Milton Friedman, A Theory of the Consumption Function, Princeton University Press, Princeton, N.J. (1957); and A. Ando and F. Modigliani, "The 'Life Cycle' Hypothesis of Saving, Aggregate Implications and Tests," American Economic Review, March, 1963. It should be noted that a low consumption propensity is not the same as a low time preference but they are closely interrelated, depending on the preferred degree of illiquidity.

After such a long-term commitment, the representative employer is naturally motivated to protect his vested interests in the firm. This protection tends to become easier, if his employees are also strongly interested in the firm's long-term prosperity and growth, i.e. if all the constituents of the firm share a common interest in the firm's future. One effective way to involve the workers in the long-term propsects of the firm in such a setting as Japanese economy is to practice the "lifetime employment" system, since it tends to encourage over time a community spirit, and hence identity and solidarity among all the firm's constituents.

Through practice of the "lifetime employment" system it becomes gradually known to the workers that their hard work, both in the current productive activities and in acquisition of advancing production techniques, tends to be rewarded over time by a higher current and expected pecuniary compensation (including the bi-annual bonuses and the lump-sum retirement allowance) and better welfare facilities, as well as by a long-term job security and a greater expected promotion opportunity along with the firm's growth and prosperity. These rewards, both current and potential, tend to induce and reinforce over time the

workers' identity with the firm and solidarity with the employer. The rewards in money, in kind and in psychic welfare, also tend to increase the present value of the respective workers' lifetime earnings, and the increasing present value, in turn, induces a decline in the workers' time preference closer to that of the employer. In addition, the workers' long-term interests in the particular firm grow, as the respective workers' seniority rises and their investment in the firm-specific human capital deepens.[80] These growing long-term interests also tend to lower the workers' time preference rates.

If the workers' time preference can be shifted over time closer to the employer's time preference, by adopting the "lifetime employment" system, it is likely that the change in the wage per worker (total wage compensations divided by the number of workers) relative to the change in the value-added per worker (gross value-added divided by the number of workers) may be significantly affected in a long duration of time. The impact of the employment practice upon the wage over time can be analysed with the use of

80. Skills acquired on the job tend to be firm-specific human capital under the practice of the "lifetime employment " system,in terms of its "pure" model. The reality of the practice, however, is somewhat more flexible.

the Fisherian intertemporal indifference schedules and budget constraints.[81] In order to facilitate a dynamic analysis, an interim period between Period O and Period Q, will be introduced in the intertemporal diagram. The analysis attempted in the following is of relations between the per-worker wage and the per-worker value-added over the interim period with or without the practice of the "lifetime employment" system.

A.1. Model 1

In order to simplify a graphical exposition, the most restrictive case will be taken up first, and the restrictive assumptions will be relaxed later. A first model (as a first approximation), then, will have the following assumptions:

(1) The representative employer has a lower rate of time preference than the representative worker.[82]

(2) The time preference of the representative worker adjusts over time toward that of the representative employer with adoption of the "lifetime employment."

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81. Irwin Fisher, The Theory of Interest, Kelly and Millman, New York (1954).

82. For simplicity, the representative employer's time preference is fixed over the interim period.

(3) All the indifference schedules, namely, those of the representative employer, the representative worker, and the representative income earners (both employers and workers inclusive) are of homogeneous degree one over the relevant interim period.

(4) The social discounting rate indicated by the slope of the intertemporal budget lines is constant over the relevant interim period.[83]

(5) The consumption per worker is equal to the wage per worker.[84]

(6) The value-added per worker grows at the same rate both for the "communal" firm and the growth-oriented "competitive firm.[85]

(8) The wage per worker in Period O is exactly the same both for all firms.[86]

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83. The budget line of Period Q, in comparison to that of Period O, must be somewhat flatter in reality, since the compounded interest between Period Q and the "future" (a fixed period in the future) tend to be less than that between Period O and the "future" (the same fixed period in the future) in this framework of analysis. This, however, is ignored here for simplicity of exposition.

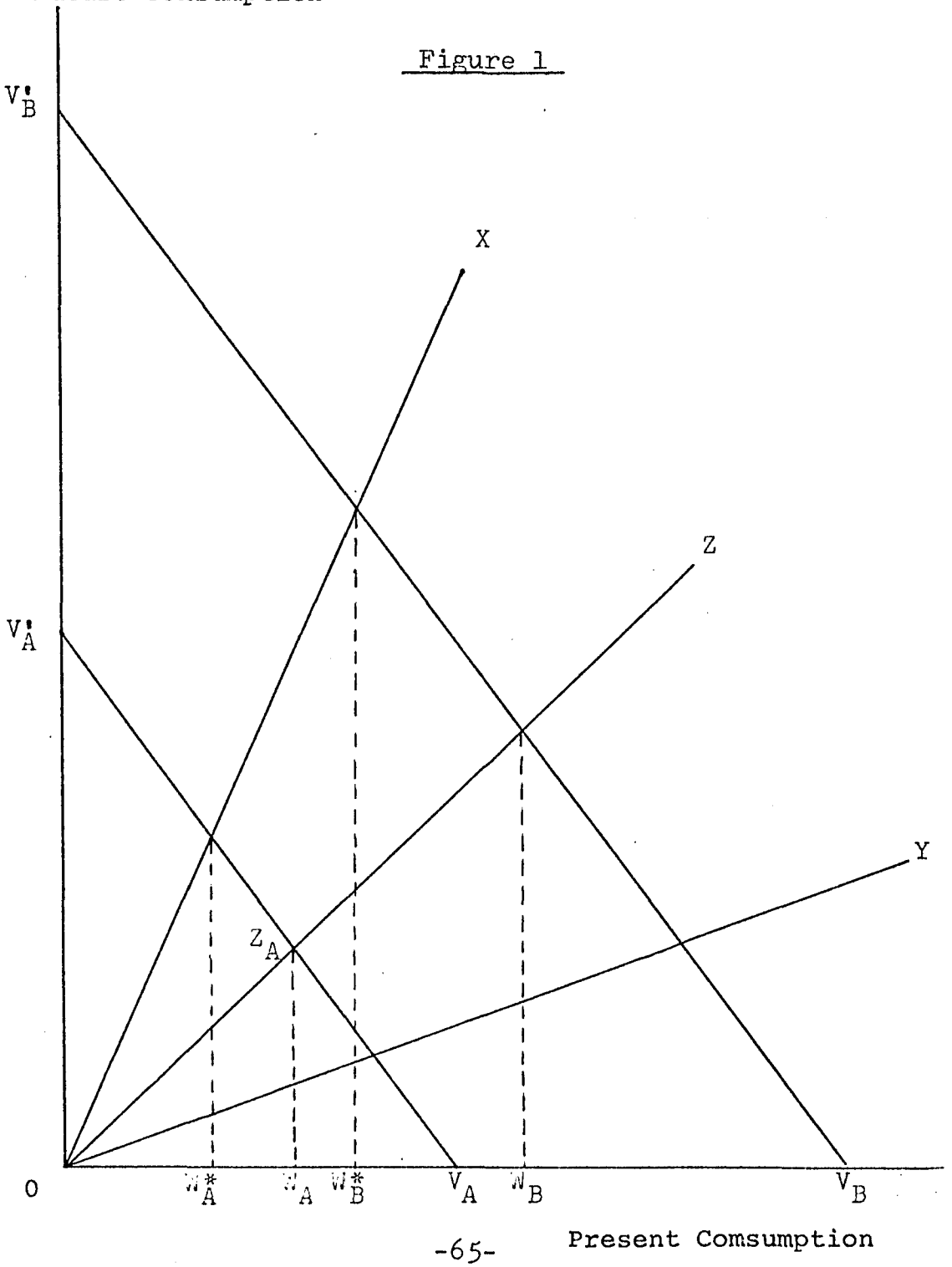
84. All savings and investments, namely, the per-worker value-added minus the per-worker wage, are made by the firms.

85. For convenience, the "communal" firm is defined to be a large firm practicing the "lifetime employment" system and the "competitive" firm, a small firm devoid of the practice.

86. Assumptions (7) and (8), together, assume away differences in labor quality and economies of scale.

In Figure 1, Ray X is postulated as the tangency points of a representative employer's inter-temporal indifference schedule with a variety of the parallel budget constraints, and Ray Y as the tangency

Figure 1



points of a representative worker's indifference schedule with the same variety of budget constraints. Likewise, Ray Z is assumed to represent the tangency points of a representative income- earner's[87] indifference schedule with the same variety of budget lines and the compromising points for the representative employer and the representative worker regarding the intertemporal allocation of the representative worker's consumption, namely, his wages in this model. For example, a tangency point along Ray Z, such as $Z_A$, represents a point determined in Period O for the intertemporal allocation of consumptions, namely, $W_A$ and $W_A'$.

As far as a representative "competitive" firm is concerned, Ray Z is assumed to remain reasonably fixed over the interim period. Ray Z, however, tends to gradually move counter-clockwise , as the representative firm adopts the "lifetime employment" and its representative worker's time preference shifts downward closer to that of its representative employer during the same time interval. The counterclockwise movement of Ray Z is gradual, due to the likelihood that there exist differences in speed among the

87. The "Income earners" are inclusions of employers and workers.

firm's workers for adjustment to the new employment practice. In an extreme situation, where the time preference of every worker adjusts completely to that of the representative employer, all the tangency rays, namely, Rays X, Y and Z, tend to overlap each other.

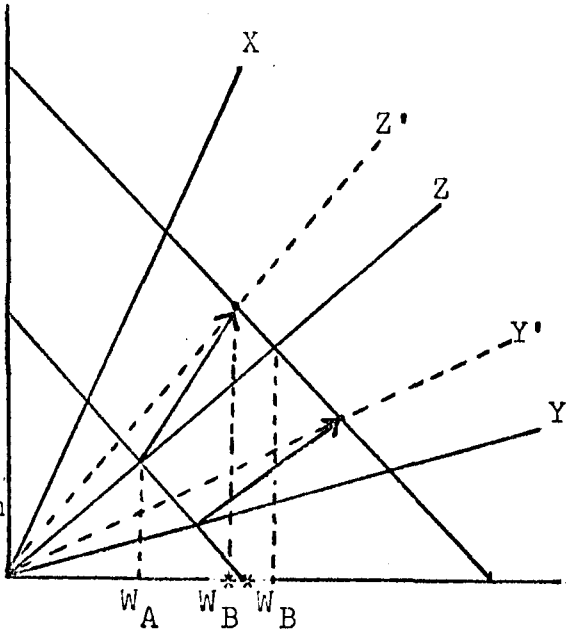
If the per-worker value-added grows from $V_A$ to $V_B$ over the interim period between Period O and Period Q, the per-worker consumption increases from $W_A$ to $W_B$, in the case of a representative "competitive" firm. In the case of the firm which adopted the "lifetime employment" prior to Period O (hereafter referred to as "communalized" firm), the per-worker consumption grows from $W_A^*$ to $W_B^*$ over the interim period.[88] When it comes to the firm, which adopts the "lifetime employment" over the interim period (hereafter referred to as "communalizing" firm), an increase in the per-worker consumption tends to be smaller than the other two cases, since the representative worker's time preference moves over the interim period toward that

88. An extreme situation, namely, the complete adjustment of the representative worker's time preference to that of the representative employer prior to Period O, is assumed here for simplicity.

of the employer.[89] In an extreme situation, where the former adjusts completely to the latter over the relevant period, the per-worker consumption only increases form $W_A$ to $W_B^*$.

If the value-added per worker is stagnant at $V_A$ over the interim period, the representative employer has little reason to adopt the "lifetime employment," since the presence of the seniority-based wage determination in the employment practice tends to increase the consumption share (which is equivalent to the wage share in the present model) in the firm's value-added. Then, under the stagnant condition, the case of the "communalizing" firm can

89. In a general case of the "communalizing" firm, the representative worker's time-preference rate tends to decline along with the counter-clockwise movement of its indicater from Y to Y'. Then, the firm's average time-preference rate is induced to decline along with the corresponding counter-clockwise movement of its indicator from Z to Z'. As a result, the per-worker consumption (or per-worker wage) increases over time from $W_A$ to $W_B^{**}$, where $W_B^{**} < W_B$.



be skipped. The consumption per worker in the case of the "competitive" firm tends to be stagnant at $W_A$. In the case of the "communalized" firm, however, the wage per worker tends to increase somewhat over the interim period, say, from $W_A^*$ to $W_A^* + e$,[90] due to a possible increase in the average seniority of the workers.[91]

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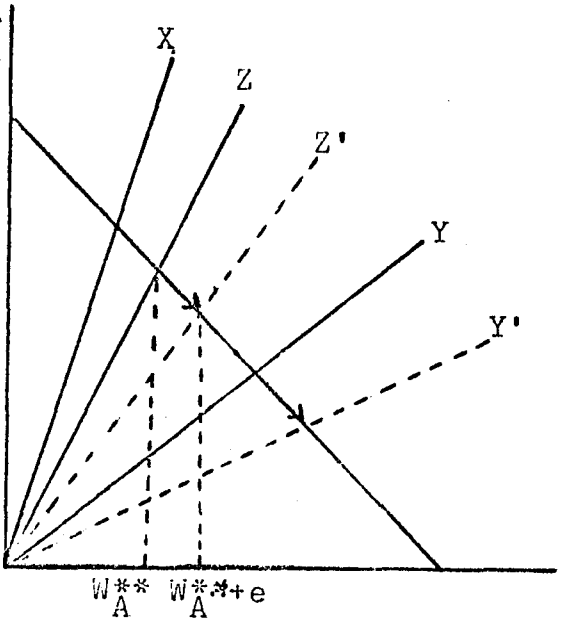
90. In the case of the "communalized" firm under the condition of stagnant value-added per worker, the representative worker's time-preference rate tends to increase along with the clock-wise movement of its indicator from Y to Y'. Then, the firm's average time-preference rate is induced to increase along with the corresponding clock-wise movement of its indicator from Z to Z'. As a result, the per-worker consumption (or per-worker wage) increases over time from $W_A^*$ to $W_A^*+e$ in an extreme case and from $W_A^{**}$ to $W_A^{**}+e$ in a more likely case, as depicted in the diagram.




91. An increase in the average seniority can be considered equivalent to a downward shift over time of the representative worker's time preference away from that of the representative employer, which is not shown in the figure.

Finally, if the value-added per worker declines over the interim period from $V_B$ to $V_A$, the representative employer has even less reason to adopt the "lifetime employment". Under this condition again the case of the"communalizing" firm can be ignored. The wage per worker for the "competitive" firm tends to decline from $W_B$ to $W_A$ in a strictly competitive sense.[92] In the case of the "communalized" firm, the wage per worker tends even to increase somewhat, say, from $W_B^*$ to $W_B^* + d$, due to a possible increase both in the average seniority and the average time-preference rate of the relevant workers.[93]

92. Even in a competitive labor market, some built-in resistance tends to exist against any wage-cut. Thus, it is more likely that the "competitive" wage remains about $W_B$ in the face of the declining value-added per worker. The use of $W_A$ here, which is an extreme case of the market-determined wage, is strictly for clear distinction between the "competitive" wage and the "communal" wage. Substitution of $W_B$ for $W_A$, however, does not affect the essence of the present analysis.

93. In the case of the "communalized" firm under the condition of declining value-added per worker, the representative worker's time-preference rate tends to increase even more than under the condition of stagnant value-added per worker, along with the clock-wise movement of its indicator from Y to Y'. Accordingly, the firm's average time-preference rate increases over time. as a result, the per-worker consumption (or per-worker wage) increases over time from $W_B^*$ to $W_B^*$=d in an extreme

All the above changes in the wage per worker (or the consumption per worker) are summarized relative to the respective changes over the interim period in the value-added per worker and presented in Table 1 for easy reference.

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case. In a more general case, the increase tends to be from $W_B^{**}$ to $W_B^{**}+d$, as shown below:

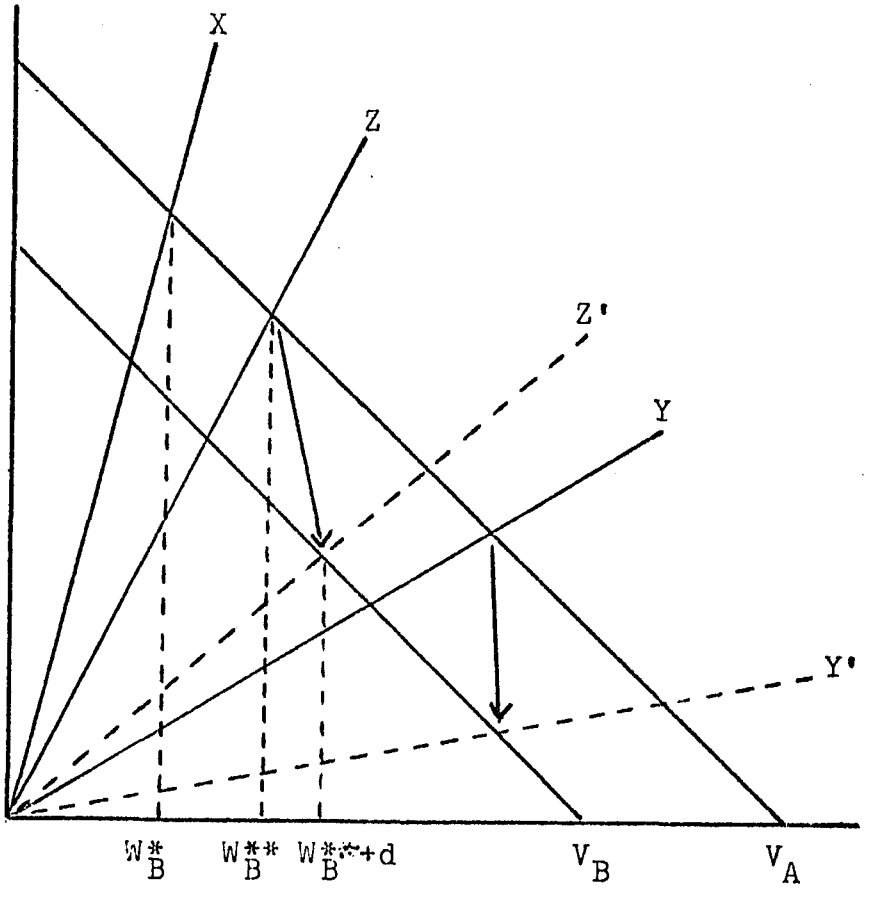


Table 1

| Type of firm / Value-added | "Competitive" | "Communalized" | "Communalizing" |
|---|---|---|---|
| Growing | $\frac{W_B}{W_A} / \frac{V_B}{V_A}$ | $=$ $\frac{W^*_B}{W^*_A} / \frac{V_B}{V_A}$ | $>$ $\frac{W^*_B}{W_A} / \frac{V_B}{V_A}$ |
| Stagnant | $\frac{W_A}{W_A} / \frac{V_A}{V_A}$ | $<$ $\frac{W^*_A+e}{W^*_A} / \frac{V_A}{V_A}$ | - - - - - |
| Declining | $\frac{W_A}{W_B} / \frac{V_A}{V_B}$ | $<$ $\frac{W^*_B+d}{W^*_B} / \frac{V_A}{V_B}$ | - - - - - |

These results can be simplified into a theoretical proposition for the comparison of the "competitive" and the "communal" firms:

First, let the "communal" firm represent both the communalized" and the "communalizing" firms:

Second, let (a) and (a*) be the respective ratios for the "competitive" and the "communal" firms of the wages per worker in Period Q to that in Period O: and

Third, let (b) and (b*) be the respective ratios for the"competitive" and the "communal" firms of the values-added per worker in Period Q to that in Period O.

Now, the following simple proposition emerges:-

(1) If the value-added per worker is growing over the interim period, then,

$$a/b > a^*/b^*, \text{ and}$$

(2) If the value-added per worker is stagnant or declining over the interim period, then,

$$a/b < a^*/b^*.$$

A.2. Model 2

Assumptions (7) and (8) are now relaxed so that different initial and final values-added per worker and wages per worker can be postulated for the two types of firms. The initial per-worker values-added for the average "competitive" firm and the growth-oriented "communal" firm are now indicated in Figure 2 by $V_A$ and $V_A^*$, and the initial per-worker wages by $W_A$ and $W_A^*+g$ (which is not shown in this diagram),[94] respectively. Together with the above relaxation, an implicit assumption, that both the "competitive" and the "communal" firms are operating in the same labor market, is also relaxed. This relaxation allows for a situation that the "communal" firm, which is generally a large firm, may buy labor resources in

94. In an extreme case of the "communalized" firm, the initial wage per worker is $W_A^*$, and the one for the "communalizing" firm is $W_B$. Thus, $W_A^*+g$ is located somewhere between the above two wages.

a differentiated labor market with some level of monopsonistic power.[95] Also, it allows for potentially different economies of scale existing between the "competitive" and the "communal" firms.

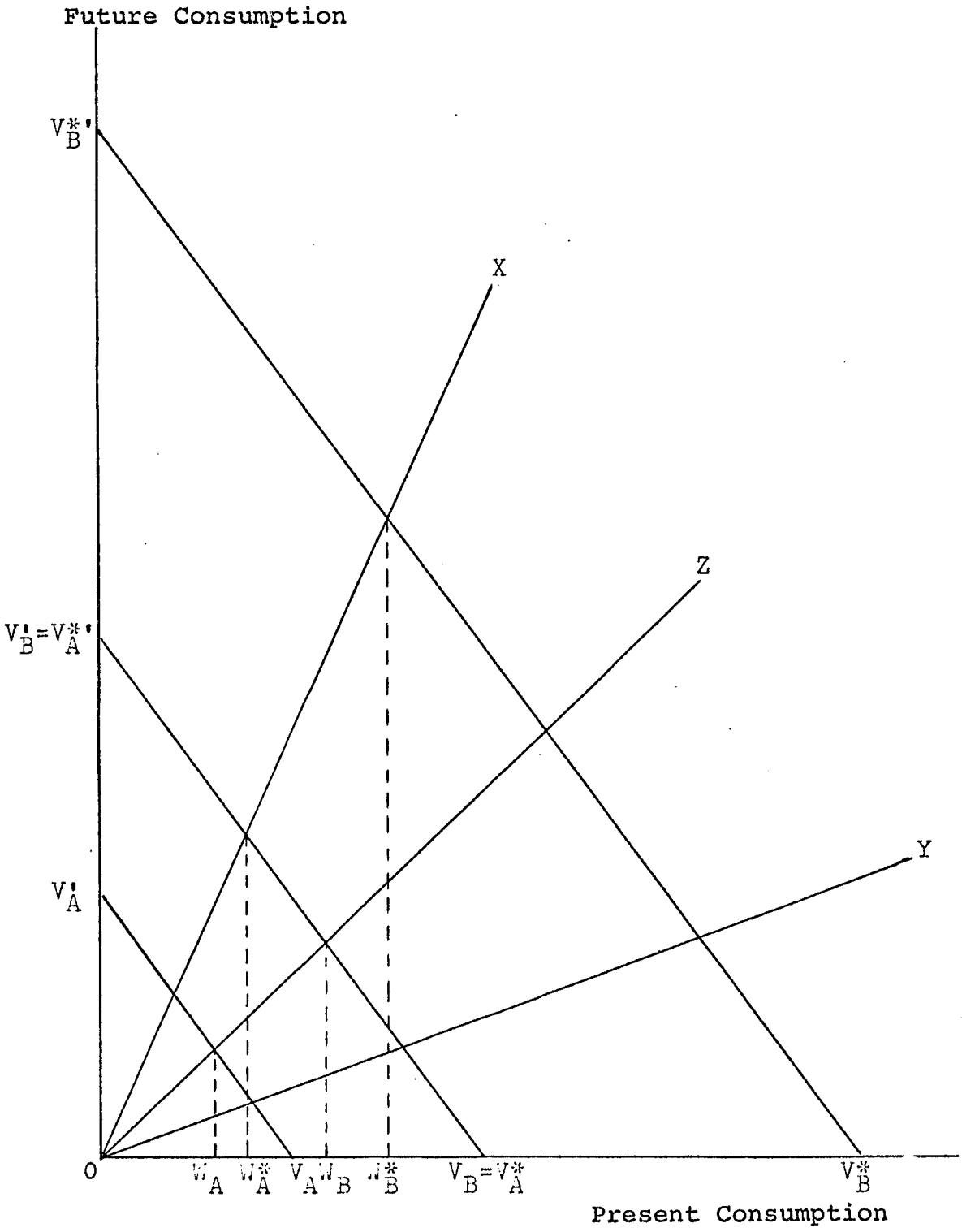
A graphical analysis, similar to the one for Model 1, regarding the changes in values-added and wages per worker is carried out for Model 2, and the results are summarized in Table 2. These results do not alter the proposition made above. Even if Assumption (6) is relaxed, and different growth rates of values-added per worker are postulated for the "competitive" and the "communal" firms, the proposition remains intact.

Table 2

| Type of firm / Value-added | "competitive" | | "communal" |
|---|---|---|---|
| Growing | $\frac{W_B}{W_A} / \frac{V_B}{V_A}$ | $>$ | $\frac{W_B^*}{W_A^*+g} / \frac{V_B^*}{V_A^*}$ |
| Stagnant | $\frac{W_A}{W_A} / \frac{V_A}{V_A}$ | $<$ | $\frac{W_A^*+g+e}{W_A^*+g} / \frac{V_A^*}{V_A^*}$ |
| Declining | $\frac{W_A}{W_B} / \frac{V_A}{V_B}$ | $<$ | $\frac{W_B^*+d}{W_B^*} / \frac{V_A^*}{V_B^*}$ |

95. This situation includes the case, in which an average worker in the "communal" firm is more productive than the counterpart in the "competitive" firm.

Figure 2

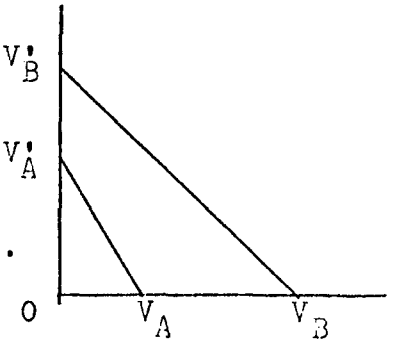

Future Consumption
$V_B^{*\prime}$
X
Z
$V_B'=V_A^{*\prime}$
Y
$V_A'$
0
$W_A$
$W_A^*$
$V_A$
$W_B$
$W_B^*$
$V_B=V_A^*$
$V_B^*$
Present Consumption

A.3. A General Model

Assumption (5), which has restricted the per-worker consumption to be equal to the per-worker wage, can also be relaxed without change in the proposition. A modified assumption can be stated that the average per-worker wage is proportional to the average per-worker consumption. Also, if other labor costs are roughly proportional to the wage cost, the average per-worker labor cost can be assumed to be roughly proportional to the average per-worker consumption. Further, assumption (4), which has fixed the social rate of discount over the interim period, can be relaxed. This relaxation now implies recognition of the different intertemporal compounded interests for different periods, such as Period 0 and Period Q.[96] This may also imply that the "communal" firm, which is, in general, larger and more capital-intensive than the

---

96. Let $V_A \sum_{t=0}^{T} (1 + r_{0T}) = V'_A$ and $V_B \sum_{t=Q}^{T} (1 + r_{QT}) = V'_B$, where $t = 0, 1, 2, \ldots, Q, \ldots, T$.
Then, $\sum_{t=0}^{T} (1 + r_{0T}) > \sum_{t=Q}^{T} (1 + r_{QT})$.



"competitive" firm, may have a different rate of return on investments (both in physical and human capitals) from one applicable to the"competitive" firms. This relaxation does not change the substance of the above proposition, either.

Finally, Assumption (3), which has stipulated all the intertemporal indifference schedules to be homogeneous degree one over the interim period, can now be to some extent relaxed: i.e. they must be consistent over the relevant period so that the tangency rays do not intersect one another within the relevant range. So far, Rays X, Y and Z are assumed to represent tangencies of the respective intertemporal indifference schedules with a variety of budget lines within the interim period. In a more general case, the representative employer (the representative worker or the representative income-earner) in Period O can be different from the one in Period Q, due to the possibility that business fluctuations over the interim period exert uneven effects on different employers (different workers or income-earners). If so, any one point on Ray X (Ray Y or Ray Z) can be interpreted as a median of the tangencies of all employers' (all workers" or all income-earners') indifference schedules with a specific budget line. Furthermore, any point

on Ray Z can be considered as a median tangency point of all employers and workers for allocation of the average worker's "present" and "future" consumption or wages, subject to the relevant budget line. Ray Z, then, moves counter clockwise over time, as practice of the "lifetime employment" becomes more general in the economy. Conversely, it moves clockwise over time, as the practice becomes less general or as an increasing proportion of the labor force is losing faith in the practice. These modifications do not affect the generality of the proposition.

In addition to the above modifications, it is important to note the effect of general income growth and that of "passing time" on the tangency rays. As national income per worker increases over the interim period between Period O and Period Q, the respective incomes of the representative employer and the representative worker also tend to increase over the same period. As a result, the respective rays (Rays X, Y and Z) tend to shift counter-clockwise and <u>arc</u> concave upward within the relevant ranges. This "income" effect on the rays, however is partially or entirely offset by the effect of "passing time" on the budget constraints. The passage of time, as mentioned above, tends to flatten the budget lines,

shift the tangency points downward over time and make the tangency rays concave downward. Thus, Rays X, Y and Z can be considered to remain reasonably straight. Even if they were concave upward or downward, the substance of the theoretical proposition would not be affected.

After all the above relaxation of the restrictive assumptions, our general model retains the first two assumptions intact, which are in fact the essence of the explanation as to why the "lifetime employment" has come to be practiced by most of the large firms in Japan. Our initial model can still be used as a simplified expression of the general model, and the initial theoretical proposition can now be considered as general proposition, which is restated as follows:-

(1) If the value-added per worker is growing over the interim period, then, $a/b > a^*/b^*$, and

(2) If the value-added per worker is stagnant or declining over the interim period, then, $a/b < a^*/b^*$.

This general proposition can be interpreted as follows. If the value-added per worker is growing over a long duration of time, the consumption per worker (or the wage per sorker) tends to grow at a similar rate in the case of the "competitive" firm

and at somewhat lower rate in the case of the "communal" firm. As a result, the percentage share of the consumption per worker (or the wage per worker) in the value-added per worker tends to decrease over time in the case of the "communal" firm faster than in the case of the "competitive" firm. In other words, the percentage share of the internal saving and investment relative to the firm's growing value-added expands faster at this representative "communal" firm than at a representative "competitive" firm.

If, on the other hand, the value-added per worker is stagnant or declining over a long period, the consumption per worker (or the wage per worker) again tends to follow the trend of the value-added per worker at a similar rate in the case of the "competitive" firm and at somewhat slower rate in the case of the "communal" firm. As a consequence, the percentage share of the consumption per worker (or the wage per worker) in the stagnant or the declining value-added per worker tends to increase over time in the case of the "communal" firm faster than the "competitive" firm. To put it differently, the percentage share of the internal saving and investment relative to the firm's value-added shrinks faster at this representative "communal" firm than at a representa-

tive "competitive" firm.

The above differences among the "competitive and the two types of "communal" firms indicate different growth trends of these firms. This implication will be explored in the following chapter, together with other possible implications.

Also the differences in the behavior of wage shares (or consumption shares) among the three types of firms are directly related to the corresponding changes in the average time-preference rates of the firms. This direct relationship will be explicitly dealt with in a later chapter (Chapter 3, Section D)

B. A Bilateral-Monopoly Framework

The "lifetime employment" system tends to discourage inter-firm mobility of labor and industry-wide labor organization, on the one hand. While, on the other hand, the employment system tends to enhance the workers' identity with their respective "communal" firms, by letting the former's well-being be closely tied with the latter's growth and prosperity. As a result, the work force of an individual"communal" firm is inclined to organize itself in a manner uniquely suited to the situation relevant to the "lifetime employment" system. Such a form of organization is the so-called "enterprise" union.

An individual "enterprise" union, which is solely composed of the relevant firm's regular labor force, can be considered as "monopolist" of the relevant labor services in the context of the intra-firm labor market. Its counterpart, namely, the management, is the sole employer of the firm's regular workers and, hence, can be deemed as "monopsonist" of the labor services in the same context. Thus, under the "life-time employment" system, a bilateral-monopoly relationship tends to prevail within the individual "communal" firm, for determination of labor quantities, wage levels, wage shares, etc.

When it comes to determination of labor quantities, it is tautology that a bilateral monopoly, in the absence of collusion or cooperation between the monopolist and the monopsonist, tends to employ a smaller quantity than a competitive labor market, at given demand and supply conditions.

It is, however, well known that no similar comparison is possible a priori, with respect to the wage levels (hence, the wage ratios) between the bilateral monopoly and the competitive market. This sort of comparison requires additional assumptions regarding the respective "bilateral-monopoly" firms, as to whether a common interest in the long-term mutual

benefits is established between the monopolist and the monopsonist, and what growth prospects the relevant firm has in the long run. Thus, a simple diagramatical comparison of the wage levels and the wage ratios will be attempted below with the following assumptions:-

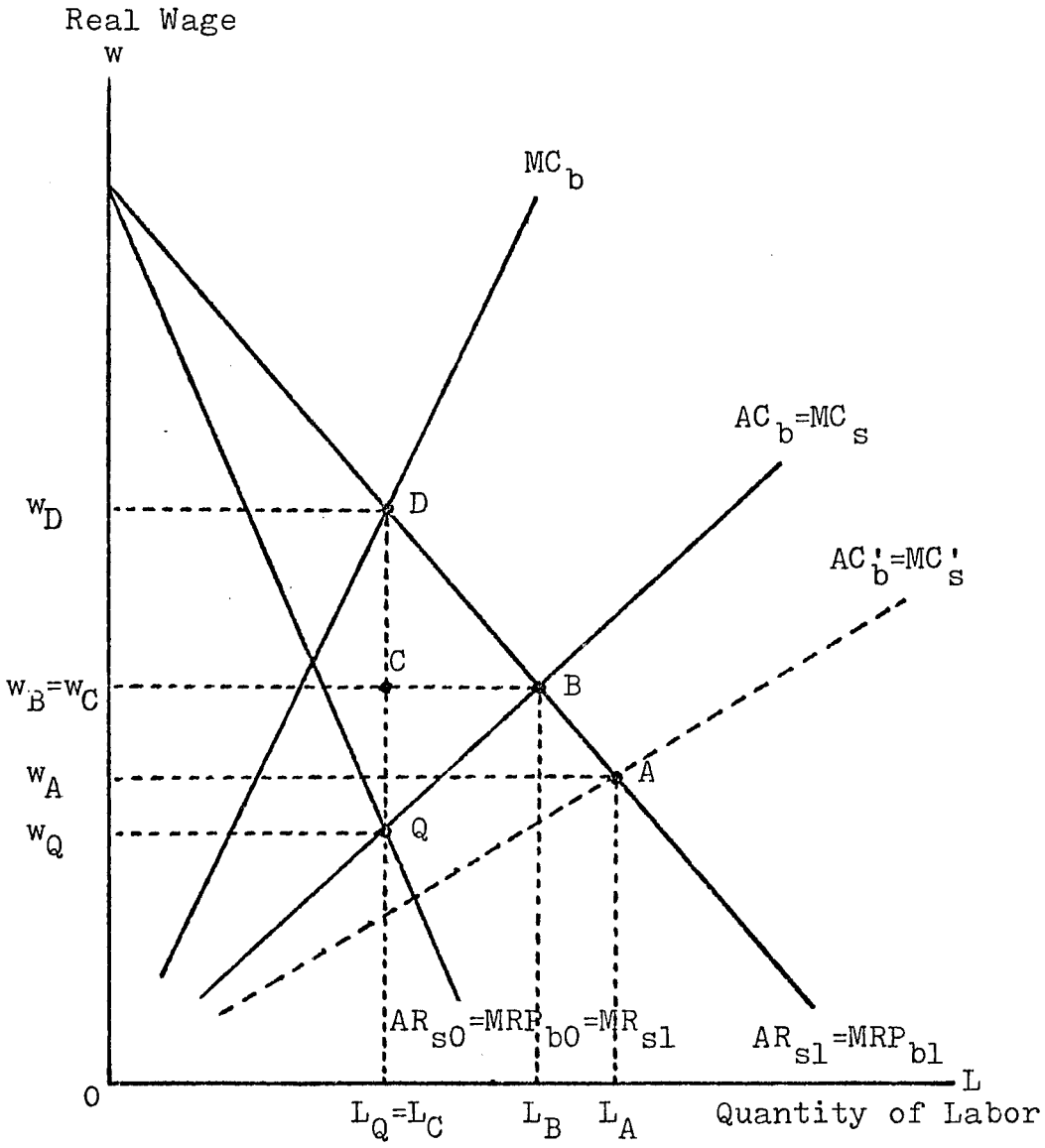
(1) Three representative firms compared here have the competitive employment practice in Period 0, and one of them (or the "competitive" firm) maintains the competitive practice throughout the interim period (or the period between Period 0 and Period 1), while the remaining two adopt the "lifetime employment" system in the early interim period.

(2) The initial demands for the three firms' products and their growth ratios over the interim period are exactly the same.

(3) The "quantitative" supply conditions, namely, the stocks of the relevant labor, capital and technology, are exactly the same for the three firms over the interim period.

(4) After adoption of the "lifetime employment" practice, the two firms (or the "communal firms) anticipate different demand prospects beyond the interim period; one expects a rapid growth and the other stagnation. Then, the former refers

Figure 3


Real Wage
w
MC b
AC b=MC s
AC' b=MC' s
w D
D
C
w B=w C
B
w A
A
w Q
Q
AR s0=MRP b0=MR s1
AR s1=MRP b1
0
L
L Q=L C
L B
L A
Quantity of Labor

the common interest tends to lower the seller's (or the monopolist's) marginal cost curve from $MC_S$ to $MC_S'$ for a better cooperation and coordination among the workers, as well as between the management and the labor, and a faster embodiment in the labor of the existing technology are likely to be induced by the common interest. These favorable effects of the common interest tend to lead to a new equilibrium point, Point A, and lower wage level., $w_A$.

Finally, the relatively stagnant firm which practices the "lifetime employment" system tends to follow a similar course in the early interim period like the growth-oriented "communal" firm, in terms of the wage determination. Due to the subsequent pessimism about the firm's future prospects, however, the relatively stagnant "communal" firm may end up with a typical wage determination of the bilateral monopoly: i.e., the final wage level is located somewhere between Point Q (the monopsonist's profit maximizing point) and Point D (the monopolist's profit maximizing point), depending upon the relative strength of the bargaining positions relevant to the management and the"enterprise" union. For the diagramatical simplicity, let the bargained wage level be $w_C$, which is equal to $w_B$ in the figure.

From the above simplified analysis, it is apparent that the wage growth ratio of the growth-oriented "communal" firm tends to be lower than those of the "competitive" firm and the relatively-stagnant "communal" firm. Though less apparent, it is not hard to see also that the growth of the per-worker wage relative to that of the per-worker value-added (a/b or a*/b*) tends to show the following order among the three firms during and beyond the interim period:-

Lowest: the growth-oriented "communal" firm

2nd Lowest: the "competitive" firm

Highest: the relatively-stagnant "communal" firm.

In the present example, both the "competitive" firm and the relatively-stagnant "communal" firm show the same rate of wage growth for the expositional convenience, but the per-worker wage for the former tends to grow proportionally with its per-worker value-added, keeping a rather steady wage/value-added ration, while the per-worker wage of the latter firm tends to move toward Point D[97] as the worker's average duration of service increases over time, raising the wage/ value-added ratio. Thus, it can be argued that, when the

97. The per-worker wage tends to move faster toward Point D, when the relevant economy is growth-oriented: the initial wages for new school-graduates in the economy are likely to grow faster to increase the average wage level of the relevant firm's labor force.

"lifetime employment" system is practiced by a typically growth-oriented firm, its wage/value-added ratio tends to decline over time more than a similarly growth-oriented "competitive" firm; while on the other hand, when the employment system is practiced by a typically stagnant firm, its wage/value-added ratio tends to grow over time more than that of a similarly stagnant "competitive" firm.

If the technological constraint is removed so that new technological advance can be embodied both in human and physical capitals over time, together with an allowance for input-combination flexibility, the advantage of practicing the "lifetime employment" by the growth-oriented firm tends to grow under the condition of a keen competition in the product market. Now, an incessant shift downward of the monopolist's marginal cost curve $MC_s$ (or the monopsonist's average cost curve $AC_s$) becomes possible, since labor productivity tends to improve along with frequent injections over time of advancing technology and growth in the capital/labor ratio, both of which tend to be eagerly supported by the common interest in a long-term growth and prosperity of the respective firm. If is also likely that the average wage in a rapidly growing firm grows faster than that of the others, even with a lowering marginal cost curve of the seller and, hence, the wage share, if

demand for the relevant commodity grows sufficiently faster than demand for the other goods.

C. An Interdependent-Utility Framework

Since labor and management jointly expects future benefits from the "lifetime employment" system, such employment practice can be treated like public goods. A common interest of labor and management in adoption and reinforcement of the employment practice for future growth and prosperity of the relevant firm seems to concur with Samuelson's definition of public good: "Public good is one that enters two or more persons' utilities.[98] Also, it is well-known that public good refers to potentiality of joint benefits rather than actual rendering of such benefits to individuals and stipulates non-rivalry and non-excludability in its consumption.[99] All these concepts regarding public good fit very well the reality of the "lifetime employment" system.

98. Paul Samuelson, "Pure Theory or Public Expenditures and Taxation," Public Economics, edited by J. Magolis and H. Guitton, St. Martin, New York (1969), p. 108.

99. With respect to all those who are covered by the "lifetime employment" system, namely, the management personnel and the regular workers, the conditions of "non-rivalry" and"non-excludability" are fully applicable.

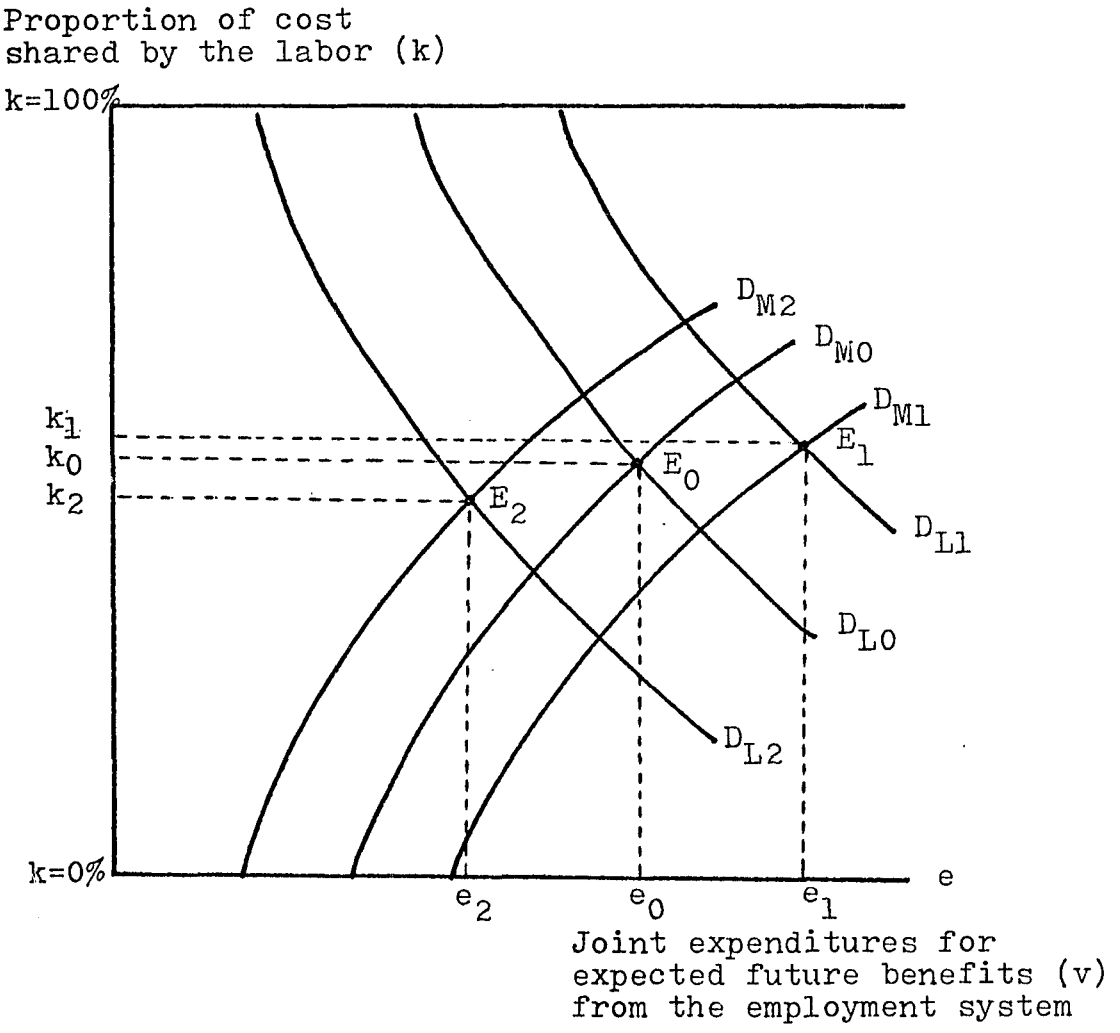
In the following, a diagramatical approach,[100] which was first utilized by Erik Lindahl, will be applied to the present discussion, as depicted in Figure 4. The horizontal axis of the figure measures current joint-expenditures for expected future joint-benefits from the employment practice. The "current joint-expenditures" here refer to the opportunity cost of the current postponement of potential current consumption by both labor and management. More specifically, they refer to the opportunity cost of wage-postponement out of the current potential wage share and dividend-postponement out of the current potential profit share. Further, the "current joint-expenditures" (e) shown on the horizontal axis are meant to be a proxy for potential and unknown future benefits from the employment practice.

On the other hand, the "expected future joint-benefits" from the employment practice refer to jointly expected long-term benefits in terms of present value (v), which can be expressed as;

$$v_i = \sum_{i-1}^{i=n} \frac{P.B.}{(1+r)^i}$$

100. Erik Lindahl, "Just Taxation--- A Positive Solution", Classics in the Theory of Public Finance, edited by Richard A. Musgrave and Alan T. Peacock, Macmillan, New York (1967), pp. 168-176; and Richard A. Musgrave and Peggy B. Musgrave, Public Finance in Theory and Practice, McGrow-Hill, New York (1973), p. 59.

Figure 4


Proportion of cost
shared by the labor (k)
k=100%
k=0%
$k_1$
$k_0$
$k_2$
$D_{M2}$
$D_{M0}$
$D_{M1}$
$D_{L1}$
$D_{L0}$
$D_{L2}$
$E_2$
$E_0$
$E_1$
$e_2$
$e_0$
$e_1$
e
Joint expenditures for
expected future benefits (v)
from the employment system

where (P) represents a relevant degree of certainty with respect to future benefits, (B) a relevant magnitude of long-term benefits, (r) a relevant interst rate, and (i) a relevant number of future employment years ($i = 1, 2, \ldots, n$). This formulation implies that an increase in P, B and i, or decline in r tends to improve the present value of expected long-term benefits from the "lifetime employment" system.

The vertical axis of Figure 4 measures a fraction (k) of the unit cost (C), which is the cost currently incurred for potential future benefits from the employment practice. The respective fractions, such as, $k_0$, $k_1$ and $k_2$, represent the respective proportions of the given unit cost shared by the firm's labor (L) and management (M), which are determined by the respective intersections ($E_0$, $E_1$ and $E_2$) between the labor's demand curves ($D_{LO}$, $D_{L1}$ and $D_{L2}$) and the management's offer curves ($D_{MO}$, $D_{MI}$ and $D_{M2}$). The management's offer curves are nothing but its demand curves drawn upside down. The management's shares of the unit cost are $(1-K_0)$, $(1-k_1)$ and $(1-k_2)$, respectively.

The initial equilibrium point ($E_0$) represents establishment of the common interest between the labor and the management, by adoption of the "lifetime employment" system. At this equilibrium point the

labor and the management make a joint-expenditure amounting to $e_0$, of which they bear the cost fractions $k_0$ and $(1-k_0)$, respectively. A shift of the equilibrium point to the right ($E_1$, for instance) implies a strengthening of the common interest, a greater optimism for future benefits, higher joint-expenditures ($e_1$) and a greater share of the current value-added allocated to saving and investment. The rightward shift of the equilibrium point also indicates a greater expected future benefits ($P \cdot B$) and a growth in the average duration of employment ($j$), owing to the enhanced joint efforts of labor and management. Then, a rightward shift of the equilibrium point represents the case of the growth oriented "communal" firms. Incidentally, although the figure indicates an increase in the labor share of the current expenditures ($k_1$), the share can remain the same, increase and decrease, depending upon the relative rightward shifts of the respective demand curves.

On the other hand, a leftward shift of the equilibrium point ($E_2$, for example) implies the opposite, namely, a weakening of the common interest, a diminished optimism for future benefits, lower current joint-expenditures ($e_2$), and a smaller share of the current value-added allocated to saving and investment.

Again, the relative shares in the current joint-expenditures between the labor and the management depend on the relative leftward shifts of the respective demand curves. In this case, the expected future benefits (P·B) and the average employment duration(i) tend to decline over time. Then, a leftward shift of the equilibrium point indicates the case of the declining or stagnating "communal firms".

It is quite clear from the above alternative approach that both labor and management are inclined to contribute to maintenance and reinforcement of the "lifetime employment" system for the firm's growth and prosperity, more in the case of the growth-oriented "communal" firms than in the case of the declining or stagnating "communal" firms. This analysis also suggests that the average duration of employment (i), the degree of certainty in future benefits (P) and the magnitude of future benefits (B) are all directly related to enhancement or disintegration of the common interest in the expected benefits of the "lifetime employment" system, and, hence, the rise or decline of the saving-investment share in the firm's value-added. In fact, all these important factors, namely, P, B and i, tend to move hand in hand with enhancement of the long-term common interest and growth of the saving investment share. Therefore,

there is a chance of explosive upward movement of all these together, as far as microeconomic viewpoint is concerned, until the trend growth rate of demand for the firm's product starts to decelerate. An opposite situation tends to follow, however, once a dismal view of the firm's future prospects is firmly established among the firm's constituents.

Then, the "lifetime employment" system, while its favorable effects last, tends to have a function to increase the average duration of employment, the probability and magnitude of long-term benefits, and attract the joint contribution toward a greater saving-investment share in the firm's value-added, over time.

## CHAPTER 3

## EMPIRICAL OBSERVATIONS

The simple theoretical proposition mentioned above is derived from the equally simple analytical framework, in which the multi-faceted socio-economic institution, namely, the "lifetime employment" system, is linked to economic theory-structure by means of a taste variable, namely, changes in time preference especially of workers. Naturally, only the growth-oriented firms tend to be interested in the practice of "lifetime employment" system, and, when the employment practice is adopted by such firms, the time preference of the representative worker tends to fall closer to that of the representative employer. This shift of the average time preference tends to induce a favorable turn of events for further growth of such firms, by enhancing their potential savings, capacity of self-financed investment, and credibility for outside borrowing. Such growth trend is likely to continue as long as demand for the relevant commodities grows. (It becomes also highly probable for the growth-oriented firms to develop new products for which growth of demand is anticipated.)

Once the rate of growth in demand for the relevant goods starts to stagnate, the average time

preference tends to rise, mostly due to a reversal shift of the representative worker's time preference. This shift tends to give rise to a vicious circle over time against the respective firms, by increasing their wage burden and reducing their saving capacity.

Viewed from a macroeconomic angle, the consumer taste undergoes changes as an economy develops: the consumer becomes more attracted to some new goods than the old ones. As demand for the relevant commodities increases, some potential producers become also lured into the market. At this stage of the respective commodity cycles, a cost-reducing device becomes increasingly attractive to the relevant producers for the purpose of becoming potential winners over the foreseeable horizons of the respective commodity cycles. In the meantime, many current workers and potential workers tend to be interested in a long-term security of employment in the face of the oscillating economic activities, which are often found in the growth-oriented free-enterprise economies. This desire of a long-term job security tends to be greatly reinforced by their past experience of a massive unemployment (such as the case of the pre-war Great Depression in Japan and the case subsequent to the Japanese defeat).

The circumstances during the first decade subsequent to the Japanese surrender indicate a large-scale transition from the emphasis on the light industries to the

underlining of the heavy industries on one hand and a massive labor movement demanding job security and minimum life-supporting wages based on ages and length of service on the other hand. Under these circumstances an employment practice

such as the "lifetime employment" system becomes an opportune expediency to both the relevant entrepreneurs and the workers. Once this employment system is adopted by the growth-oriented large firms, the other not-so-growth-oriented large firms and the growth-oriented small/and medium-size firms tend to be compelled to adopt or simulate the employment practice for successful recruitment of high achievers directly from schools. Also, like the Japanese economy of the post-war era, if an economy is growth- oriented, meaning that both the aggregate demand and supply are growing rapidly for a long period of time, the practice of the "lifetime employment" system, especially in its growth sector, tends to accelerate the rate of economic growth over time.

At this point of the discussion, it becomes necessary to make a further elaboration of the so-called "lifetime employment" system, particularly about the extent of its coverage among workers and the extent of its responsiveness to business fluc-

tuations, since so far only a simple model of the "lifetime employment" system has been dealt with, for the purpose of building a simple and straight-forward analytical framework for the employment practice.

## A. Further Elaboration of the "Lifetime Employment" System

### A.i. Extent of Coverage

The 'lifetime employment" system is, by no means, a general employment practice in Post-War Japan. It is primarily practiced by government agencies, the large firms (which employ 1,000 or more regular workers) and part of the medium-size firms (which employ between 100 and 999 regular workers). According to a 1972 survey,[21] about 35 per cent and 25 per cent of all male employees in the manufacturing sector were employed by the large and the medium-size firms, respectively; and, for non-agricultural sector as a whole, the figures were 28 per cent and 21 per cent, respectively. This implies that, if not all these male workers were covered by the employment practice, a significant minority of male workers in the economy tended to enjoy the benefits of the "lifetime employment" system. As far as the small

101. Bureau of Statistics, Office of the Prime Minister, Annual Report on the Labor Force Survey, 1972, p. 126.

firms (which employ less than 100 workers) are concerned, the practice is largely in question. An actual practice involves more than a declaration by the respective employers as to adoption of such an employment system. Unless a firm has, and is judged by its current and potential workers to have, the capability to fulfill its responsibility under the employment arrangement over a long period of time, at least as long as the duration of the current workers' tenure, the firm cannot in reality take advantage of the benefits from the "lifetime employment" system. Thus, only a tiny proportion of the small firms, which has a history of sustained growth and strong growth potential in the future, is deemed capable to practice the employment arrangement in a real sense.

An examination of Table 3, which compares male workers' monthly wages in the manufacturing sector based on ages of workers and sizes of firms, may reveal potential support for the above statement. As far as the large firms are concerned, the average wages indicate a positive correlation with ages up to the retirment age, which is usually 55. On the other hand, the average wages in the small firms tend to be generally lower for each age group than those in the large firms and positively correlated with ages

Table 3

WAGE DIFFERENCES BASED ON AGE OF WORKERS & SIZE OF FIRMS (yearly wages)

(Unit: 1,000 of current Yen)

| CLASS AGE GROUP | LARGE FIRMS | | | | | SMALL FIRMS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1970 | 1972 | 1974 | 1975 | 1976 | 1970 | 1972 | 1974 | 1975 | 1976 |
| under 17 | 29.3 | 39.8 | 61.2 | 65.9 | 72.8 | 28.7 | 37.0 | 56.9 | 62.8 | 68.7 |
| 18 -- 19 | 35.4 | 47.5 | 73.8 | 82.5 | 88.0 | 33.9 | 43.0 | 66.1 | 73.5 | 78.4 |
| 20 -- 24 | 42.0 | 56.8 | 87.7 | 96.3 | 103.3 | 42.7 | 54.6 | 82.6 | 91.6 | 99.0 |
| 25 -- 29 | 53.9 | 71.0 | 107.8 | 119.3 | 129.2 | 54.5 | 68.6 | 101.8 | 112.7 | 124.3 |
| 30 -- 34 | 65.2 | 85.9 | 132.0 | 146.8 | 159.8 | 61.7 | 77.7 | 119.0 | 131.4 | 144.8 |
| 35 -- 39 | 75.3 | 97.0 | 151.3 | 167.3 | 182.1 | 63.9 | 81.8 | 124.2 | 138.9 | 153.4 |
| 40 -- 44 | 88.7 | 112.0 | 164.3 | 182.2 | 199.4 | 64.6 | 80.7 | 123.3 | 137.8 | 153.8 |
| 45 -- 49 | | | 179.2 | 197.2 | 212.8 | | | 120.6 | 133.2 | 149.1 |
| 50 -- 54 | 93.6 | 118.3 | 187.5 | 211.1 | 227.9 | 59.9 | 74.9 | 117.2 | 131.8 | 144.2 |
| 55 -- 59 | | | 159.8 | 182.7 | 202.5 | | | 106.4 | 120.2 | 134.5 |
| 60 & over | 52.4 | 67.2 | 103.7 | 122.2 | 140.2 | 48.7 | 61.3 | 92.9 | 105.7 | 117.4 |

source: The White Paper on Labor, appendix, p. 43.

only up to about the prime ages of working life. These different trends of wages between the two types of firms tend probably to reflect the practice of the "lifetime employment" system more significantly among the large firms than among the small firms, since wage determination based largely on ages and length of service, which is one of the major characteristics of the employment practice, can be detected from the wage-age relations for the large firms.

Other probable support may be found in a comparison of the "regular" workers' average length of service between the large and the small firms in manufacturing sector. This comparison is provided in Table 4. The message of the table is clear: the average duration of service of the large-firm workers is invariably and significantly longer than that of the small-firm workers. One caution, however, is in order in the interpretation of the data: all data include figures for female workers and "temporary regular" workers. Female workers in the large firms are conspicuously excluded from the coverage of the "lifetime employment" system. They are often expected to quit at about the age of 25, namely, the average age of their marriage, and, as a result, only a very small proportion of women outside the public sector

Table 4 AVERAGE DURATION OF SERVICE

(Unit: year)

| Industry | 1960 | | 1965 | | 1970 | | 1973 | |
|---|---|---|---|---|---|---|---|---|
| | large firms | small firms | large firms | small firms | large firms | small firms | large firms | small firms |
| Total Manufacturing | 8.3 | 4.3 | 8.3 | 4.7* | 9.1 | 6.1 | 10.6 | 6.6 |
| Transport Equipment | 9.8 | 4.1 | 9.1 | 4.5* | 9.1 | 5.9 | 9.7 | 6.4 |
| Precision Instruments | 7.4 | 4.4 | 7.2 | 4.6* | 8.5 | 5.9 | 9.3 | 6.6 |
| Electrical Machinery | 6.2 | 3.3 | 6.7 | 3.9* | 7.2 | 4.6 | 8.6 | 5.0 |
| Ordinary Machinery | 9.0 | 4.4* | 8.9 | 5.2* | 9.9 | 6.5 | 12.4 | 7.2 |
| Chemical Products | 10.1 | 5.0 | 10.1 | 5.2* | 11.4 | 6.6 | 11.9 | 6.9 |
| Printing & Publishing | 10.5 | 5.1* | 10.7 | 4.9* | 11.4 | 6.7 | 12.6 | 6.9 |
| Paper & Pulp | 9.8 | 4.2 | 10.6 | 4.6* | 11.8 | 6.2 | 9.7 | 6.9 |
| Rubber Products | --- | --- | 6.2 | 5.0* | 7.8 | 5.5 | 9.0 | 6.4 |
| Textiles | 5.8 | 4.1 | 5.8 | 4.5* | 6.8 | 6.1 | 8.0 | 6.9 |
| Iron & Steel | 9.5 | 4.4 | 10.0 | 5.6* | 11.8 | 7.3 | 13.0 | 8.0 |
| Nonferrous Metals | 10.2 | 4.9 | 9.8 | 5.7* | 10.6 | 6.4 | 11.2 | 7.5 |
| Fabricated Metal Products | 7.6 | 3.9* | 7.1 | 4.6* | 7.4 | 5.8 | 7.9 | 6.5 |
| Foodstuffs | 7.6 | 4.4* | 6.8 | 4.4* | 9.3 | 6.3 | 9.7 | 6.7 |
| Glass & Ceramics | --- | --- | 6.2 | 5.0* | 7.8 | 5.5 | 9.0 | 6.4 |

Large firms (more than 1,000 employees); Small firms (between 10 and 99 employees)
* Small firms(between 30 and 99 employees)
Source: Nippon Tokei Nenkan (Japan Statistical Yearbook), Bureau of Statistics, Office of the Prime Minister, Tokyo, for respective years.

enjoys the benefits of the employment practice.[102] Then, most of female workers in the large firms are treated as workers with the status in-between the "permanent regular" and the "temporary regular" workers, according to Taira's classification.[103] Thus, due to the inclusion of female workers among the large-firm workers, the average length of service tends to be understated as far as the "permanent regular" workers are concerned. Another understatement comes from the inclusion of the "temporary regular" workers. This category of workers and the so-called "casual" workers composed of part-time, seasonal, and day laborers, together with employees of subcontractors, are also excluded from coverage of the "lifetime employment" system, except for some from the subcontractors, who are classified as "permanent regular" workers by their respective subcontractors. Then, benefits of the

102.- Walter Galenson and Konosuke Odaka, "The Japanese Labor Market," Asia's New Giant, ed. by Hugh Patrick and Henry Rosovsky, The Brookings Institution, Washington, D.C. (1976), pp. 615-616. Also, see: Nobuko Takahashi, "Women's Wages in Japan and the Question of Equal Pay," International Labor Review, (Jan. 1975), p. 57.

103. According to Koji Taira, Economic Development and Labor Market in Japan, Columbia University Press, New York (1970,p.180,a firm's work force is first classified into"casual"and "regular" workers. The "casual workers are employed on a day-to-day basis or for less than thirty consecutive days. The"temporary regular"workers are employed for more than thirty days but with a specific term of contract. The "permanent regular" are those with tenure lasting to the retirement age.

employment practice are limited only to the "permanent regular" workers tend to coincide with those who were employed directly from their respective schools and members of their respective enterprise unions.[104]

From the above-mentioned differences of service duration between the workers employed by the large and the small firms it can be interpreted that the "lifetime employment" system is more frequently found among the large firms than among the small ones, on a rather reasonable assumption that the average length of service tends to be positively affected by the employment practice. Also the tendency apparent in Table 4 that the average duration of service for the workers of both the large and the small firms grew more conspicuously between 1970 and 1973 can be interpreted as follows:

(a) Due to the prolonged recession over the period, the proportion of the younger "permanent regular" workers (who had a relatively short duration of service) to the older "permanent regular" workers (who had a relatively long period of service) declined, as fewer new "permanent regular" workers were employed. In the meantime, voluntary separation among that category of workers diminished

104. Glaenson and Odaka, op.cit.,p.619; and O.E.C.D., op. cit., p. 33.

in the face of decreasing alternative job opportunities. Also, a smaller number of the "temporary regular" workers were recontracted as the business activities stagnated, and as a result the overall turn-over rates diminished.

(b) Together with a decline in voluntary separation among all sorts of workers in the small firms, owing to the sluggish business activities, practice and simulation of the "lifetime employment" system might have been on the rise among the growth-oriented small firms.

Another exclusion from the employment practice is suggested by the above-mentioned compulsary retirement at about 55 years of age, which is directly related to the practice of "lifetime employment" system. The compulsary retirement indicates an age limit to the firm's employment guarantee for the "permanent regular"workers. This limit is a result of the past experience that, on one hand, growth of labor productivity tends to slow down even before fifty years of age, while, on the other hand, labor cost especially of wages and retirement allowance tends to accelerate in the meantime, due to their determination being dependent largely on the length of service. Except of a lucky minority of workers who are retained

after the retirement age, the compulsary retirement to the "permanent regular" workers means the end of their careers at least at their long-associated firms. Most of these veterans tend to find jobs because of necessity or because of a preference for continuous work, with substantially reduced wages and without any guarantee of a long-term employment. Even those who are fortunately retained by their respective firms are largely excluded from further benefits of the "lifetime employment" system, except for the members of their respective boards of directors.

A.2. Responsiveness to Business Fluctuations

It is dipicted in the 1972 O.E.C.D. report on Japanese manpower[25] that labor input in Japan relative to output tends to vary less than in other industrial nations, such as Sweden, West Germany, and the United States. The comparison is made with respect to both the total industries and the manufacturing industries, and the trends in both cases are found similar. With this finding, the O.E.C.D. examiners suggest that the contribution of the "lifetime

105. O.E.C.D., op. cit., pp. 38-43

employment" system is favorable to general stability in employment. The same finding, viewed from a different standpoint, however, implies a not-so-favorable attribute of the employment practice, namely, a higher degree of labor-quantity rigidity in the face of demand fluctuations.

Indeed, the "lifetime employment" system in a strict sense suggests inflexibility of employment, especially downward inflexibility, and, hence, labor cost rigidity over recessions. In reality, however, both employment size and labor cost tend to be adjusted to some significant degrees through a variety of avenues, although the speed and magnitude of adjustment under the "lifetime employment" system may not equal those under the "competitive" employment practice. One route of adjustment relies on manipulation of the "casual" workers, the "temporary regular" workers and the workers supplied by subcontractors.[106] These workers are often regarded as "safety valves" of the "lifetime employment" system and bear the brunt of business fluctuations.

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106. As pointed out by Gelenson and Odaka, much work, involving the peak-load extra production or the chores other than regular production of the respective "communal" firms, is subcontracted out to smaller firms. In the event of a business slowdown, marginal subcontractors tend to be eliminated before any other personnel adjustment are made. Gelenson and Odaka, op. cit., pp.619-620

A rough indication of this type of flexibility is found in Table 5,[107] which shows chronological lists of the total workers of the "communal" firms in the manufacturing sector, the total "regular" workers of the "communal" firms in the same sector, the ratios between these two totals for the 1951-1975 period, and the rates of increase in real G.N.P. The total workers are the respective year-end figures and include all the "permanent regular," the "temporary regular" and the "casual workers." The "permanent regular" workers are those with "lifetime" tenure, the "temporary regular" workers are those who are employed for more than thirty consecutive days with a specific terms of contract, and the "casual" workers are those who are employed on a day-to day basis or for less than thirty consecutive days.[108] On the other hand, the total "regular" workers include only the "permanent regular" and the "temporary regular" workers and are listed in terms of the 12-month average for each year.

The ratios of the total workers to the total "regular" workers tend to indicate degrees of employment flexibility over business fluctuations, which are largely

107. The total workers and the total "regular" workers are extracted from Census of Manufacturers (Kogyo Tokei-hyo), M.I.T.I., Tokyo: Annual publication between 1951 and 1975 issues.
108. Taira, op. cit., p. 180

TABLE 5

TOTAL WORKERS VS TOTAL "REGULAR" WORKERS
IN MANUFACTURING SECTOR

| YEAR | TOTAL WORKERS (1,000) (1) | "REGULAR" WORKERS (1,000) (2) | (1)/(2) RATIO (3) | G.N.P. PERCENTAGE INCREASE (4) |
|---|---|---|---|---|
| 1951 | 860.2 | 847.0 | 1.016 | 12.0 |
| 1952 | 789.8 | 791.0 | 0.998 | 11.7 |
| 1953 | 836.1 | 821.7 | 1.018 | 7.7 |
| 1954 | 803.3 | 807.8 | 0.994 | 2.8 |
| 1955 | 804.5 | 776.2 | 1.036 | 10.8 |
| 1956 | 924.7 | ----- | ----- | 6.2 |
| 1957 | 1,024.5 | ----- | ----- | 7.8 |
| 1958 | 994.3 | 994.7 | 0.999 | 6.0 |
| 1959 | 1,187.6 | 1,135.2 | 1.046 | 11.2 |
| 1960 | 1,373.7 | 1,326.2 | 1.036 | 12.5 |
| 1961 | 1,568.2 | 1,519.3 | 1.032 | 13.5 |
| 1962 | 1,571.9 | 1,588.5 | 0.990 | 6.4 |
| 1963 | 1,601.7 | 1,602.6 | 0.999 | 12.5 |
| 1964 | 1,686.8 | 1,680.4 | 1.004 | 10.6 |
| 1965 | 1,644.9 | 1,685.9 | 0.976 | 5.7 |
| 1966 | 1,654.0 | 1,651.4 | 1.002 | 11.1 |
| 1967 | 1,764.8 | 1,742.7 | 1.013 | 13.1 |
| 1968 | 1,885.5 | 1,864.3 | 1.011 | 12.7 |
| 1969 | 1,991.8 | 1,973.8 | 1.009 | 11.0 |
| 1970 | 2,047.0 | 2,028.9 | 1.009 | 10.4 |
| 1971 | 1,965.7 | 1,981.3 | 0.992 | 7.3 |
| 1972 | 1,883.3 | 1,901.6 | 0.990 | 9.8 |
| 1973 | 1,935.0 | 1,925.5 | 1.005 | 6.4 |
| 1974 | 1,856.0 | 1,875.5 | 0.990 | -0.2 |
| 1975 | 1,760.9 | 1,779.3 | 0.990 | 3.1 |

attributable to variation of the"casual"and the" temporary regular" workers. In the period of relatively low business activities, the year-end figures of the total workers tend to include lower-side figures of the "casual" and the "temporary regular" workers, due to elimination of some of these workers, while, on the other hand, in the period of relatively high business activities, they tend to include higher-side figures of these categories of workers, since the numbers of new additions to the "permanent regular" workers tend to be rather stable over time.[109] It is customary in Japan that all the newly employed school-graduates for each year, namely, the new "permanent regular" workers, start working on April 1 alongside the "casual," the "temporary, the "regular" and the older "permanent regular" workers. This lump-sum addition in April to the existing labor force tends to expand the size of employment for at least 3-to-6 months during the initial training period, since in the growth-oriented Japanese economy the new addition to the"permanent regular" workers tends to be greater than the retirement and the other separations of the same category of workers. This mid-year expansion in employ-

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109. This category of workers is employed for a long-term purpose rather than for cyclical adjustment. O.E.C.D., op. cit., p. 40.

ment tends to significantly affect the 12-month average of the total "regular" workers, relative to the year-end figure of the total workers.

Both the year-end figure and the 12 month average commonly include the "permanent regular" and the "temporary regular" workers, of which the latter tends to be the relevant variable. In the period of relatively low business activities, the "temporary regular" workers tend to be gradually replaced by the newly-trained "permanent regular" workers, and, hence, the year-end figure tends to be lower than the 12-month average of the "temporary regular" workers. On the other hand, in the period of relatively high business activities, it is highly probable that employment of the "temporary regular"workers increases toward the end of each year, since employment of the "permanent regular" workers tends to be relatively stable, and, then, the year-end figure tends to be higher than the 12-month average of the "temporary regular" workers.

As for the "casual" workers, whose figures are included only in the year-end figures of the total workers, elimination and addition of this category of workers tend to precede those of the "temporary regular" workers over business fluctuations. Then, the presence of the "Casual" workers in the data of the total workers tends to exaggerate increases and decreases of the year-end figures

over the business cycle.

The foregoing suggests that in the period of low business activities the 12-month average of the "permanent regular" and the "temporary regular" workers tends to exceed the year-end figure of total workers and that in the period of relatively high business activities the year-end figure of the total workers tends to exceed the 12-month average of the total "regular" workers. This tendency is eloquently expressed in Table 5. For the years of relatively low business activities, such as 1954, 1965, 1971 and 1975, the ratios of the total workers with the total "regular" workers are invariably smaller than unity, and for the years of relatively high business activities, such as 1951, 1961 and 1967, the ratios exceed the unity. These results indicate that the "communal" firms to some extent adjust labor quantity over business fluctuations, by manipulating employment of the "casual" and the "temporary regular" workers.

Part of the above labor-quantity flexibility over demand fluctuations comes from the practice of mandatory retirement at about age 55. Most of the "permanent regular" workers reaching the retirement age tend to desire continued employment at their respective firms, and, depending upon business conditions of the

firms, varying numbers of these workers are allowed to remain with their respective firms as sort of "temporary regular" workers. At any time, then, there is a pool of these veteran workers, and the size of the pool can be manipulated based on the business conditions. This method of labor-quantity management is also cost effective,[110] since such workers, in addition to being experienced and loyal to their respective firms, are customarily retained with substantially reduced wages and without further benefit of retirement allowance.

Also, voluntary or involuntary separation[111] and early voluntary retirement of the "permanent regular" workers tend to contribute to the downward flexibility of labor quantity. For the years of relatively low business activities, the workers thus separated tend not to be replaced by the "casual" or the "temporary regular" workers. Early voluntary retirment is more likely to be encouraged with some premium payment of retirement allowance, usually in prolonged stagnation of business than in temporary recession. Such encouragement is often accompanied by pessimism

110. Galenson and Odaka, op. cit., pp. 621 and 622.

111. Ibid., p. 616. Distinction between voluntary and involuntary separation is often ambiguous. For example in easing out undesirable "permanent regular" employees, transfer to new jobs or new location, which may not be acceptable to these employees, is often used to induce resignation.

about the future prospect of the respective firms. This manner of labor-quantity reduction is, however, more relevant to a long-term strategy, rather than adjustment to a short-term business stagnation.

It is also feasible to manipulate the number of annual lump-sum addition to the "permanent regular" workers. This method, however, is not usually adopted by the "communal" firms, since employment of these workers is based on calculations of a long-term labor demand of the respective firms, and since a visible reduction of the annual employment of new school-graduates tends to be interpreted by the outsider as revealing a sign of some deep-seated illness of the respective firms. Then, this avenue of labor-quantity adjustment can be considered one of the last resort.

In addition to the above avenues of labor-quantity adjustment, there are mainly two direct methods for adjustment of labor cost in relation to business fluctuations. One is management of over-time work, and the other is variation of bi-annual bonus. These methods are usually effective for reducing labor cost over a recession, since bonus and over-time allowance in Japanese firms constitute a significant portion of their respective annual labor cost.

## B. Translation of the Theoretical Proposition into a Testable Proposition

The theoretical proposition derived in the previous chapter needs to be modified into an appropriate testable proposition for empirical verification based on actual Japanese data. Such a proposition must indeed be responsive to the actual conditions of the economy. As the economy grows, most of its firms (or industries) tend to grow faster or slower than the economy, and such relative growth tends to be measured against an appropriate average. Since economic behavior of one economic entity is likely to be affected by that of the other, a firm (or industry) growing faster than the average in a similar category tends to be regarded as "doing well," while, another growing slower than the same average is considered otherwise, even if it is growing according to an absolute measure. In view of the rapid growth of the Japanese economy and its manufacturing industries in the post-war era, it is, then, realistic to translate the absolute terms of the theoretical proposition into proper relative terms. It is also appropriate to rewrite the conditional statements of the proposition into more explicit expression for a ready verification based on the available data.

With the above consideration, the theoretical proposition is transformed into a testable proposition, which is now stated as:

(1) if the growth ratio (b*) of the real value-added per worker for the representative "communal" firm in an industry is, for a relevant interim period, greater than the mean growth ratio (b*) for all the"communal" firms of the total industries considered, the following relation tends to emerge:

$$a/b > a^*/b^*; \quad \text{and}$$

(2) if the growth ratio (b*) of the real value-added per worker for the representative 'communal" firm in an industry is, for a relevant interim period, equal to or smaller than the mean growth ratio (b*) for all the "communal" firms of the total industries considered, the following relation tends to emerge:

$$a/b < a^*/b^* ;$$

where (a) and (a*) refer to the per-worker wage growth ratios of the "competitive" firms and the "communal" firms, respectively, and (b) and (b*) the per-worker value-added growth ratios of the "competitive" firms and the"communal" firms, respectively.

This proposition properly focuses on the "communal" firms, examination of which is the theme of

the present thesis. As far as the growth criteria is concerned, the mean growth ratio (b*) is not only handy, but also quite appropriate, for the following reasons. First, Japanese firms of similar sizes in a given industry tend to produce and market more similar goods, and also employ more similar kinds of new school graduates, than those of drastically different sizes. Many of the small firms tend to produce for the large firms some components of the latter's goods and/or their complements, or tend to produce those goods for which competition of the large firms is absent. Secondly, it is customary that the large and well-established firms in each industry are more selective in the employment of new school graduates than the small firms in terms of school grades, personality, family backgrounds, etc. Thirdly and more importantly, the "communal" firms of all manufacturing industries tend to compete for similar kinds of new school-graduates. Consequently, the "communal" firms of all industries tend to be more conscious of one another, than of the "competitive" firms in their respective industries, when it comes to their growth, achievement and recruiting strategy.

Even with the above testable proposition, it is highly probable that some contradicting cases arise, especially in the borderline situation. Such

contradiction, if any, can be attributed to the inherent ambiguity of distinction between the "communal" and the "competitive" firms, which is due mainly to the lack of explicit data regarding the "lifetime employment" system. This data insufficiency affects the ambiguity of distinction more seriously in the rapid change of the economy and its institutions. The ambiguity tended to spread, as practice and simulation of the "lifetime employment" system among the well-established small firms became prevalent in 1960s and 1970s, in the face of intensifying competition for new school-graduates, who had long been regarded as the cheapest source of labor supply. In the meantime, a rapid rise of wages for young workers as a result of continued excess demand for new school-graduates tended to cause an added burden of the "lifetime employment" system to an increasing number of the large firms. This tendency, in turn, necessitated some changes in the employment practice. One important change was an expansion of the efficiency-based allowance within the seniority-oriented wage structure. This change in the wage structure also tended to compound the ambiguity of distinction between the "communal" and the "competitive" firms.

Another source of such ambiguity is located in an extensive employment by the large firms of female, "casual" and"temporary regular" workers, who do not share the benefits of the "lifetime employment" system. The best available data, utilised in this thesis, exclude the "casual" workers, but they separate out neither the female workers nor the "temporary regular" workers.

Besides the above ambiguity of distinction, the classification of the "communal" and the"competitive" firms based on firm sizes tends to be highly question-begging. Even if the problem of differences between the two groups of firms regarding scale and labor-quality[112] effects are partially removed by adoption of a dynamic analysis, it is likely that there exists other differences related to outside borrowing, purchase of foreign patents, advertising, marketing, influence on government policies and procurement, etc. All these are intangible, and their dynamic effects are extremely difficult, if not impossible, to measure. Because of the likelihood of such compounded differences

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112. Vladimir Stoikov in "Size of Firm, Worker Earnings, and Human Capital: The Case of Japan" (Industrial and Labor Relations Review, July 1973) concludes: "there is no evidence that larger firms pay higher wages than smaller ones for the same quality of labor input, as measured by an array of human capital components."

between the large and the small firms, some degree of distortion in the empirical prediction by the present model should be anticipated. Thus, the above empirical proposition should be interpreted as only a rough indicator of the underlying tendency.

C. Empirical Tests

Given the inherent ambiguity regarding the distinction between the "communal" and the "competitive" firms and also the compounded differences between these firms other than their different employment practices, the interest of this section lies in an empirical detection of some important economic effects of the "lifetime employment" system on the growth-oriented and the relatively stagnating industries. More specifically, the aim of this section is to find reasonable empirical answers to the following questions:

(a) Under what economic conditions is the practice of the "lifetime employment" system beneficial for the relevant firm?

(b) Under what economic conditions is the practice of the "lifetime employment" system costly for the relevant firm?

(c) Does the practice of the "lifetime employment" system affect the trend of wage per worker over a long duration of time?

(d) Does the practice of the "lifetime employment" system affect the trend of value-added per worker over a long duration of time?

(e) Does the practice of the "lifetime employment" system affect the behavior of wage per worker over business cycles?

(f) Does the practice of the "lifetime employment" system affect the bahavior of value-added per worker over business cycles?

(g) How does the practice of the "lifetime employment" system affect the relation between wage per worker (or wage share) and value-added per worker?

(h) What empirical evidence, if any, does the practice of the "lifetime employment" system provide regarding the growth of industries?

No two questions in the above are mutually independent, and, therefore, any empirical evidence to be suggested in answer to the above questions will be by necesity interelated.

The main source of raw data in the following analysis is Kogyo Tokei-hyo (Census of Manufacturers), annually compiled by the Office of Minister, the Ministry of International Trade and Industry, Tokyo. Thus, the data relevant to the present thesis are mainly

calculated on the raw data for the period between 1952 and 1975. On the merit of data availability, fourteen 2 digit industries in manufacturing sector are selected in order to test the present empirical proposition and answer the above questions, for the period between 1952 and 1975.[112]

The fourteen industries are, as follows:

(1) Chemical Products

(2) Transport Equipment

(3) Precision Instruments

(4) Ordinary Machinery

(5) Electric Machinery

(6) Fabricated Metal Products

(7) Rubber Products

(8) Textiles

(9) Glass, Ceramics and Stone Products

(10) Iron and Steel

(11) Nonferrous Metals

(12) Pulp, Paper and Paper Products

(13) Foodstuffs

(14) Printing and Publishing.

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112 For three of the 14 industries, namely, Fabricated Metal Products, Iron and Steel, and Nonferrous Metals, the relevant data are available only for the period between 1955 and 1975. As a first approximation, "competitive" firms and "communal" firms are defined as those employing 30 to 99 workers and over 1000 workers, respectively.

C.1. A Graphical Survey

As a foothold for verification of the empirical proposition and the related matters, a graphical survey is attempted in search for relevant clues in the actual industrial data. A graph each for the 14 industries is prepared in the following manner. First, the percentage wage share in the corresponding value-added for the "communal" and the "competitive" firms in each industry is calculated for each year of the 1952-1975 period. Next, for the sake of convenient comparison in the same dimensions of the percentage shares both for the "communal" and the "competitive" firms, the "adjusted" wage shares for the respective categories of firms are produced as:

$$X_{Ai} = \frac{X_i}{\frac{\Sigma X_i}{n}} = \frac{X_i}{\bar{X}} \quad ; \text{ and}$$

$$X^*_{Ai} = \frac{X^*_i}{\frac{\Sigma X^*_i}{n}} = \frac{X^*_i}{\bar{X}} \quad ; \text{ where}$$

$X_A$ = the "adjusted" wage-share for the "competitive" firms

$X^*_A$ = the "adjusted" wage-share for the "communal" firms

$X$ = percentage wage-share for the "competitive" firms

$X^*$ = percentage wage-share for the "communal" firms

$\bar{X}$ = the mean percentage wage-share for the "competitive" firms

$\bar{X}^*$ = the mean percentage wage-share for the "communal" firms

i = 1952, 1953, ..., 1975

n = number of years in the relevant period considered.

By this adjustment the wage shares both for the "competitive" firms and the "communal" firms can be expressed as pure numbers bout the horizontal line at unity (in the diagrams below), which denotes the respective arithmetic means of the wage shares relevant to the two types of firms.

The "adjusted" wage shares for both the "communal" and the "competitive" firms in each industry are plotted together in the same quadrant in the form of polygons, as shown in Figures 5 to 18. The polygons expressed in solid lines and dotted lines represent the "adjusted" wage shares for the "communal" and the "competitive" firms, respectively.

A close observation of these polygons reveals the following major differences between the "adjusted" wage shares for the two categories of firms:

(a) The "adjusted" wage shares for the "competitive" firms tend to lie significantly closer to the "common" average wage share, $X_A$ (which is the mean of the "adjusted" wage shares in an industry for the relevant period considered and is shown by the solid horizontal line at the "adjusted" wage share equal to

Figure 5

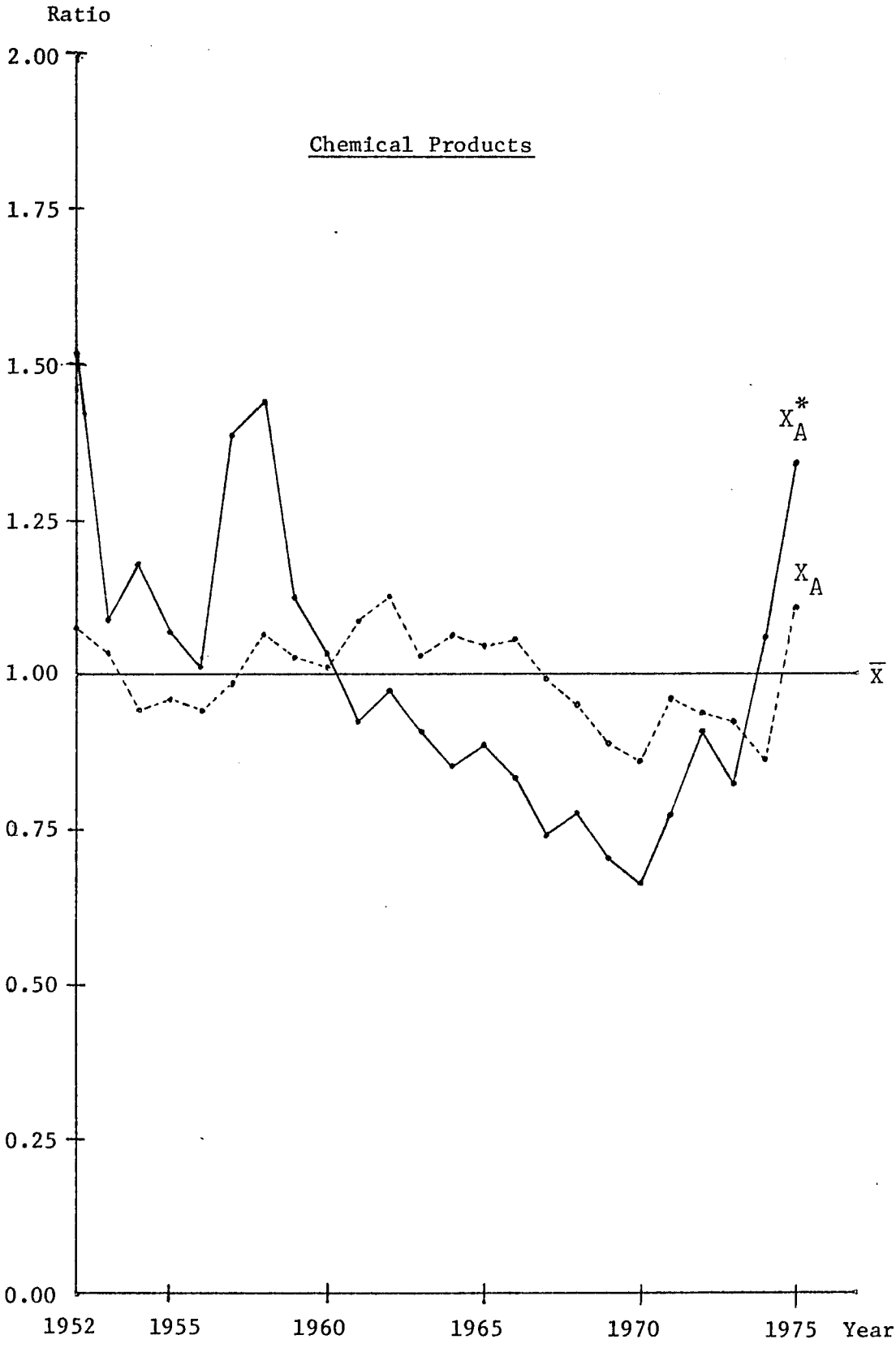

Ratio
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Chemical Products
$X_A^*$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 6

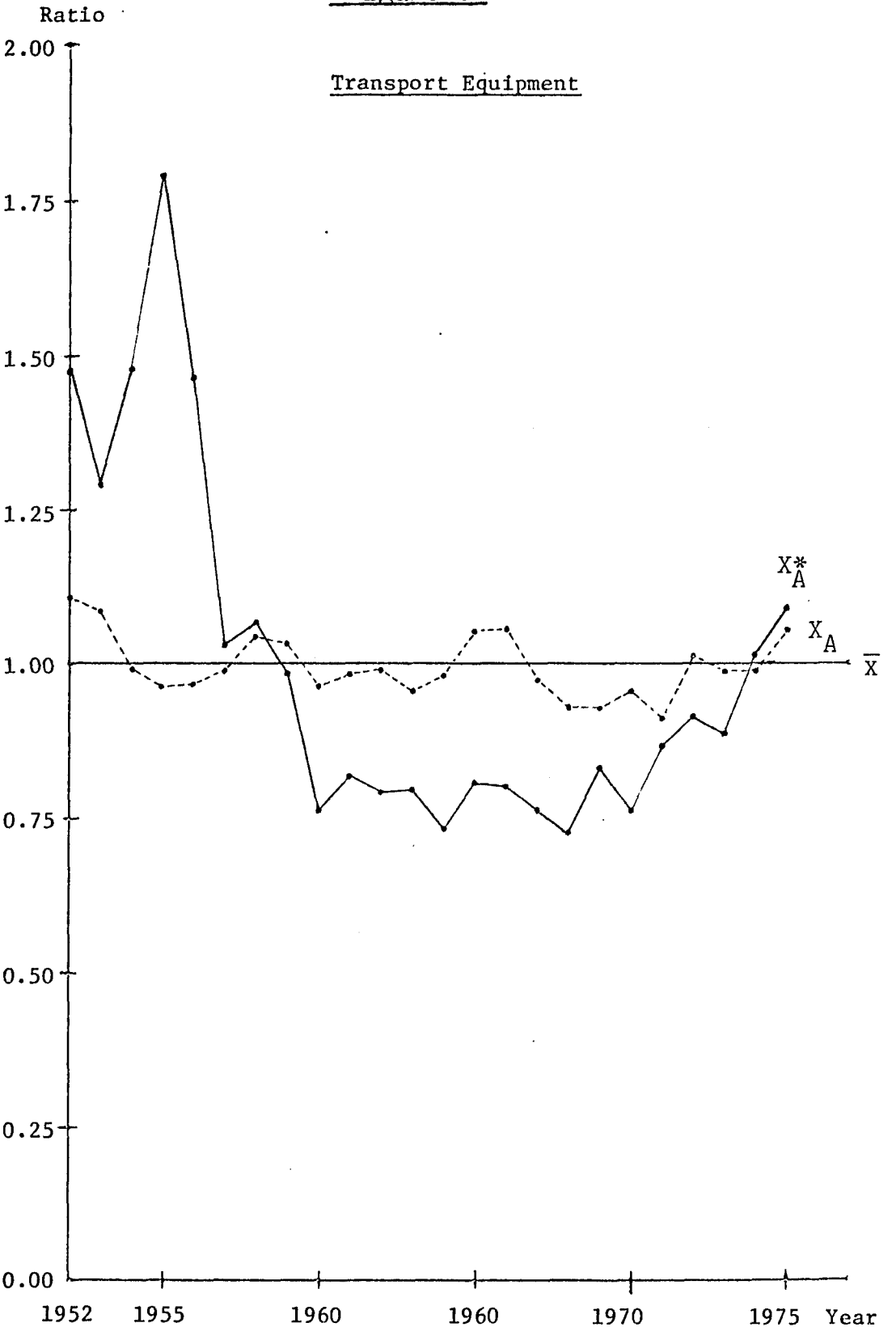

Ratio
2.00
Transport Equipment
1.75
1.50
1.25
$X_A^*$
$X_A$
1.00
$\overline{X}$
0.75
0.50
0.25
0.00
1952
1955
1960
1960
1970
1975
Year

Figure 7

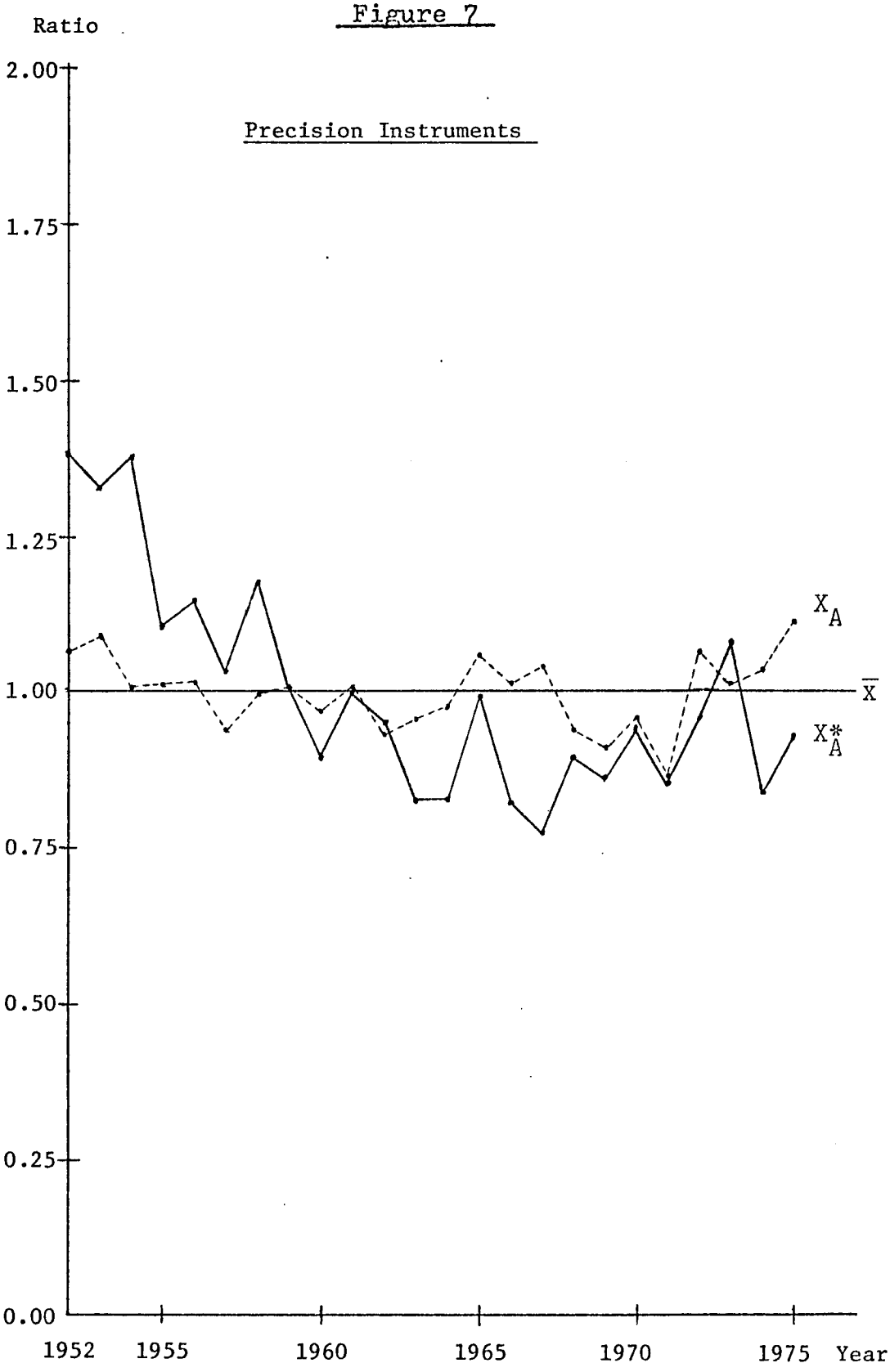

Ratio
2.00
Precision Instruments
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$X_A$
$\overline{X}$
$X_A^*$
1952
1955
1960
1965
1970
1975
Year

Figure 8

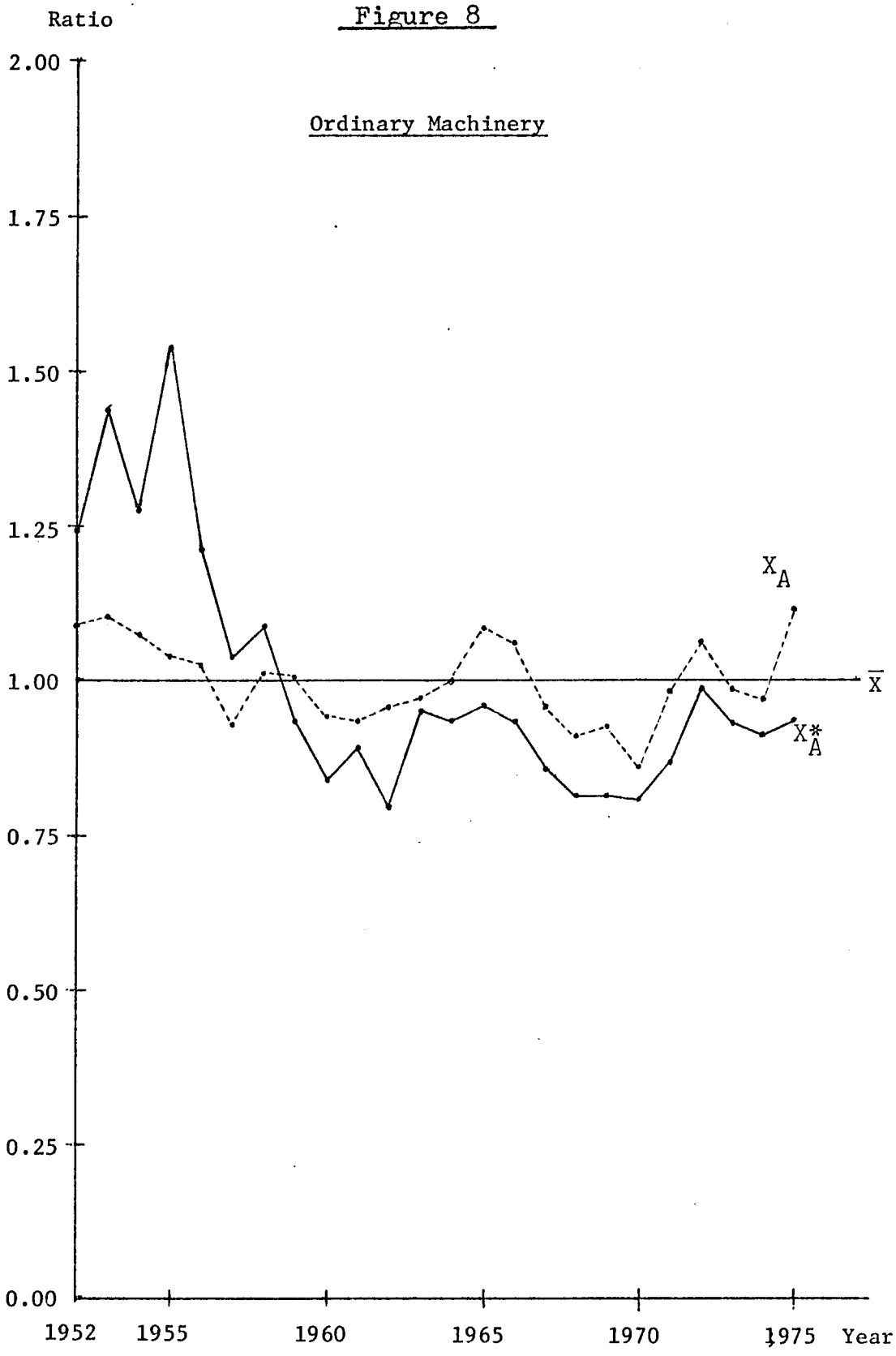

Ratio
Ordinary Machinery
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$X_A$
$\bar{X}$
$X^*_A$
1952
1955
1960
1965
1970
1975
Year

Figure 9

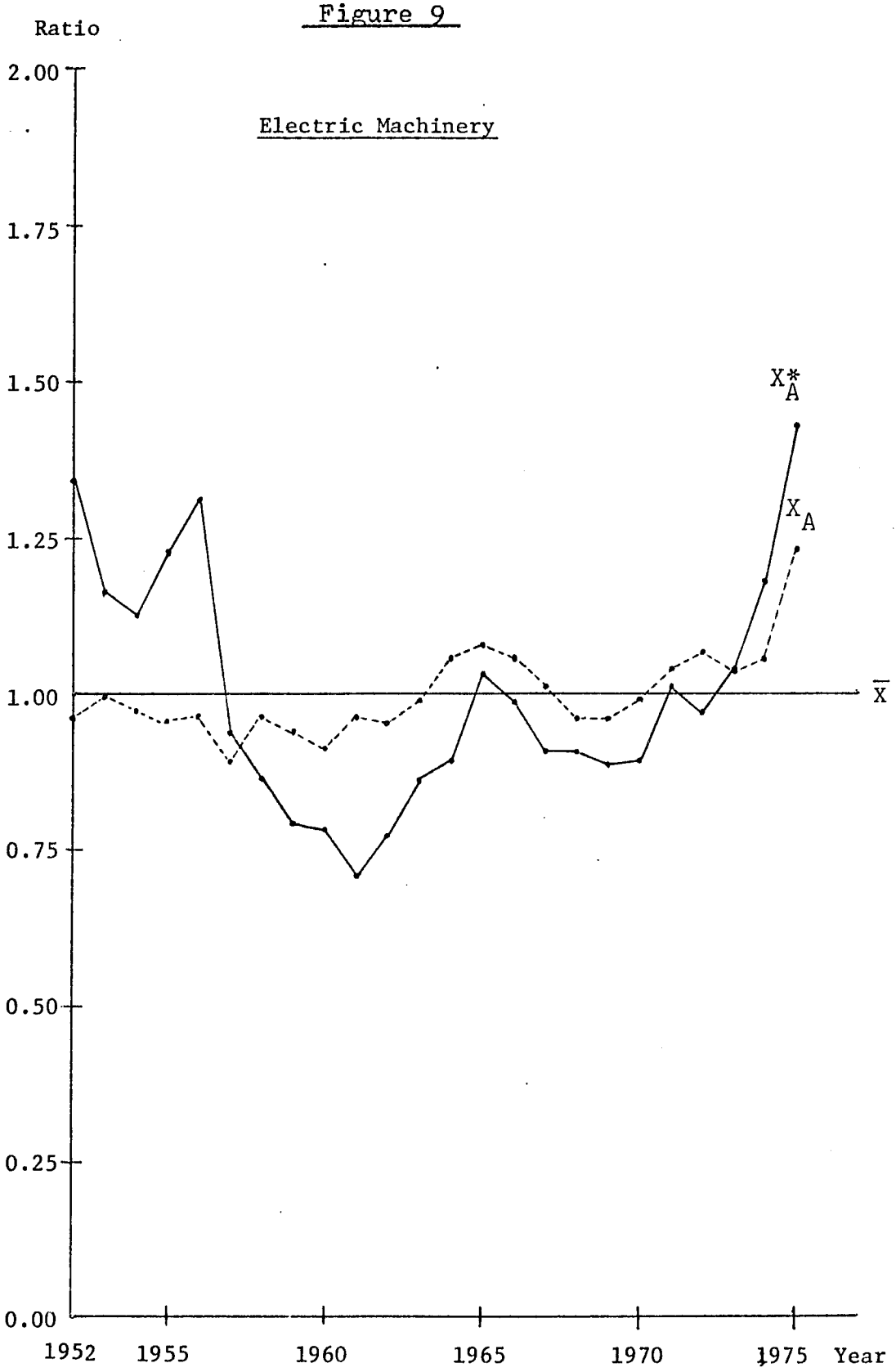

Ratio
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Electric Machinery
$X_A^*$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 10

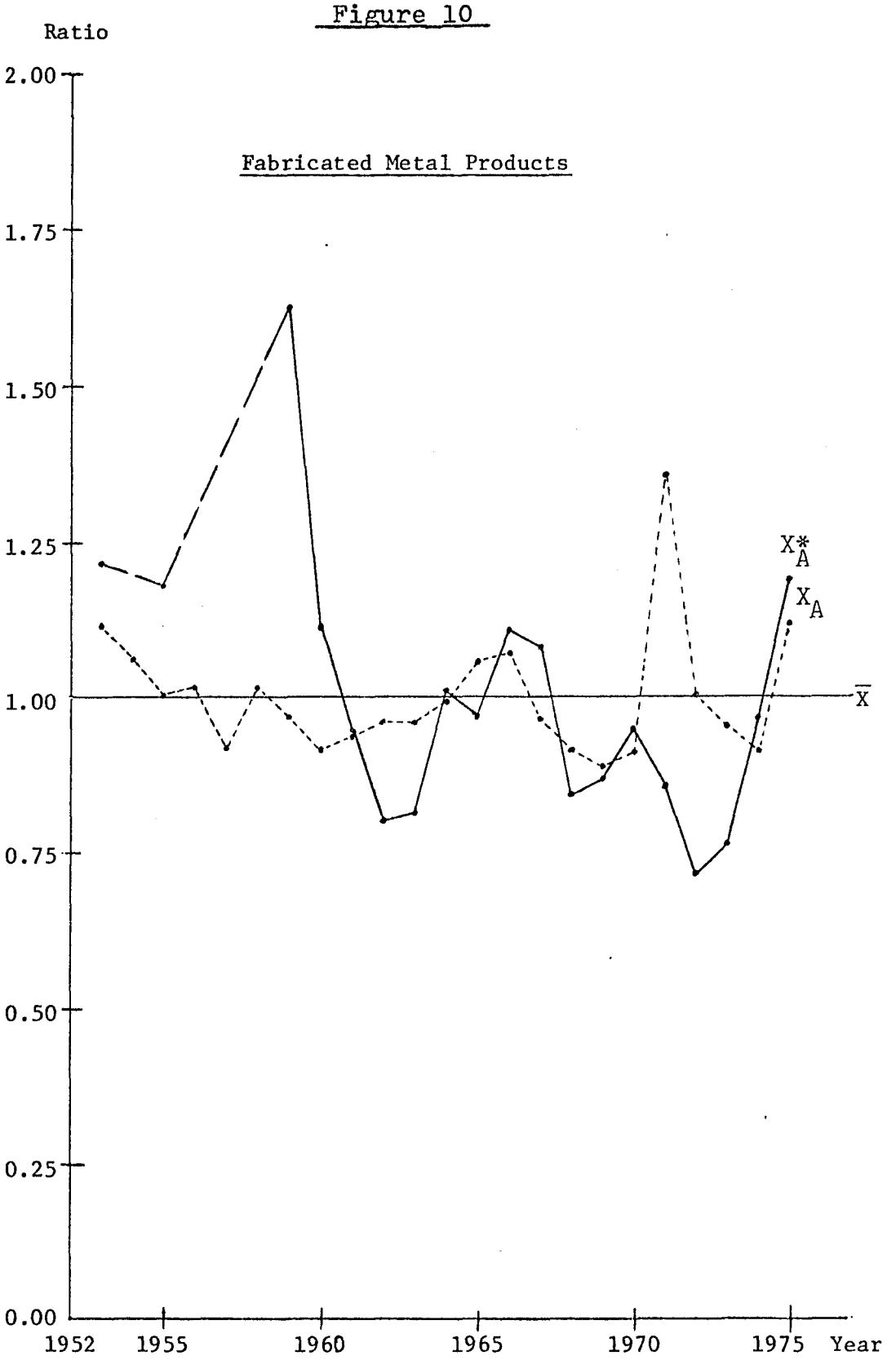

Ratio
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Fabricated Metal Products
$X_A^*$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 11

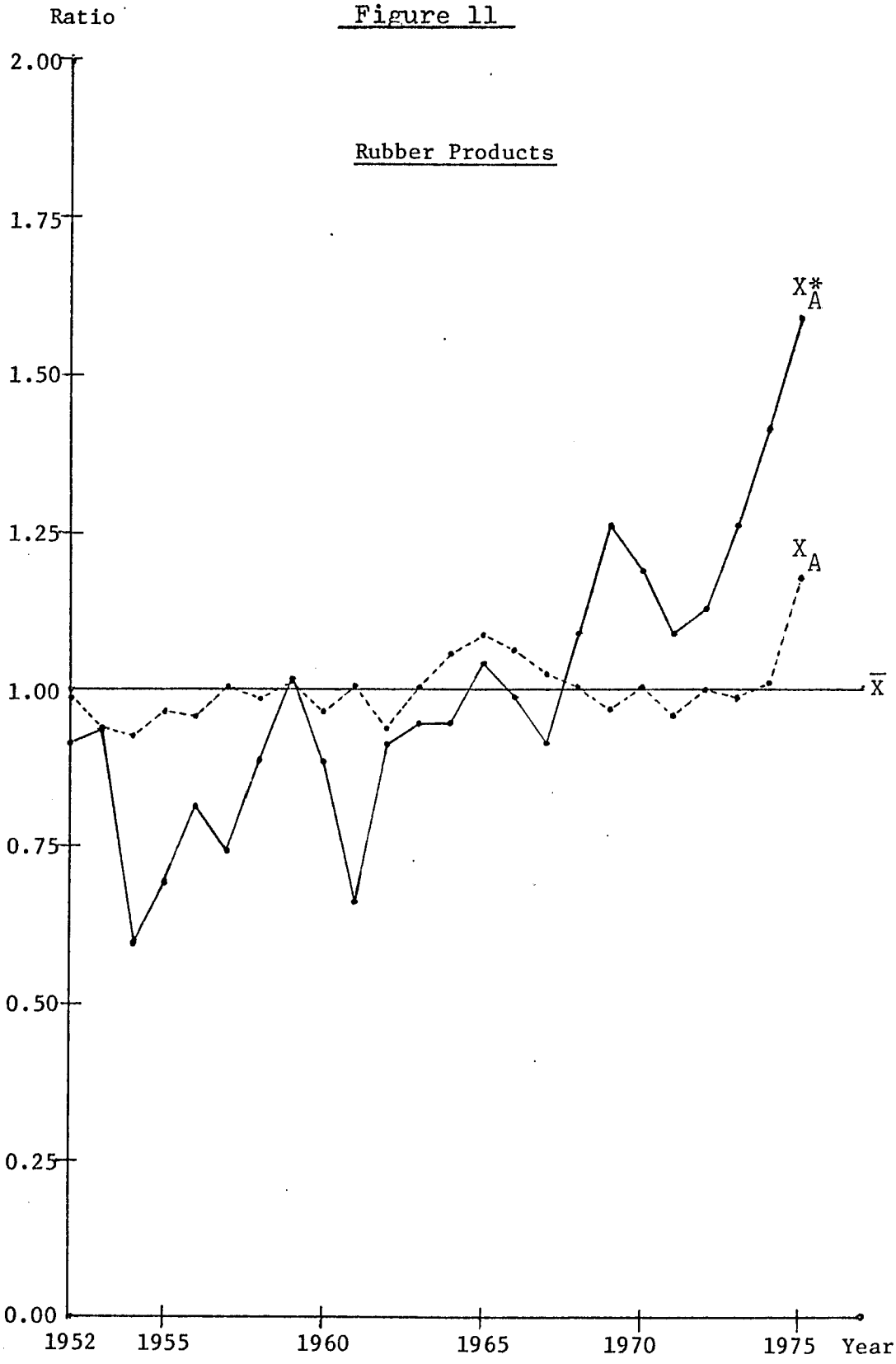

Ratio
Rubber Products
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$X^*_A$
$X_A$
$\overline{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 12

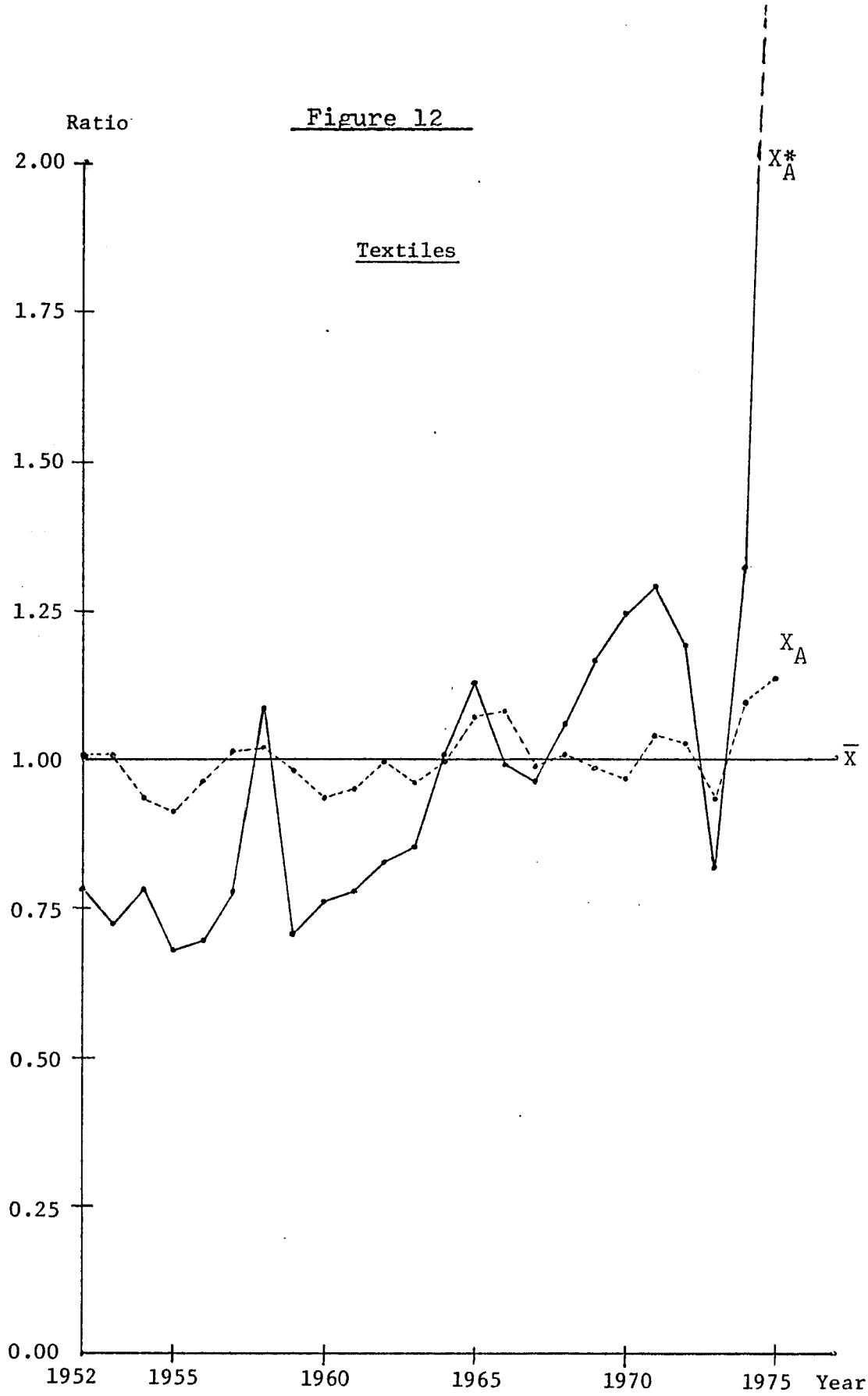

Ratio
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Textiles
$X^*_A$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 13

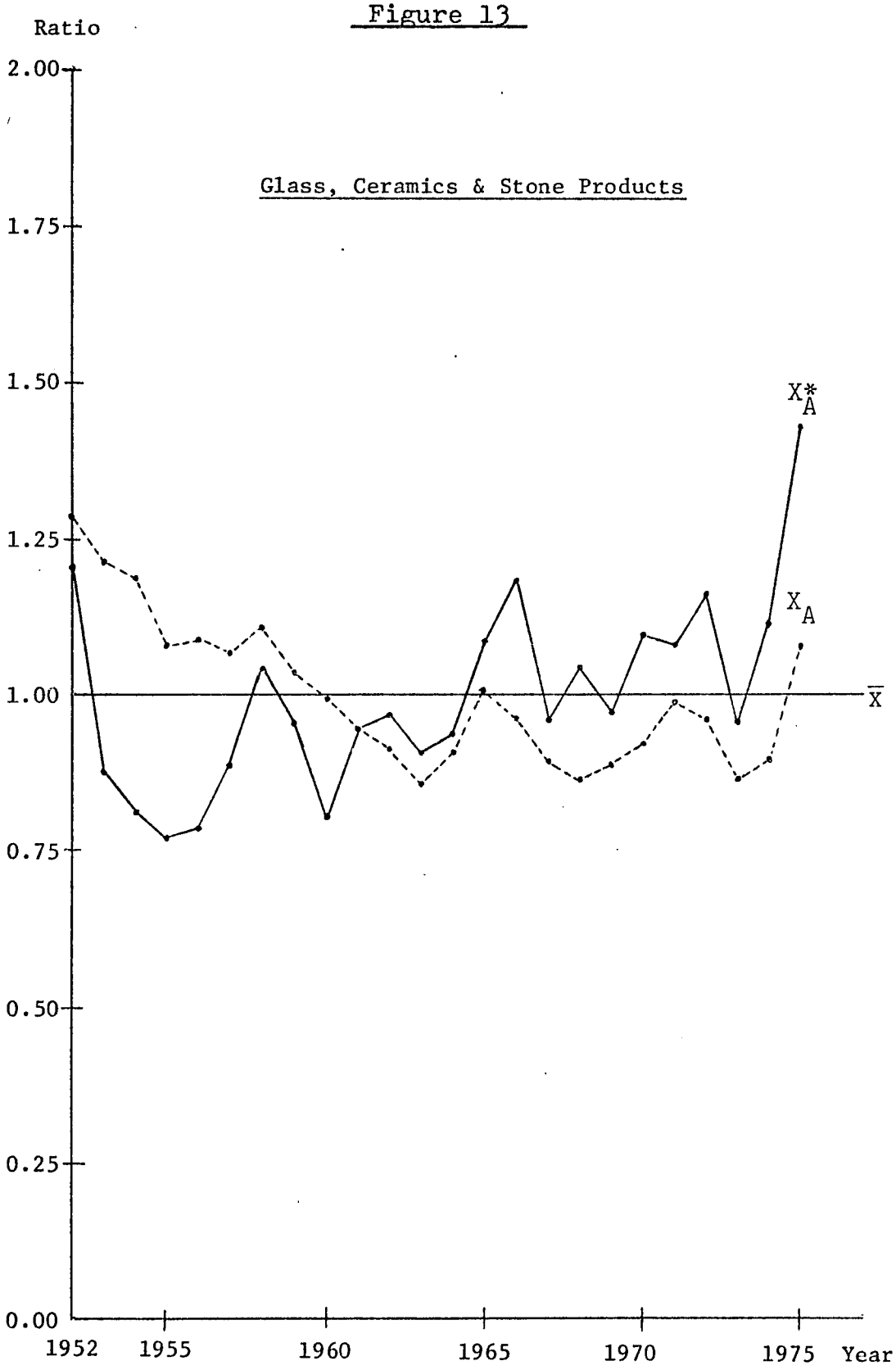

Ratio
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Glass, Ceramics & Stone Products
$X_A^*$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 14

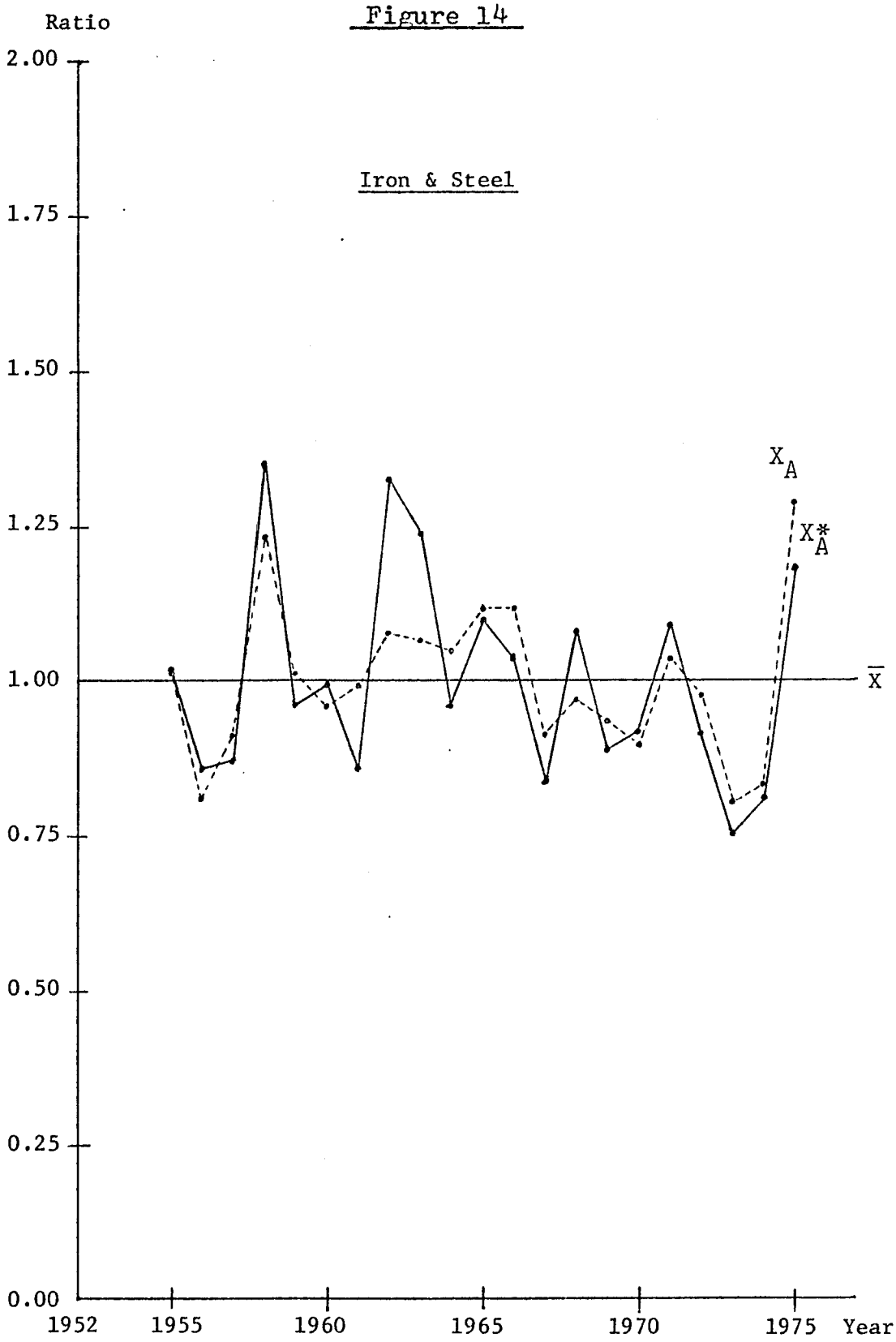

Ratio
Iron & Steel
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$X_A$
$X_A^*$
$\overline{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 15

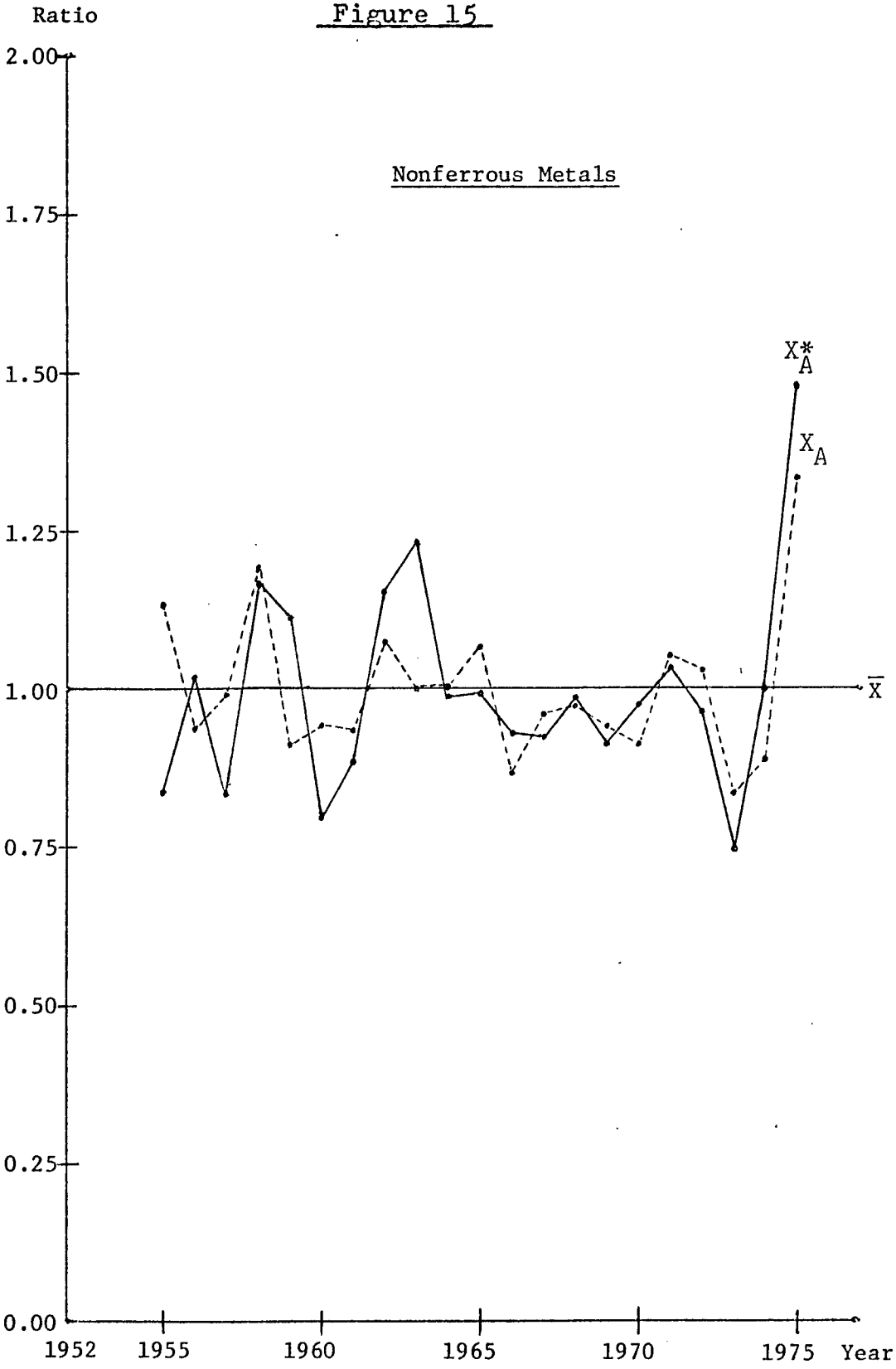

Ratio
Nonferrous Metals
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$X^*_A$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 16

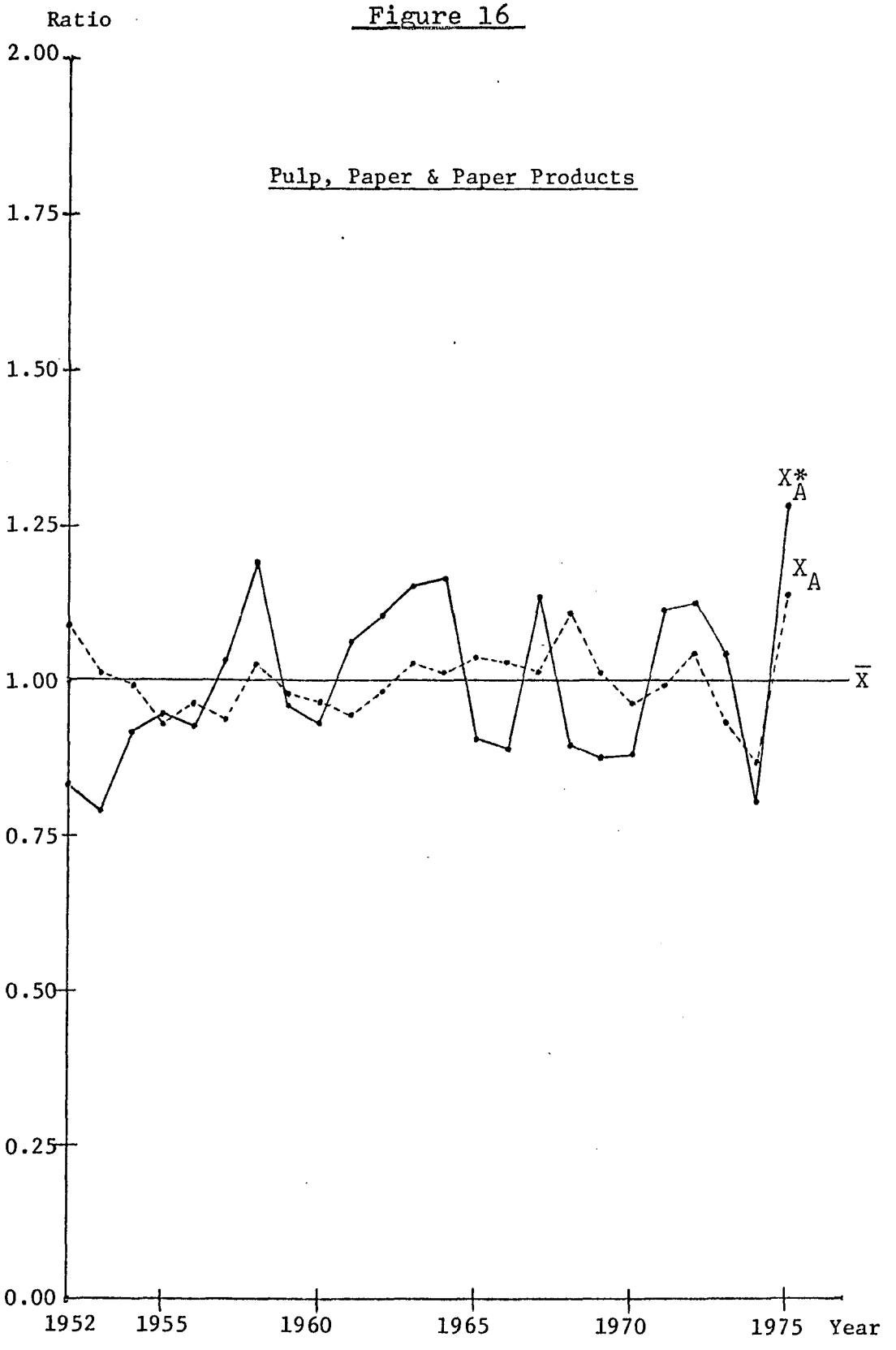

Ratio
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Pulp, Paper & Paper Products
$X_A^*$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 17

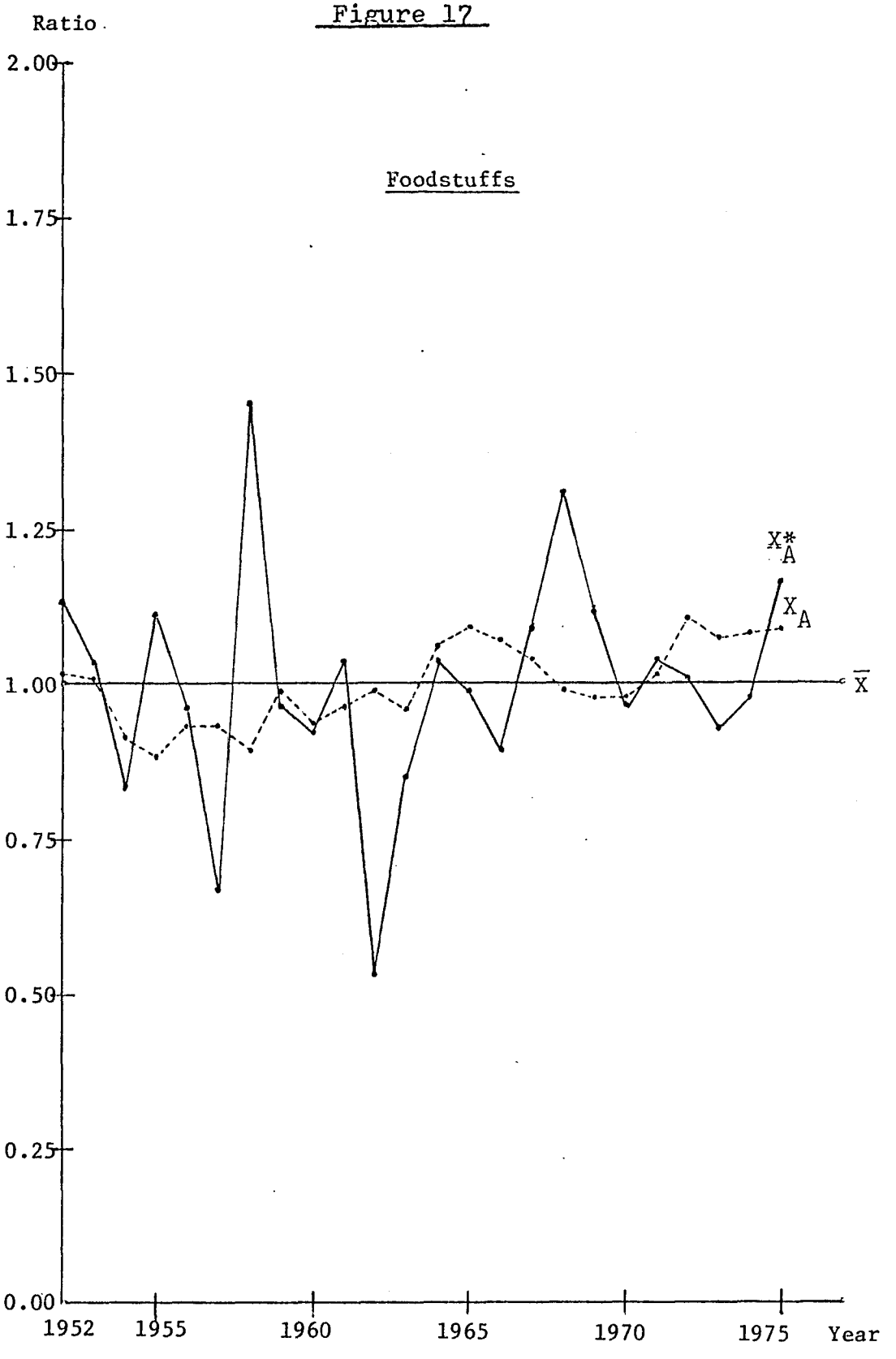
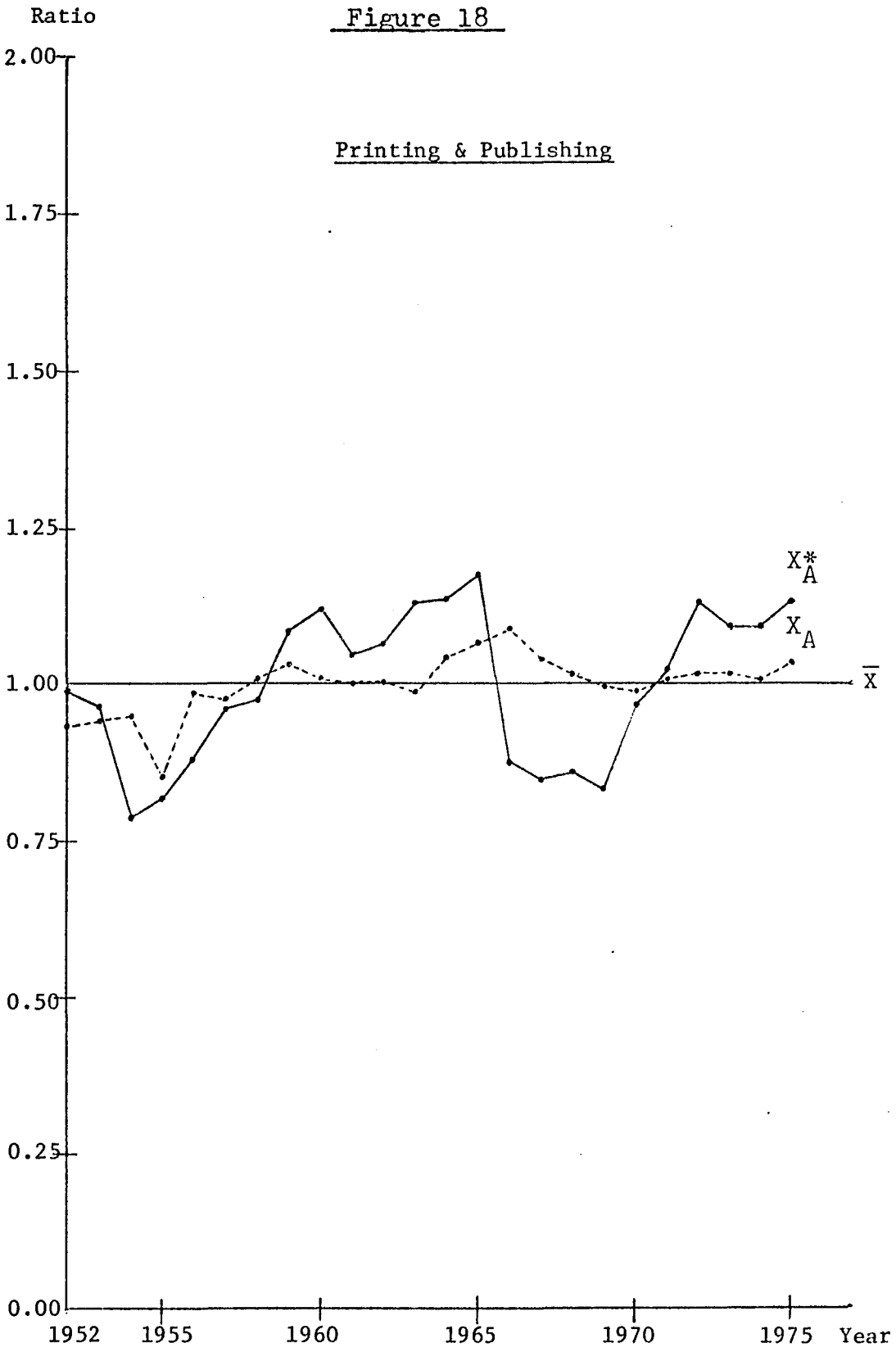

Ratio
Foodstuffs
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$X^*_A$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

Figure 18


Ratio
Printing & Publishing
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$X_A^*$
$X_A$
$\bar{X}$
1952
1955
1960
1965
1970
1975
Year

unity) than those for the "communal" firms.

(b) The long-term patters of wage shares perceived from the respective polygons are generally more conspicuous in the case of the "communal" firms than in the case of the "competitive" firms.

The characteristic (a) of the observed polygons is quite in accordance with the implication of the present analytical framework; i.e., changes in the average wage per worker for the "competitive" firms are more nearly proportional to changes in the average value-added per worker than those for the "communal" firms. This implies that the wage shares of the firms practicing the "lifetime employment" system are unstable relative to those of the "competitive" firms. This relative instability of wage shares taken alone suggests a burden of the employment practice, which entails a necessary cost. Since a high wage share of one year can not be simply financed by a low wage share of another, a firm for financing a high wage ratio has to draw upon the past accummulation of retained earnings, and/or borrow from outside sources. Neither of these means of financing is costless: the relevant corporate profit tax, which is already paid on the past profits, can be considered the cost of financing the high wage share by the retained earning, in addition

to its opportunity cost, while interest payment is the cost of outside borrowing. The burden of the "lifetime employment" system may be felt heavier, since peaks of wage-share fluctuations tend roughly to correspond to troughs of business fluctuations. This rough correspondence is no coincidence; the former is mainly a result of the latter. As business activities slacken, with a relatively stable employment and a steadily increasing wage cost based on seniority-oriented wage structure, wage share by necessity increases.

The characteristic (indicates a further peculiarity of wage-share behavior attributable to practice of the "lifetime employment" system. This peculiarity is of a long-term nature. The conspicuous trends observed in the polygons of the "communal" firms can by roughly classified into three patterns; namely, "the convex-downward," the "upward-sloping" and the "relatively-trendless" patterns. A detailed examination of these patterns may bring out some meaningful suggestions regarding costs and benefits of the "lifetime employment" system.

The "convex-downward" pattern is observed in the polyons for six industries, namely, Chemical Products, Transport Equipment, Precision Instruments, Ordinary Machinery, Electric Machinery, and Fabricated

Metal Products. These are the solid-line polygons shown in figures 5 to 10. All the industries included are those often referred to as "modern industries," and are largely responsible for the rapid economic growth and export expansion in 1950s and 1960s. This implies that demand for commodities of these industries was expanding relatively faster than that for other commodities both domestically and internationally, and that the domestic supply accordingly grew in the post-war era.

The "convex-downward" pattern includes at least two sub-patterns[113], namely, the downward-sloping" and the"upward-sloping" segments. The "downward sloping" portion of the empirical trend can be clearly explained by the present analytical model: adoption of the "lifetime employment" system by a growth-oriented firm tends to shift over time its representative worker's time preference downward closer to that of the employer and as a result the wage share in the firm's value-added tends to decline over time. This portion can be considered favorable for internal generation of growth. For that matter, the steeper and

113. If, in the "convex-downward" pattern, transition from the downward slope to the upward slope is very slow in time, then, the "relatively-trend-less"sub-pattern may also be present.

longer is the segment, the more favorable it is for a potential growth impetus. A decline in the firm's wage share over time, assuming that its labor costs other than wage cost are fairly stable over time or proportional to the wage cost, implies a rise in the capital share, which in turn indicates an increase in the investment over time.[114] The rise in the firm's investment tends to enhance labor productivity and lead to an expanded output per worker. Since the "life-time employment" system tends to contribute at least partially to the exaggeration of the "convex-downward" trend and hence of its "downward sloping" segment, the resulting growth stimulus to labor productivity and output can at least partially be regarded as a benefit derived from the employment practice. In this respect, it is interesting to note that five of the above six industries scored higher growth rates than the rest of the 14 industries for the period between 1955 and 1970, where the order and the corresponding growth ratios in terms of value-added per worker are:

114. Even if an increase in the investment is not financed by the ratained earning, investment can be encouraged by an increase in the capital share, since a greater portion of the value-added can be devoted to depreciations, interests and dividends.

| | Growth Ratio | |
|---|---|---|
| the highest | (5.031); | Ordinary Machinery |
| 2nd " | (4.353); | Transport Equipment |
| 3rd " | (3.744); | Chemical Products |
| 4th " | (2.685); | Electric Machinery |
| 5th " | (2.512); | Fabricated Metal Products |
| 6th " | (2.071); | Iron and Steel |
| 7th " | (2.046); | Printing and Publishing |
| 8th " | (1.892); | Foodstuffs |
| 9th " | (1.853); | Pulp, Paper & Paper Products |
| 10th " | (1.715); | Precision Instruments |
| 11th " | (1.443); | Rubber Products |
| 12th " | (1.362); | Nonferrous Metals |
| 13th " | (1.288); | Glass, Ceramics, & Stone Products |
| the lowest | (1.157); | Textiles. |

It should be noted also that, although the growth ratio for Precision Instruments ranked only 10th for the 1955-1970 period, this industry was the only one showing any significant growth in value-added per worker for the slump period between 1970 and 1975.

If the "downward-sloping" segment of the "convex-downward" trend is favorable to the growth of

value-added per worker, the "upward-sloping" portion of the same must be unfavorable to such growth. The latter segment of the empirical pattern tends to indicate an increasing burden of the "lifetime employment" system, which is due probably to a slackening demand for the relevant commodities, an increasing wage cost as a result of the practice of seniority-based wage determination in the face of rapidly increasing wages for new school-graduates, or a combination of both. In the present analytical framework, the upward-sloping" portion can be interpreted in terms of the "communalized" firms; after practice of the "lifetime employment" system becomes the rule among the relevant firms, a prolonged slackening of their business activities tends to raise the average time preference of their respective workers[115] over time, due probably to an increasing pessimism among the workers about the future prospects of their respective firms. As a result, the wage share tends to rise. The "upward-sloping" part can be explained by the analytical model in another way: after a long-period of output expansion, the proportion

115. The result is similar if the time preferences of both the employers and the workers are lowered.

of younger and more volatile workers tends to increase in the labor forces of the respective firms. This proportional change, in turn, tends to raise the average time preference of the workers, and as a result, the wage share tends to rise.

The practice of seniority-based wage determination, which is one of the major characteristics of the "lifetime employment" system, also encourages an increase in the wage share, especially when the growth of value-added per worker is relatively stagnating or declining. If such practice of wage determination is accompanied by rapidly rising wages for the younger portion of the labor force, owing to a chronic excess demand for new school-graduates as a result of a rapid economic expansion, a rise in the wage share tends to be exaggerated over time. Then, the practice of seniority-based wage determination, the rapid rise of real wages for new school-graduates (or wages for the beginners) in 1960s, the increase in the proportion of younger workers in the respective labor forces in 1950s and 1960s, due to the seniority wages, and the stagnating business activities in 1970s, all together contributed to induce the "upward-sloping" portion of the "convex-downward" pattern for the above-mentioned six industries. Such an increase in thewage share can at least partially be

attributed to the "lifetime employment" system, and, thus, it is not farfetched to argue that the "upward-sloping" segment at least partially represents a cost of the employment practice.

Why does the wage-share trend for the growth-oriented firms (or industries) tend to be the form of convex-downward parabola? To begin with, the exaggerated downward trend of the wage share is, ceteris paribus, induced by the practice of the "lifetime employment" system. The employment practice tends to hinder labor mobility among firms and gives rise to a firm-unit labor market. In other words, a "communal" firm tends to become a monopsonist, as far as its "permanent regular" workers are concerned. Such workers, being isolated from workers of other firms, tend to form an enterprise union, which is a sort of monopolist of the major labor services to the respective "communal" firm. There now emerges a bilateral-monopoly situation within a firm, with a mutual interest in the respective firm's long-term growth and prosperity. As demand for the firm's commodity grows, then, the common interest between the employers and the employees induces over time a decline in the wage share, without reducing the

real wage per worker,[116] as indicated in Chapter 2.

This effect on the wage share is exactly the one shifting the average time preference downward in the present model. Then, the wage share tends gradually to decline over time along with the growing demand for the relevant commodities. The speed of the downward movement in the wage share tends to depend largely on the speed and the extent of adjustment in the average time preference (which, in turn, tends to depend on the expected rate of increase in the demand for the relevant commodities) and the rate of growth in the value-added per worker (which, in turn, partially depends on the rate of induced growth in the capital/labor ratio and the slope of its marginal productivity). The gradual decline in the wage share, together with a keen competition in the commodity market, not only induces capital formation, but also tends to give a downward pressure to the rate of increase in the prices of the relevant commodities and/or upward pressure to the quality of the commodities. This, in turn, tends to give a favorable effect to the quantities demanded of the goods through the income and substitution effects. This upward trend in the quantities demanded, together

116. For that matter, the real wage per worker can increase faster than that of an average "communal" firm, depending on the speed of demand growth.

with the on-going shift upward of the relevant demand schedules, tends to give a strong impetus to the growth of the respective firms (or industries).

The wage share, however, may not continue to decline forever. In the meantime, some counterveiling economic forces tend to develop not much behind the forces which move the wage share downward. On one hand, growth in the value-added per worker, which is largely dependent on a rise in the capital/labor ratio, tends to slowdown, due to the probable slowness in the growth of productivity-enhancing technology relative to a potentially steep "diminishing marginal productivity" of capital at a high level of the capital/labor ratio. On the other hand, wages, especially of the starting workers (new school-graduates) tend to rise rapidly in the face of growing excess demand for the marginal addition to the labor force.[117] This excess demand tends to develop rather swiftly as a result of the compounded output growth, which depends mainly on the

117. The growth-oriented firms with the practice of "lifetime employment" in 1950s and 1960s were particularly inclined to rush for new school-graduates, for countering the steady increase in the per-worker labor cost of the older workers, which was mainly due to the determination of wages and retirement allowance based largely on the length of service. Supply of such new workers, specially the cheapest ones, namely, junior high-school graduates, were, however, on the decline.

reinforced growth of demand for the goods of the growth oriented firms (or industries), the rapid growth in capital formation (which may be largely induced both by the practice of the "lifetime employment" system and the accelerator effect of the output growth) and the multiplier effect of the growing investment. The rapid wage hike for the new school-graduates, coupled with the persisting practice of wage determination based largely on the length of service, tends to raise the wage burden, especially in the situation of a diminishing growth rate of value-added per worker and, sooner or later, tends to stop the decline in the wage share and start raising it gradually.

Since the capital share in the relevant value-added is largely tied up with the depreciation allowance and the payment of interest and dividends, the gradual rise in the wage share tends to give an upward pressure to the prices of the relevant goods. This, in turn, tends to give a downward pressure to the quantities demanded of the goods through the income and substitution effects. Over a long period of time, the relevant tend in the demand for the specific goods also tends to decline, as new commodities start to appear in the market along with a change in the consumer's taste. Under the circumstances, the relevant

business activities tend to stagnate, and the wage share is led to a more pronounced rise. Thus, the wage share eventually tends upward over time.

The above discussion regarding the"upward-sloping" portion of the "convex-downward" trend can also suggest the characteristics of a second pattern, namely, the "upward-sloping" pattern, since the situation existing for the former must be quite similar to the one existing for the latter. Then, practice of the "lifetime employment" system tends to pose more of a burden than anything to the firms (or industries) concerned. In terms of the present analytical framework, these firms represent those "communalized" firms, demand for whose commodities tends to stagnate over time. Also, such "communalized" firms tend to be found in such industries, whose growth ratios in terms of the value-added per worker for the "communal" firms are characterized as being smaller than the average of all the "communal" firms in the total industries.

This "upward-sloping" pattern is found in the polygons for three industries, namely, Rubber Products, Textiles; and Glass, Ceramics & Stone Products, as shown in Figures 11, 12 and 13, respectively. A common feature of these industries, other than the wage-share pattern, is that both their individual

outputs and value-added per worker grew much slower than the respective averages of the total manufacturing industries for the 1955-1975 period, as far as the "communal" firms are concerned. As listed earlier in this section, these three industries ranked 14th, 11th, and 13th among the fourteen industries, in terms of the growth ratios of value-added per worker.

A relevant question now is: why did the large firms in these industries adopt the "lifetime employment" system? An intituitive answer may include one or more of the following reasons:

(a) The demand for the relevant commodities was growing when they adopted the employment practice.

(b) They miscalculated the future prospects of their respective commodities.

(c) They were forced into adopting the employment practice by the existing competition for high-quality school graduates.

Indeed, these light-industries thrived on export in the immediate post-war period, but with the rise of heavy industries as Japan's leading industries in mid-1950s they gradually faded away, as they lost their competitive edge in the international market, due mainly to the rapidly rising labor costs. Both miscalculation of their future prospects and consideration for labor

recruitment were quite likely factors for adoption of the "lifetime employment" system in the early post-war Japan.

A third wage-share trend, namely the"trend-less" pattern, represent cases in-between the above two conspicuous patterns. To be more accurate, the relevant polygons shown in Figures 14 to 18 are not totally de-void of trends. The respective polygons for Printing & Publishing; Pulp, Paper & Paper Products; and Non-ferrous Metals show slight upward trends, the one for Foodstuffs indicates some resemblance to the "convex-downward" pattern, and the one for Iron&Steel suggests a slight "downward-sloping" trend. Since these pat-perns are not as distinct as to be included in the previous two patterns, the respective polygons are simply placed under the "trendless" pattern. As far as the trend alone is concerned, practice of the "lifetime employement" system does not seem to impose any burden or cost to the industries concerned. As stated earlier in the section, however, a higher vari-ation of the wage share alone, which is, ceteris paribus, brought about by the employment practice, suggests a certain cost to the relevant firms and industries under the "lifetime employment" system.

In summary, there are basically three dif-ferent patterns in the wage-share behavior of the "com-

munal" firms, namely, the "convex-downward," the upward-sloping" and the "trendless" patterns. The first pattern tends to be most favorable of the three for internal generation of growth, because of its "downward-sloping" portion, while the second one is the most unfavorable, since it implies an ever-increasing wage share in the relevant value-added.[118] The third one, namely, the "trendless" pattern simply represents the situation in-between the first two patterns. All the polygons of the "communal" firms considered above fall into one of these trend-patterns and indicate a common tendency of fluctuations greater than the corresponding polygons of the "competitive" firms. This common tendency represents, ceteris paribus, a burden attibutable to practice of the "lifetime employment" system. Another burden, which may be more important in a long duration, is suggested by the "upward-sloping" trend, which appears to exist at least for the latter part of all the polygons for the "communal" firms. These implied costs of the "lifetime employment" system may, as time passes, affect

118. It is quite possible that the "upward-sloping" wage-share pattern for the relatively stagnant industries is only a segment of a "convex-downward" pattern of a longer period, since those industries, such as Textiles, Rubber Products, and Ceramics, were leading industries of Japan before the rise of her heavy industries in 1950s.

severly at least some components of the employment practice, such as the determination of wages and retirement allowance based largely on the length of service.

C.2. Relations between Changes in Wage Share and Grwoth in Value-Added

The above results of the graphical survey are in accordance with the data representing the wage-share growth ratios and the value-added growth ratios in Tables 6 and 7, respectively, for the "competitive" and the "communal" firms. Columns 2 and 3 in each table show the 5-year averages of the wage shares (wage/value-added ratios) for the 1955-1959 period and 1968-1972 period, respectively. Column 4 presents the ratios of the Column-3 values to the corresponding Column-2 values, which are the wage-share growth ratios. Columns 5 and 6, on the other hand, show the 5-year averages of real value-added per worker for the 1955-1959 period and the 1968-1972 period, respectively. Then, Column 7, listing the ratios of the Column-6 values to the corresponding Column-5 values, shows the growth ratios of the value-added per worker. The 5-year averages for the relevant variables, rather than annual values, are adopted here in order to reduce the potential errors related to short-run fluctuations.

## Table 6

THE "COMPETITIVE" FIRMS: FIVE-YEAR AVERAGES OF WAGE-SHARES AND VALUE-ADDED

| | | Wage-share | | | Value-added | | |
|---|---|---|---|---|---|---|---|
| | (1) INDUSTRY | (2) 1955-59 average | (3) 1968-72 average | (4) (3)/(2) | (5) 1955-59 average (¥1,000) | (6) 1968-72 average (¥1,000) | (7) (6)/(5) b |
| 1 | Chemical products | 0.285 | 0.264 | 0.925 | 1,363 | 3,406 | 2.499 |
| 2 | Transport equipment | 0.484 | 0.459 | 0.948 | 656 | 1,675 | 2.583 |
| 3 | Precision instruments | 0.488 | 0.467 | 0.956 | 627 | 1,558 | 2.484 |
| 4 | Ordinary machinery | 0.468 | 0.442 | 0.945 | 747 | 1,996 | 2.671 |
| 5 | Electric Machinery | 0.438 | 0.465 | 1.062 | 683 | 1,323 | 1.938 |
| 7 | Rubber products | 0.433 | 0.435 | 1.005 | 662 | 1,547 | 2.337 |
| 8 | Textiles | 0.429 | 0.441 | 1.028 | 492 | 1,305 | 2.652 |
| 9 | Glass, Ceramics & Stone products | 0.468 | 0.403 | 0.860 | 601 | 1,737 | 2.891 |
| 10 | Iron & Steel | 0.430 | 0.415 | 0.966 | 967 | 2,297 | 2.375 |
| 11 | Nonferrous metals | 0.426 | 0.405 | 0.950 | 889 | 2,260 | 2.542 |
| 12 | Pulp, Paper & Paper products | 0.375 | 0.398 | 1.061 | 731 | 1,789 | 2.447 |
| 13 | Foodstuffs | 0.291 | 0.319 | 1.096 | 894 | 1,925 | 2.153 |
| 14 | Printing & Publishing | 0.456 | 0.474 | 1.039 | 754 | 1,784 | 2.366 |
| | Arithmetic Mean: | | | 0.988 | | | 2.457 |
| | Standard Deviation: | | | 0.067 | | | 0.240 |
| | Coefficient of Variation: | | | 0.068 | | | 0.098 |

## Table 7

THE "COMMUNAL" FIRMS: FIVE-YEAR AVERAGES OF WAGE SHARES AND VALUE-ADDED

| (1) INDUSTRY | Wage-share (2) 1955-59 average | (3) 1968-72 average | (4) (3)/(2) | Value-added (5) 1955-59 average (¥1,000) | (6) 1968-72 average (¥1,000) | (7) (6)/(5) b |
|---|---|---|---|---|---|---|
| 1 Chemical products | 0.332 | 0.210 | 0.633 | 1,696 | 5,407 | 3.188 |
| 2 Transport equipment | 0.511 | 0.331 | 0.648 | 1,429 | 3,387 | 2.370 |
| 3 Precision instruments | 0.551 | 0.457 | 0.829 | 1,116 | 2,160 | 1.935 |
| 4 Ordinary machinery | 0.464 | 0.344 | 0.731 | 1,255 | 3,361 | 2.678 |
| 5 Electric machinery | 0.319 | 0.290 | 0.909 | 1,556 | 3,145 | 2.021 |
| 7 Rubber products | 0.260 | 0.359 | 1.381 | 1,433 | 2,527 | 1.764 |
| 8 Textiles | 0.346 | 0.522 | 1.509 | 931 | 1,171 | 1.258 |
| 9 Glass, Ceramics & Stone products | 0.244 | 0.294 | 1.205 | 2,677 | 3,662 | 1.368 |
| 10 Iron & Steel | 0.413 | 0.401 | 0.971 | 1,854 | 3,301 | 1.780 |
| 11 Nonferrous metals | 0.341 | 0.333 | 0.977 | 2,012 | 3,377 | 1.679 |
| 12 Pulp, Paper & Paper products | 0.349 | 0.342 | 0.980 | 2,240 | 3,685 | 1.645 |
| 13 Foodstuffs | 0.312 | 0.329 | 1.054 | 2,096 | 3,226 | 1.539 |
| 14 Printing & Publishing | 0.319 | 0.325 | 1.019 | 2,542 | 5,028 | 1.978 |
| Arithmetic Mean: | | | 0.989 | | | 1.939 |
| Standard Deviation: | | | 0.260 | | | 0.537 |
| Coefficient of Variation: | | | 0.263 | | | 0.277 |

It is quite clear from these tables, that high growth ratios of value-added per worker are associated with low growth ratios of wage shares, while low growth ratios of value-added per worker tend to go hand in hand with high growth ratios of wage shares. A caution must be exercised for interpretation of the mean growth ratios of the wage shares and the value-added per worker. These averages for the "competitive" firms are 0.988 and 2.457, respectively, while the respective values for the "communal" firms are 0.989 and 1.939. It is quite tempting to interpret these results to the effect that the "competitive" firms are on the average more conducive for the growth of value-added per worker than the "communal" firms. An interpretation as such, however, may not be entirely warrented, since a value-added per worker growing from ¥1,000,000 to ¥2,000,000 over a relevant period is a very different story from another growing from ¥2,000,000 to ¥4,000,000 over the same period,[119] although their respective growth ratios amount to exactly the same. Among other things,

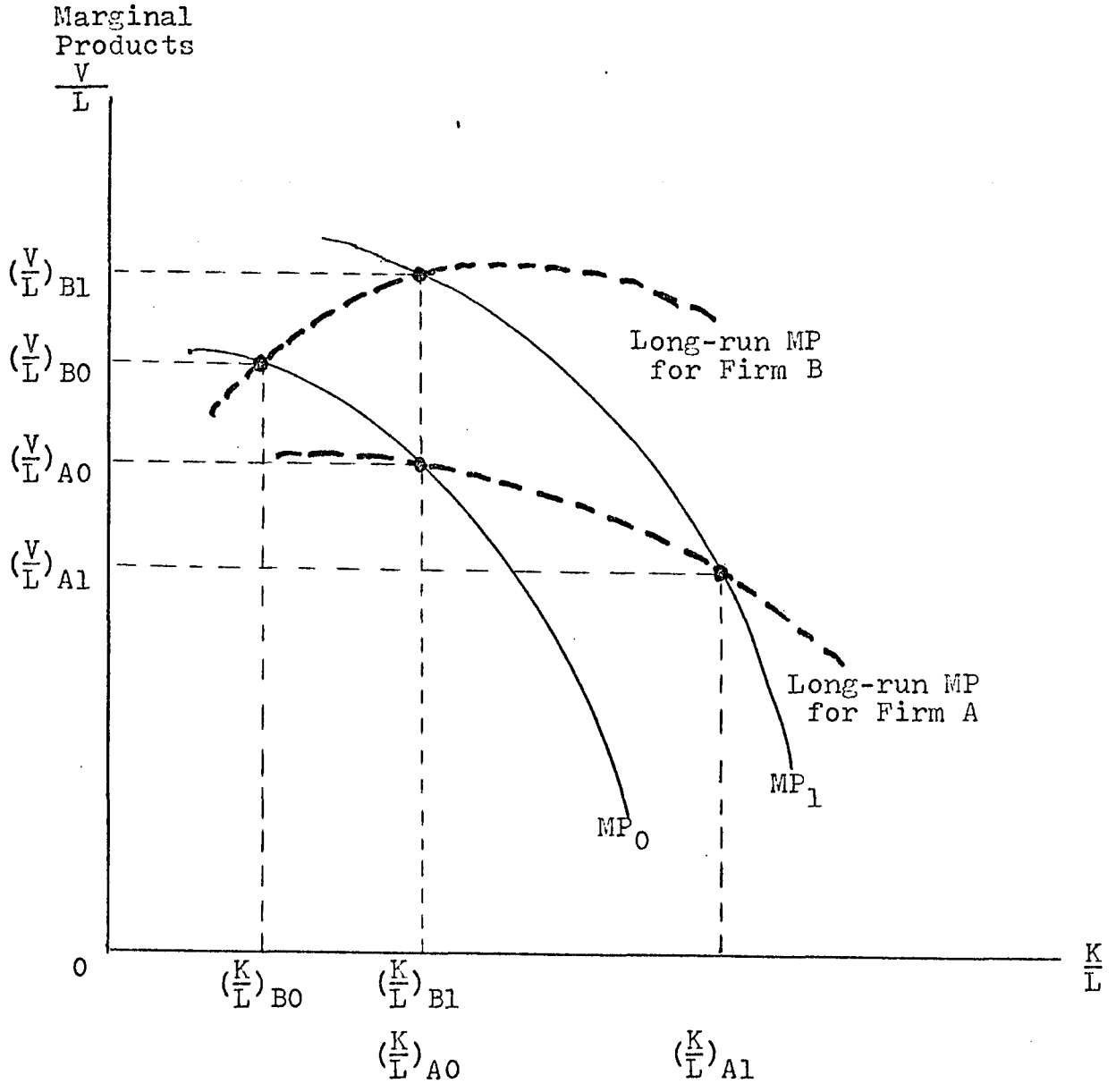
119. The growth ratios of value-added per worker calculated on the 13-industry averages are 2.447 and 1.903, respectively for the "competitive" and the "communal" firms. The average for the "competitive" firms grew from ¥774 thousand (annual value-added per worker) to ¥1,894 thousand for the relevant period, while that for the "communal" firms grew from ¥1,756 thousand to ¥3,341 thousand for the same period.

the law of variable proportion may have some influence on the rate of growth in the value-added per worker even in a long duration of time, as depicted in Figure 19.

With reference to Figure 19, let Firm A's capital/labor ratio, $(\frac{K}{L})_{A0}$, be twice as large as Firm B's capital/labor ratio, $(\frac{K}{L})_{B0}$, in period 0, and let the marginal products along $MP_0$ of the respective capital/labor ratios be $(\frac{V}{L})_{A0}$ and $(\frac{V}{L})_{B0}$. Also, let the respective capital/labor ratios increase 100% between period 0 and Period 1, i.e., $(\frac{K}{L})_{A1} = 2(\frac{K}{L})_{A0}$ and $(\frac{K}{L})_{B1} = 2(\frac{K}{L})_{B0}$. Furthermore, let the marginal-product schedule be shifted to $MP_1$, owing to a technological advance between Period 0 and Period 1. Then, the marginal products of $(\frac{K}{L})_{A1}$ and $(\frac{K}{L})_{B1}$ are $(\frac{V}{L})_{A1}$ and $(\frac{V}{L})_{B1}$, respectively. Due to the possible presence of credit-market imperfection, imperfect information, etc., any two firms do not necessarily have the same marginal product or capital/labor ratio at any given point of time. From this it can be inferred that the growth ratio in the value-added per worker of Firm B exceeds that of Firm A over the relevant long-run. Thus, the rate of growth in the value-added per worker can be influenced by the law of variable proportion even in the long run.

Also, the variations of both the wage-share growth ratios and the value-added growth ratios among

Figure 19


Marginal Products
V/L
(V/L)B1
(V/L)B0
(V/L)A0
(V/L)A1
Long-run MP for Firm B
Long-run MP for Firm A
MP1
MP0
0
(K/L)B0
(K/L)B1
(K/L)A0
(K/L)A1
K/L

the 13 industries are much greater for the "communal" firms than for the "competitive" firms. The larger standard deviation of the wage-share changes for the "communal" firms is in agreement with the observation of the wage-share polygons, i.e., (1) the wage-share trends for the "communal" firms are more conspicuous than those for the "competitive" firms, (2) the wage-share values fluctuate more for the former than for the latter over the short-run business fluctuations, and (3) there are greater gaps in the wage-share growth between the growth-oriented "communal" firms and the stagnating "communal" firms than between the growth-oriented "competitive" firms and the stagnating "competitive" firms.

Another important caution is in order at this stage of discussion. It is easy to conjecture a negative association between the wage-share growth ratios and the growth ratios of the value-added per worker. In fact, significant negative correlations are found between these variables, together with high coefficients of determinations ($R^2$); i.e., $R^2$ for the "competitive" firms and the "communal" firms are o.573 and o.642, respectively. This negative association of the relevant variables is, however, largely a truism, which can be demonstrated, as follows:

Let "b" be a growth ratio of the value-added per worker, viz., the value-added per worker for Period 1 divided by the value-added per worker for Period 0; symbolically,

$$b = (V/L)_1/(V/L)_0;$$

"a" a growth ratio of the wages per worker, viz., the wage per worker for Period 1 divided by the wage per worker for Period 0; symbolically,

$$a = (W/L)_1/(W/L)_0;$$

and "c" a growth ratio of the wage shares, viz., the wage share for Period 1 divided by the wage share for Period 0; symbolically,

$$c = (W/V)_1/(W/V)_0.$$

Now, the growth ratio of the wage shares can be rewritten as,

$$(\frac{W}{V})_1/(\frac{W}{V})_0 = (\frac{W/L}{V/L})_1/(\frac{W/L}{V/L})_0 \text{ ; and}$$

the right-hand side of the equation also can be rearranged as,

$$\frac{(W/L)_1}{(V/L)_1}\cdot\frac{(V/L)_0}{(W/L)_0} = \frac{(W/L)_1}{(W/L)_0}\cdot\frac{(V/L)_0}{(V/L)_1} = a\cdot\frac{1}{b} = \frac{a}{b}\ .$$

Thus, a wage-share growth ratio, $\frac{a}{b}$, is by definition negatively correlated with a growth ratio of the value-added per worker, b. A decline in the wage share over time implies either a low growth ratio of the wage per worker relative to the growth ratio of the value-added per worker, or, alternatively, a high growth ratio of the value-added per worker relative to the growth ratio of

the wage per worker. This suggests a decline in the average rate of time preference, and the alternative interpretation of the negative relation is indicative of an outward shift of the budget line in the present theoretical framework. A relevant portion of the implied outward shift, attributable to practice of the "lifetime employment" system is presently referred to as "internal-generation of growth" in the value-added per worker, of which a certain inference was made in the previous section. It seems, however, that there is missing link between the evidence of declining wage shares and the potentiality of "internally-generated growth" in the value-added per worker.

A pertinent question is now: under what circumstances does practice of the "lifetime employment" system induce a growth in the value-added per worker? Two of the most obvious conditions are a strong prospect for a long-term growth in demand for the relevant goods and a keen competition in the market for the goods among the producers. Under these conditions, what is saved through a long-term decline in the wage shares tends largely to be allocated for new capital formation, or at least for inducement of new investments, not only for a quantititive increase of the capital/labor ratio but also for a qualitative improvement of the ratio through the best possible embodiment of technological advance into

the new physical capital and the existing labor. This tends to continuously boost the value-added per worker. Thus, given these conditions, the common interest of management and labor, established and reinforced under the "lifetime employment" system, tends to provide continuous growth stimili for the relevant firms.

Then, the "missing link" can be at least partially supplied by an information regarding the rate of capital formation and its possible effect on the growth of the value-added per worker. The presently availabe data, which are shown in Table 8 and refer to growth in capital per worker, output per worker and value-added per worker, neither have the same firm-classification as the one adopted so far, nor indicate figures specific to any individual industries. Nevertheless, they may serve as a rough indication of the relation between a growth in the capital/labor ratio and an increase in value-added per worker. As seen in the table, firms are classified into six categories according to capital sizes. The last category, namely, those firms capitalized at 100 million yen or more, can be considered here as rough equivalent to the "communal" firms. The fixed capital per worker (or the capital/labor ratio) in these firms increased 128.3% over the period between 1953 and 1959, together with 71.8% growth in output per worker and 81.3% increase in value-added per worker.

Table 8

CAPITAL/LABOR RATIO AND LABOR PRODUCTIVITY

| CLASS BASED ON CAPITALIZATION (million yen) | Fixed-Capital per worker $\frac{\text{1953 value}}{\text{1959 value}} \times 100$ (%) | Output per worker $\frac{\text{1953 value}}{\text{1959 value}} \times 100$ (%) | Value-added per worker $\frac{\text{1953 value}}{\text{1959 value}} \times 100$ (%) |
|---|---|---|---|
| Less than 2 | 291.8 | 189.4 | 192.4 |
| 2 and under 4.99 | 164.8 | 119.5 | 135.9 |
| 5 and under 9.99 | 189.8 | 119.8 | 131.0 |
| 10 and under 49.99 | 155.9 | 116.5 | 119.3 |
| 50 and under 99.99 | 187.3 | 152.6 | 162.9 |
| More than 100 | 228.3 | 171.8 | 181.3 |

Source: Takatoshi Nakamura, Nippon No Dai-Kigyo (Large Corporations of Japan), Iwanami Shoten, Tokyo (1974), Pages 142 and 143.

These growth percentages are greater than those of the other classes, except the smallest-firm class (which includes many "family" companies capitalized at less than 2 million yen). The corresponding growth rates for the "communal" firms in the growth-oriented industries must be considerably greater than the average of all the "communal" firms in manufacturing industries, especially because the data period corresponds to a part of the "downward-sloping" portion of the "convex-downward" wage-shre pattern. This evidence, being by no means conclusive, may point to the relations pertinent to the internal generation of growth in value-added per worker for the growth-oriented "communal" firms; i.e., a decline in the wage share induces a growth in capital/labor ratio, which, in turn, encourages an increase in value-added per worker.

C.3. A Test of the Modified Proposition

The above two analyses, namely, a graphical survey and an examination of wage-share changes in relation to growth rates of value-added per worker, lead to the crux of the problem, namely, verification of the testable proposition, which is restated below for a convenient reference:

(1) If the growth ratio (b*) of the real value-added per worker for the representative "communal" firm in an

industry, for a relevant interim period, greater than the mean growth ratio ($\bar{b}^*$) for all the "communal" firms of the total industries considered, the following relation tens to emerge,

$$a/b > a^*/b^* \text{ ; and}$$

(2) If the growth ratio ($b^*$) of the real value-added per worker for the representative "communal" firm in an industry is, for a relevant interim period, equal to or smaller than, the mean growth ratio ($\bar{b}^*$) for all the "communal" firms of the total industries considered, the following relation tends to emerge,

$$a/b < a^*/b^*;$$

where (a) and ($a^*$) refer to the per-worker wage growth ratios of the "competitive" firms and the "communal" firms, respectively, and (b) and ($b^*$) the per-worker value-added growth ratios of the "competitive" firms and the "communal" firms, respectively.

It is also important to repeat that this testable proposition should be interpreted as only a rough indicator of the underlying tendency, due to the inherent ambiguity and complication regarding the distinction between the "communal" and the "competitive" firms, as referred to in an earlier section.

The denominators of the above inequalities, namely, b and $b^*$, have been already calculated for the

previous section and shown in Column 7 of Tables 6 and 7, respectively. For the numerators, namely, a and a*, a similar calculation is performed, and the respective values are listed in Columns 4 and 7 of Table 9. For an easy reference, the growth ratios of wages per worker (or, a and a*) and the growth ratios of value-added per worker (or, b and b*) are now transferred to Table 10, which also lists, for each of 13 industries,[120] a/b for the "competitive" firms and a*/b* for the "communal" firms. Also stated in Table 10 is the arithmetic mean of the growth ratios ($\bar{b}^*$=1.939) for all the "communal" firms of the 13 industries considered, which serves here as the growth criteria for the empirical proposition.

Now, a comparison of the two vital ratios, namely, a/b and a*/b*, is in order. From Table 10, it is noted that five industries, namely, Chemical Products, Transport Equipment, Ordinary Machinery, Electrical Machinery, and Printing and Publishing, have their respective growth ratios (b*) of value-added per worker exceeding the arithmetic mean of the growth ratios ($\bar{b}^*$= 1.939). For each of these industries, $a/b > a^*/b^*$, without any exception. This result undoubtedly supports the testable proposition (1).

120. Values for Fabricated Metal Products are not included in the table, due to the lack of date for 1956, 1957 and 1958.

## Table 9

FIVE-YEAR AVERAGES OF WAGES

| INDUSTRY (1) | THE "COMPETITIVE" FIRMS 1955-59 average (¥1,000) (2) | 1968-72 average (¥1,000) (3) | (3)/(2) a (4) | THE "COMMUNAL" FIRMS 1955-59 average (¥1,000) (5) | 1968-72 average (¥1,000) (6) | (6)/(5) a* (7) |
|---|---|---|---|---|---|---|
| Chemical products | 389 | 898 | 2.308 | 555 | 1,130 | 2.035 |
| Transport equipment | 318 | 778 | 2.448 | 680 | 1,129 | 1.660 |
| Precision instruments | 306 | 725 | 2.371 | 613 | 986 | 1.609 |
| Ordinary machinery | 349 | 882 | 2.527 | 557 | 1,154 | 2.071 |
| Electric machinery | 299 | 616 | 2.062 | 475 | 906 | 1.908 |
| Rubber products | 287 | 673 | 2.346 | 366 | 937 | 2.560 |
| Textiles | 211 | 576 | 2.730 | 313 | 613 | 1.958 |
| Glass, Ceramics & Stone products | 281 | 702 | 2.500 | 647 | 1,078 | 1.666 |
| Iron & Steel | 410 | 952 | 2.323 | 748 | 1,310 | 1.752 |
| Nonferrous metals | 374 | 914 | 2.443 | 670 | 1,125 | 1.679 |
| Pulp, Paper & paper products | 275 | 709 | 2.579 | 774 | 1,207 | 1.560 |
| Foodstuffs | 260 | 615 | 2.367 | 618 | 1,042 | 1.687 |
| Printing & Publishing | 345 | 845 | 2.450 | 813 | 1,631 | 2.006 |

Table 10

COMPARISON OF GROWTH RATIOS BETWEEN THE "COMPETITIVE" AND THE "COMMUNAL" FIRMS

| INDUSTRY | a | b | a/b | a* | b* | a*/b* |
|---|---|---|---|---|---|---|
| Chemical products | 2.308 | 2.499 | 0.924 | 2.035 | 3.188 | 0.638 |
| Transport equipment | 2.448 | 2.583 | 0.948 | 1.660 | 2.370 | 0.700 |
| Precision instruments | 2.371 | 2.484 | 0.955 | 1.609 | 1.935 | 0.832 |
| Ordinary machinery | 2.527 | 2.671 | 0.946 | 2.071 | 2.678 | 0.773 |
| Electric machinery | 2.062 | 1.938 | 1.064 | 1.908 | 2.021 | 0.944 |
| Rubber products | 2.346 | 2.337 | 1.004 | 2.560 | 1.764 | 1.451 |
| Textiles | 2.730 | 2.652 | 1.029 | 1.958 | 1.258 | 1.556 |
| Glass, Ceramics & Stone products | 2.500 | 2.891 | 0.865 | 1.666 | 1.368 | 1.218 |
| Iron & Steel | 2.323 | 2.375 | 0.978 | 1.752 | 1.780 | 0.984 |
| Nonferrous metals | 2.443 | 2.542 | 0.961 | 1.679 | 1.679 | 1.000 |
| Pulp, Paper & Paper products | 2.579 | 2.447 | 1.054 | 1.560 | 1.645 | 0.948 |
| Foodstuffs | 2.367 | 2.153 | 1.099 | 1.687 | 1.539 | 1.096 |
| Printing & Publishing | 2.450 | 2.366 | 1.036 | 2.006 | 1.978 | 1.014 |
| Arithmetic Mean: | 2.420 | 2.457 | 0.989 | 1.858 | 1.939 | 1.012 |
| Standard Deviation: | 0.159 | 0.240 | 0.065 | 0.274 | 0.537 | 0.270 |
| Coefficient of Variation: | 0.066 | 0.098 | 0.066 | 0.147 | 0.277 | 0.267 |

On the other hand, for each of five relatively stagnant industries, namely, Rubber Products, Textiles, Glass, Ceramics & Stone Products, Iron & Steel, and Nonferrous Metals, $a/b < a^*/b^*$, which results also attests the testable proposition (2).

The remaining three industries which indicate a relatively stagnant growth in value-added per worker, however, suggests a/b being greater than $a^*/b^*$, which does not agree with the testable proposition (2). One of the three, namely, Precision Instruments, has almost the same growth ratio ($b^*=1.935$) as the average ratio ($\bar{b}^*=1.939$) and tends to reveal the characteristics of a relatively growing industry, as discussed in an earlier section. This industry can then be treated as one practically part of the above growth-oriented industries, where $a/b > a^*/b^*$. The other two industries, namely, Foodstuffs and Pulp, Paper & Paper Products, are, therefore, the only ones which do not fit to the empirical proposition, due probably to the ambiguity and complication mentioned above.

Alternatively, with respect to the five relatively growing industries, their representative growth ratios (simple arithmetic means) of wage per worker and value-added per worker, and the ratio of

the two growth ratios are computed both for the "competitive" and the "communal" firms, and the resulted values are shown, as follows:

a = 2.359, b = 2.411, a/b=0.978; and

a* = 1.936, b* = 2.447, a*/b*=0.791.

Since a/b (=0.978) is greater than a*/b* (=0.791), this result confirms the testable proposition (1).

For the remaining industries, namely, eight relatively stagnant industries, a similar calculation is performed with the following results:

a = 2.457, b= 2.485, a/b=0.989; and

a* = 1.809, b*= 1.621, a*/b*=1.116.

Now, a/b is smaller than a*/b*, and this result is in agreement with the testable proposition (2). Thus, it is rather reasonable to conclude that the empirical proposition tends to capture the underlying contrasts between the "competitive" and the "communal" firms.

In addition to the above, it is important to note the following from Table 10:

(1) As afar as the "competitive" firms are concerned, the growth ratio of wage per worker (a) is closely in line with the growth ratio of value-added per worker (b) for each industry. A simple correlation between these ratios for the 13 industries indicates a significant relationship, namely,

$R = 0.727$.

(2) Regarding the "communal" firms, on the other hand, the growth ratios of wage per worker (a*) vary widely with the corresponding growth ratios of value-added per worker among the 13 industries. A simple correlation between these ratios (a* and b*) for the 13 industries indicates a trivial relationship, namely, $R = 0.250$.

(3) The growth ratios of wage per worker among the 13 industries are more similar for the "competitive" firms than for the "communal" firms. This tendency is indicated by the respective standard deviations and coefficient of variation regarding the growth ratios, namely:

$$s_a = 0.159 < s_{a*} = 0.274 \text{ ; and}$$
$$c_a = 0.066 < c_{a*} = 0.147 \text{ , where}$$

the asterisk refers to the values for the "communal" firms.

(4) The growth ratios of value-added per worker among the 13 industries are, again, more similar for the "competitive" firms than for the "communal" firms. This tendency is indicated by the respective standard deviations and coefficients of variation regarding the growth ratios, namely,

$s_b = 0.240 < s_{b*} = 0.537$ ; and

$c_b = 0.098 < c_{b*} = 0.277$.

(5) The vital ratios, namely, the ratios between the growth ratios of wage per worker and the growth ratios of value-added per worker among the 13 industries are more similar for the "competitive" firms than for the "communal" firms. This tendency is indicated by the respective standard deviations and coefficients of variation regarding the vital ratios, namely:

$s_{a/b} = 0.065 < s_{a*/b*} = 0.270$ ; and

$c_{a/b} = 0.066 < c_{a*/b*} = 0.267$.

(6) Relations between the growth ratios or wage per worker for the "competitive" firms (a) and the corresponding ratios for the "communal" firms (a*) among the 13 industries are trivial, as indicated by a small correlation coefficient, namely, $R = -0.139$.

These additional empirical observations tend to bring out major contrasts between the "competitive" firms and the "communal" firms. The basic concept of the present analytical framework includes an assertion that an average time preference (namely, an average of all employers and workers in a firm) for the "competitive" firms is

stable, while it tends to move in different directions and degrees, depending upon growth profiles in the case of "communal" firms, due specifically to practice of the "lifetime employment" system. Presence of these differences between the two types of firms tend to be indicated by the empirical observations (1) and (2). Also, a greater flexibility in resource allocation among the "competitive" firms than among the "communal" firms is implied by the observations (3) and (4). Furthermore, a necessary consequence of the above differences is noted by the observation (5), which indicates a greater variation of the vital ratios among the "communal" firms than among the "competitive" firms. Finally, the observation (6) tends to imply a general lack of labor mobility between the two types of firms.

## 4. Summary

The following differences between the "competitive" and the "communal" firms tend to emerge from the above empirical analyses.

1) The short-term (annual and cyclical) variations of wage share tend to be greater in the case of "communal" firms than in the case of "competitive" firms. This implies that the "communal" firms

must bear a greater burden in terms of financial arrangement over business cycles.

2) The long-term patterns of wage share tend to be more conspicuous in the case of "communal" firms than in the case of "competitive" firms.

a) The wage-share patterns of the "competitive" firms tend to be mostly trendless. This is also evidenced by similar growth ratios of wage per worker and value-added per worker in each industry. Further, the respective growth ratios are found similar among the thirteen industries.

b) In the case of the growth-oriented "communal firms, a long-duration of wage-share decline is revealed at least for the earlier part of the investigated period. This is also evidenced by the slow growth of wage per worker relative to the growth of value-added per worker. This implies an advantage of the growth-oriented "communal" firms relative to the "competitive" firms. This is evidenced by the inequality based on actual data, namely, $a/b > a^*/b^*$.

c) A predominant upward-sloping wage-share

pattern is found in some cases of the relatively stagnant "communal" firms. This is also evidenced by the rapid growth of wage per worker relative to the growth of value-added per worker. This implies a disadvantage of the stagnant "communal" firms relative to the "competitive" firms. This is revealed by the inequality based on actual data, namely, $a/b/ < a^*/b^*$.

3) A potential link between a decline in the wage share and an increase in the value-added per worker, suggestive of internal generation of growth in the growth-oriented "communal" firms, is inferred from the available data.

   a) Practice of the "lifetime employment" system tends to reduce wage share over time through a downward shift in the average time preference.

   b) A decline in the wage share tends to induce a growth in new capital formation under the conditions of a long-term growth prospects of the relevant goods and a keen competition in the market among the relevant producers.

   c) An increase in new capital formation

tends to raise the capital/labor ratio and, hence, the value-added per worker.

4) Some evidence is found regarding mobility of workers. Workers tend to move more freely among the "competitive" firms than among the "communal" firms, and there tends to be a general lack of mobility of workers between the "competitive" and the "communal" firms.

So far, it has been strictly assumed that the "lifetime employment" system tends to reduce the average time-preference rate in a representative "growth-oriented" firm and increase it in a representative "stagnant" firm. Is this assumption reasonably supported by empirical evidence? This crucial question will be dealt with next in the following section.

## D. Relationship between the "lifetime Employment" System and Average Time-Preference Rates

### D.1. Measurement of Changes in Time-Preference Rates

The leading assumption of the present thesis is that adoption of the "lifetime employment" system influences changes in the average rate of time preference of the adopting firm's constituents, via establishment of long-term common interests between the

firm's employers (management) and employees (enterprise union). The long-term interests refer to the future growth and prosperity of the relevant firm and are assumed to arise through adoption of the employment institution on the premise that the firm is growth-oriented (meaning that demand for the firm's product is expected to grow faster than the economy's aggregate demand for a long duration of time, and the per-worker value-added of the firm also is growing or can be induced to grow, faster than the economy's average over time) and faces actual or potential competition in the product market. The common interests, once established, tend to lower the average rate of time preference and, subsequently, lower the wage share in the firm's value-added (wage ratio) for a greater internal saving and investment. The common interests, however, may falter, once the demand for the firm's product and/or the per-worker value-added start to show a strong sign of long-term stagnation or decline relative to the economy's aggregate demand and average value-added per worker, respectively, and, subsequently, the firm's average rate of time preference may rise. Given the above conditions and assumptions, the question here concerns first the measurability of changes in the average rate of time preference and secondly the pos-

sible approximation of the changes attributable to practice of the "lifetime employment" system over a relevant interim period.

On the assumption that changes in the average rate of time preference directly influence changes in the wage ratio (W/V), the former can be inferred from the latter. A simplified relation between an inverse indicator of time-preference rate (Z) and the wage ratio (W/V) is shown in Figure 20. It is assumed in the figure that the "lifetime employment" is adopted during the interim period between Period 0 and Period 1. It is also assumed that, as a consequence, the average rate of time preference declines over the relevant period along with a counter-clockwise movement of Z from $Z_0$ to $Z_1$. Also, the firm's real wages and value-added are shown to increase over the period from $W_0$ and $V_0$ to $W_1$ and $V_1$, respectively. Consequently, the wage ratio (W/V) is indicated to decline from $W_0/V_0$ to $W_1/V_1$.

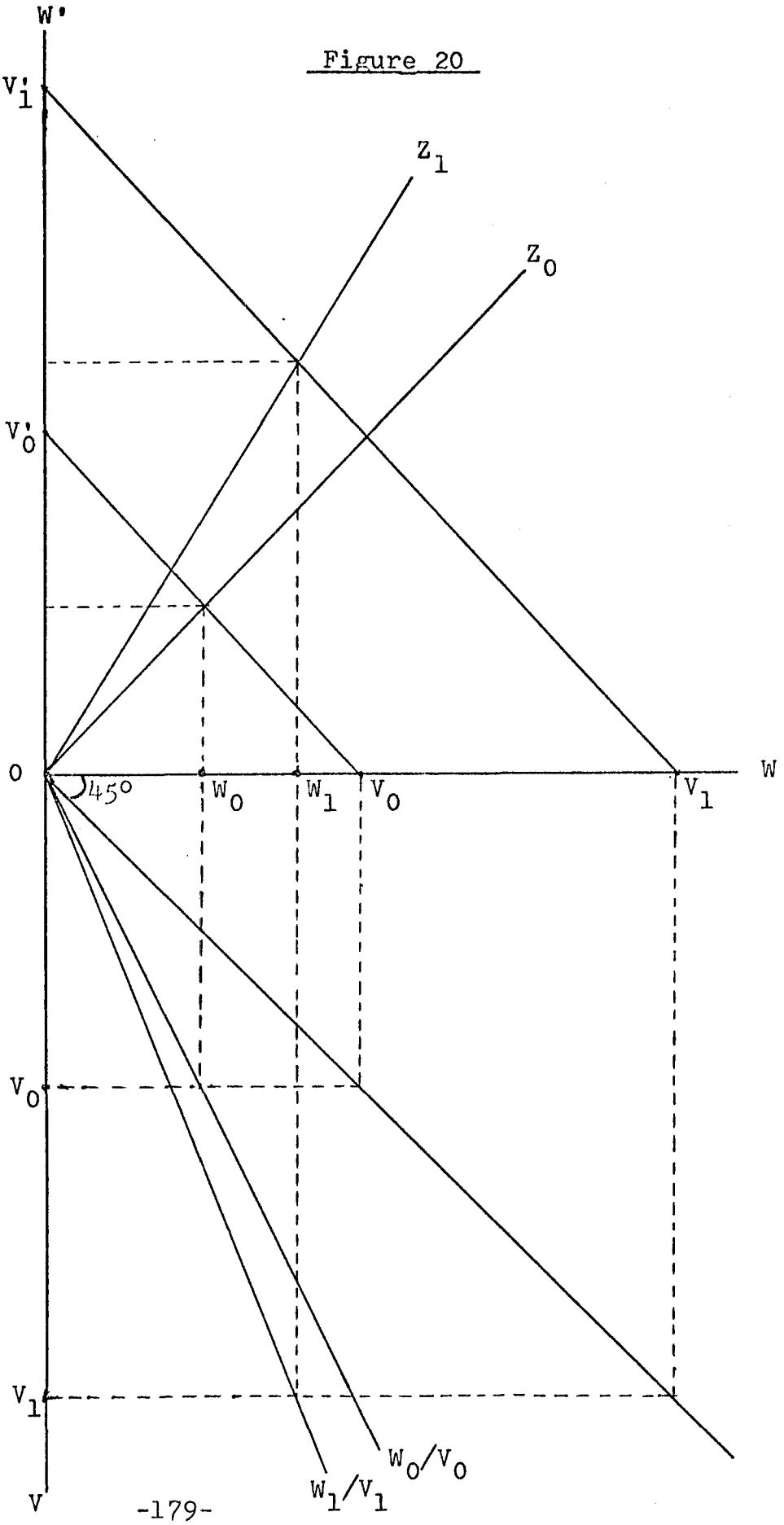
The above relations can be formulated as follows: $Z_i = W_i'/W_i$ - - - - - (1)

where $Z_i$ = an inverse indicator of the average time-preference rate in Period i

$W_i$ = Wage in real Yen in Period i

$W_i'$ = $(V_i - W_i)(1 + r)$ = Future wage in real

Figure 20



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Yen estimated from capital share in Period i, namely, $(V_i - W_i)$, and the given interest rate r (as proxy for the marginal efficiency of capital)

i = Periods 0 and 1.

Equation (1) can be rewritten as,

$$Z_i = \frac{(V_i - W_i)(1+r)}{\frac{W_i}{V_i} V_i} \quad \text{and, letting } w_i = \frac{W_i}{V_i},$$

$$Z_i = \frac{(1 - w_i)(1 + r)}{w_i} - - - - - - - - (2)$$

Now, the indicator of the average time-preference rate $Z_i$ can be calculated from the wage ratio $w_i$ alone, given a constant interest rate r as proxy of the marginal efficiency of capital. The relation between the average rate of time preference and the wage ratio can be described as: the lower the $w_i$, the greater is $Z_i$ and the lower is the average rate of time preference.

For an estimation of the average rate of time preference, it is convenient to follow F. Ramsey in his derivation of a general equation for saving ratio[121] and, then, proceed to derive an equation for time preference rate. Let U = U(C), where U stands

121. F. Ramsey, "A Mathematical Theory of Saving", Economic Journal, Dec., 1928. Also Kenjiro Ara, "Time-Preference and Saving," Kindai Keizai-gaku Jiten, edited by Yamada, Koizumi, Shinohara, Miyazawa and Ara, Kobun-sha, Tokyo (1966).

for utility and C for consumption, and let $C = C_W + C_R$, where $C_W$ stands for consumption out of wage income and $C_R$ for consumption out of asset income.

The marginal utility M is,

$M = dU/dC$, and, according to the law of diminishing marginal utility,

$$\frac{dM}{dC} = -\frac{d}{dC}\left(\frac{dU}{dC}\right) < 0.$$

Now, let $e = -\frac{dC}{C}/\frac{dM}{M}$, where $\frac{1}{e}$ is the elasticity of the marginal utility.

For simplicity, the above equation is rewritten as,

$$e = -\frac{C_0' - C_0}{C_0}/\frac{M_0' - M_0}{M_0}$$ and, then,

$$\frac{C_0' - C_0}{C_0} = -e\left(\frac{M_0' - M_0}{M_0}\right) - - - - (1)$$

Now, the law of equal marginal utility asserts,

$M_0(1 + T_0) = M_0'(1 + r_0)$, where $T_0$ is the average rate of time preference in Period 0 and $r_0$ the interest rate in Period 0 as proxy for the marginal efficiency of capital in Period 0.

By substituting Equation (2) into Equation (1), the following emerges,

$$\frac{C_0' - C_0}{C_0} = e\left(\frac{r_0 - T_0}{1 + r_0}\right) - - - - - (3).$$

Next, it is assumed that the relevant firm in a short run produces a constant yearly value-added, exclusive

of interest income (or profit income) on its investment S, and maintains a constant saving ratio (S/V). Then, Equation (3) can be rewritten as,

$$\frac{V_0' - V_0}{V_0} = e\left(\frac{r_0 - T_0}{1 + r_0}\right) - - - - - (4).$$

where:

$V_0$ = value-added, exclusive of interest income on its investment (or saving S)

$V_0'$ = value-added inclusive of interest income, $r_0 S_0$.

If, now, the value-added in Period 0 net of the interest income ($r_0 S_0$ ) is $V_0'$ the subsequent value-added $V_0'$ is as follows;

$$V_0' = r_0 S_0 + V_0.$$

When the above is substituted into Equation (4), the following is obtained with a certain simplification,

$$\frac{S_0}{V_0} = e\left(\frac{r_0 - T_0}{r_0}\right) - - - - - - (5)$$

Now, assuming that the saving ratio ($S_0/V_0$) is roughly equal to the profit ratio or asset-income ratio $(V_0 - W_0)_{V_0}$,

Equation (5) is modified as,

$$1 - \frac{W_0}{V_0} = e\left(\frac{r_0 - T_0}{r_0}\right) - - - - - (5)'.$$

Rearranging the above equation and letting $w_0 = W_0/V_0$, an equation for the time-preference rate is obtained as,

$$T_0 = r_0\left(1 - \frac{1 - w_0}{e}\right).$$

This equation can be generalized as follows,

$$T_i = r_i \left(1 - \frac{1 - w_i}{e}\right) - - - - - (6).$$

The above equation implies : the average rate of time preference approaches equality with the interest rate (or marginal efficiency of capital) as the wage ratio ($w_i$) increases toward unity, and the former approaches zero as the latter declines toward zero, given a reciprocal of the elasticity of marginal utility (e) being unity for $w_i$=0. Thus, the time-preference rate tends to increase or decrease, together with wage ratio, as demonstrated in Figure 20.

With a further simplification of the above equation, namely, assuming (e) to be constant at approximately unity over time,[122] calculation of changes in the time-preference rates in 13 industries is attempted for an interim period between 1952 and 1975. The simplification reduces the equation to

$$T_i = r_i (w_i) - - - - (7)$$

so that the time preference for an individual year ($T_i$) is found simply by multiplication of the relevant interest rate ($r_i$) and wage ratio ($w_i$). In order

122. This simplification is adopted, due to the inherent difficulty of calculating an accurate elasticity of marginal utility of consumption for each year. It, however, does not negate the essense of the measurement.

to obtain a change in the time-preference rate, the respective rates of the starting year ($T_0$) and the ending year ($T_i$) of the relevant interim period are calculated first, as shown on Columns 2 and 3 and Columns 5 and 6 in Table 11 for the "competitive" and the "communal" firms, respectively. Differences between the time-preference rates of Columns 2 and 3 and of Columns 5 and 6 are shown on Columns 4 and 7, respectively, for the "competitive" and the "communal" firms, and these differences represent the changes in time-preference rates over the interim period. The interest rates (as proxy for the marginal efficiency of capital) for 1952 and 1975 are estimated to be 8.75% and 7.52%, respectively, based on the trend line which are in turn calculated from the annual interest rates shown in Table 15, and the same respective interest rates are used in the calculation of time-preference rates both for the "competitive" and the "communal" firms.[123] Also, the wage ratios for 1952 and 1975 are estimated from the trend lines, which

123. Estimates of rate of return on total fixed assets tend to show similar profit rates for most types of firms and an inverse relation to scale. Andrea Boltho, Japan: An Economic Survey 1953-1973, Oxford University Press, London (1975), p. 48; and Economic Planning Agency, Economic Survey of Japan (1969-1970, The Japan Times, Tokyo (1970), p. 31.

Table 11

| (1) Industry | (2) $T_1^*$ % | (3) $T_0^*$ % | (4) $T_1^*-T_0^*$ % | (5) $T_1$ % | (6) $T_0$ % | (7) $T_1-T_0$ % | (8) $\Delta T_{1e}$ % |
|---|---|---|---|---|---|---|---|
| Transport Equipment | 2.15 | 4.54 | -2.39 | 3.53 | 4.33 | -0.80 | -1.59 |
| Precision Instruments | 3.04 | 5.31 | -2.27 | 3.67 | 4.32 | -0.65 | -1.62 |
| Ordinary Machinery | 2.32 | 4.30 | -1.98 | 3.41 | 4.20 | -0.79 | -1.19 |
| Chemical Products | 2.65 | 2.91 | -1.26 | 2.07 | 2.60 | -0.53 | -0.73 |
| Electrical Machinery | 2.29 | 2.78 | -0.49 | 3.74 | 3.76 | -0.02 | -0.47 |
| Iron & Steel | 2.94 | 3.80 | -0.86 | 3.21 | 3.82 | -0.61 | -0.25 |
| Foodstuffs | 2.35 | 2.57 | -0.22 | 2.53 | 2.56 | -0.03 | -0.19 |
| Printing & Publishing | 2.70 | 2.76 | -0.06 | 3.70 | 3.93 | -0.23 | 0.17 |
| Pulp & Paper | 2.78 | 2.82 | -0.04 | 2.95 | 3.36 | -0.41 | 0.37 |
| Nonferrous Metals | 2.71 | 2.86 | -0.15 | 2.99 | 3.63 | -0.64 | 0.49 |
| Rubber Products | 3.08 | 1.87 | 1.21 | 3.46 | 3.69 | -0.23 | 1.44 |
| Glass, Ceramics & Stone Prod. | 2.37 | 2.04 | 0.33 | 2.83 | 4.33 | -1.50 | 1.83 |
| Textiles | 4.66 | 2.27 | 2.39 | 3.43 | 3.67 | -0.24 | 2.63 |

$\Delta T_{1e} = (T_1^*-T_0^*) - (T_1-T_0)$.

are calculated from the time series of annual wage ratios shown in Appendix.

From the above calculations the following contrasts tend to emerge:

(1) Downward changes in the average time-preference rates among the growth-oriented "communal" firms (namely, the large firms belonging to such industries as Transport Equipment, Precision Instrument, Ordinary Machinery, Chemical Products, and Electrical Machinery) are greater than those among the stagnant "communal" firms (namely, the large firms belonging to such industries as Textiles, Rubber Products, Glass-Ceramics-and-Stone-Products, Foodstuffs and Nonferrous Metals). The average time-preference rates among the "communal" firms in three stagnant industries, namely, Textiles, Rubber Products and Glass-Ceramics-Stone-Products, even increased over the relevant interim period.

(2) Downward changes in the average time-preference rates among the growth-oriented "communal" firms are greater than those among the corresponding "competitive" firms.

(3) Downward changes in the average time-preference rates among the stagnant "communal" firms are

smaller than those among the corresponding "competitive" firms.

(4) Changes in the average time-preference rates among the "communal" firms show a greater variation than those among the "competitive" firms. This result is reasonable, since changes in time-preference rates are directly related to changes in wage-shares.

D.2. Changes in the Average Time-Preference Rates Attributable to the "Lifetime Employment" System

A next logical question is: how much of the changes in the time-preference rates of the "communal" firms can be roughly attributable to the practice of "lifetime employment"? This question is approached by rephrasing it as: Is it reasonable to assume that there tends to be a significant difference in the dynamic pattern of the average time-preference rate in a representative "competitive" firm and that in a typical firm consisting of bilateral monopoly for its labor factor of production? It is customary to assume, in the latter type of firm, presence of conflicting interests between the monopolist (labor union) and the monopsonist (management), namely, absence of the aforementioned long-term common interests which tend to

supersede whatever conflicting interests of short-term nature. Under the above assumption, both labor and management tend to compete for their respective shares in the firm's short-run gains. If this is the case, the average time-preference rate in the firm tends to be reasonably stable over time, and similarly with respect to the wage share. Then, it is quite likely that changes in the average time-preference rates, if any, tend to be similar between the two types of firms. This implies that a change in the average time-preference rate of a representative "communal" firm in an industry, beyond whatever change in the rate of a representative "competitive" firm in the same industry, can be roughly attributed to practice of the "lifetime employment" system, ceteris paribus.

Based on the above argument, an approximation of changes in the adjusted average time-preference rates is attempted and shown on Column 8 in Table 11. These adjusted rates on the column are simple differences between the changes over the interim period of the average time-preference rates for the "communal" firms (shown on Column 4) and those for the "competitive" firms (shown on Column 7), or

$$\Delta T_{1e} = (T^*_1 - T^*_0) - (T_1 - T_0),$$

where $\Delta T_{le}$ = change in the time-preference rate attributable to the practice of "lifetime employment"

$*$ = indicator of the "communal" firms

0 = Year 1952

1 = Year 1975.

Alternatively, the net changes of the time-preference rates, owing to the employment practice, can be estimated first by finding the differences in the magnitude of changes of wage ratios over the interim period between the cases of the "communal" and the "competitive" firms, and next by multiplying the differences and the average interest rate of the interim period, or

$$\Delta T_{le} = r_a \left[ (w^*_1 - w^*_0) - (w_1 - w_0) \right],$$

where $r_a$ = average interest rate for the interim period =8.13%.

This method is roughly equivalent to the following,

$$\Delta T_{le} = r_a \left[ N(t^*_s - t_s) \right],$$

where $N$ = number of years in the interim period

$t_s$ = slope of the wage-ratio trend line.

Calculations and results of these two alternative methods are shown in Table 12 and Table 13, respectively.

The adjusted time-preference changes shown

in the above three tables, namely, the respective changes in time-preference rates roughly attributable to the "lifetime employment" system, strongly suggest that the respective time-preference rates in the case of the growth-oriented "communal" firms (namely, the large firms belonging to such industries as Transport Equipment, Precision Instruments, and Ordinary Machinery) declined substantially over the 1952-1975 period, while those in the case of the stagnant "communal" firms (namely, the large firms belonging to such industries as Textiles, Rubber Products and Glass-Ceramics-and-Stone-Products) rose significantly over the same time interval. Also, it is discernible that the greater the decline in the adjusted time-preference rate, the greater was the growth rate of industry (in terms of the growth rates in value-added) and that the greater the rise in the adjusted time-preference rate, the smaller was the growth rate of industry. These relations among others will be explored in the following.

D.3. Relationship between Changes in the Adjusted Time-Preference Rates and Important Variables

A simple correlation analysis is attempted in an effort to determine relative closeness of relationship between the postwar changes in the time-preference

Table 12

| (1) Industry | (2) $W_1^*$ | (3) $W_0^*$ | (4) $W_1^*-W_0^*$ | (5) $W_1$ | (6) $W_0$ | (7) $W_1-W_0$ | (8) (4)-(7) | (9) $\Delta T_{1e}$ % |
|---|---|---|---|---|---|---|---|---|
| Transport Equipment | 0.286 | 0.519 | -0.233 | 0.469 | 0.495 | -0.026 | -0.207 | -1.68 |
| Precision Instruments | 0.404 | 0.607 | -0.203 | 0.488 | 0.494 | -0.006 | -0.197 | -1.60 |
| Ordinary Machinery | 0.309 | 0.491 | -0.182 | 0.454 | 0.480 | -0.026 | -0.156 | -1.27 |
| Chemical Products | 0.219 | 0.332 | -0.113 | 0.275 | 0.297 | -0.022 | -0.091 | -0.74 |
| Electrical Machinery | 0.304 | 0.318 | -0.014 | 0.497 | 0.430 | 0.067 | -0.081 | -0.66 |
| Iron & Steel | 0.391 | 0.434 | -0.043 | 0.427 | 0.437 | -0.010 | -0.033 | -0.27 |
| Foodstuffs | 0.313 | 0.294 | 0.019 | 0.337 | 0.292 | 0.045 | -0.026 | -0.21 |
| Printing & Publishing | 0.359 | 0.315 | 0.044 | 0.492 | 0.449 | 0.043 | 0.001 | 0.01 |
| Pulp & Paper | 0.370 | 0.322 | 0.048 | 0.392 | 0.384 | 0.008 | 0.040 | 0.33 |
| Nonferrous Metals | 0.357 | 0.322 | 0.035 | 0.401 | 0.418 | -0.017 | 0.052 | 0.42 |
| Rubber Products | 0.409 | 0.214 | 0.195 | 0.460 | 0.422 | 0.038 | 0.157 | 1.28 |
| Glass, Ceramics & Stone Prod. | 0.315 | 0.233 | 0.082 | 0.376 | 0.495 | -0.119 | 0.201 | 1.63 |
| Textiles | 0.620 | 0.259 | 0.361 | 0.456 | 0.419 | 0.037 | 0.324 | 2.63 |

$\Delta T_{1e} = r_a\left[(w_1^*-w_0^*) - (w_1-w_0)\right]$ , where $r_a = 8.13\%$.

Table 13

| (1) Industry | (2) $t_s^*$ | (3) $t_s$ | (4) $t_s^* - t_s$ | (5) $\Delta T_{le}$ % |
|---|---|---|---|---|
| Transport Equipment | -0.0101 | -0.0012 | -0.0089 | -1.74 |
| Precision Instruments | -0.0088 | -0.0003 | -0.0085 | -1.66 |
| Ordinary Machinery | -0.0079 | -0.0011 | -0.0068 | -1.33 |
| Chemical Products | -0.0049 | -0.0010 | -0.0039 | -0.76 |
| Electrical Machinery | -0.0006 | 0.0029 | -0.0035 | -0.68 |
| Iron & Steel | -0.0019 | -0.0004 | -0.0015 | -0.29 |
| Foodstuffs | 0.0008 | 0.0020 | -0.0012 | -0.23 |
| Printing & Publishing | 0.0019 | 0.0019 | 0.0000 | 0.00 |
| Pulp & Paper | 0.0021 | 0.0003 | 0.0018 | 0.35 |
| Nonferrous Metals | 0.0015 | -0.0008 | 0.0023 | 0.45 |
| Rubber Products | 0.0085 | 0.0017 | 0.0068 | 1.33 |
| Glass, Ceramics & Stone Prod. | 0.0035 | -0.0051 | 0.0086 | 1.68 |
| Textiles | 0.0157 | 0.0016 | 0.0141 | 2.75 |

$\Delta T_{le} = r_a[N(t_s^* - t_s)]$ , where $r_a = 8.13\%$.

rates attributable to the "lifetime employment" system and such important variables as wage shares, value-added per worker and wages per worker. This analysis includes three sets of data; namely, (1) the 1952-1975 data for the 13 manufacturing industries regarding the relevant changes in the adjusted time-preference rates ( $\Delta T_{le}$ ), the corresponding <u>actual</u> changes in value-added per worker ( b* ), wages per worker ( a* ) and wage shares (a*/b*), and the corresponding <u>estimated</u> (by the least-square regression) changes in value-added per worker ($b^*_e$), wages per worker ($a^*_e$) and wage shares ( $a^*_e/b^*_e$ ); (2) the 1955-1970 data for the same industries regarding the relevant changes in the adjusted time-preference rates ( $\Delta T''_{le}$ ), the corresponding <u>actual</u> changes in value-added per worker (b*"), wages per worker (a*") and wage shares (a*"/b*"), and the corresponding <u>estimated</u> (by the least-square regression) changes in value-added per worker ($b^*_e$"), wages per worker ($a^*_e$") and wage shares ($a^*_e$"/$b^*_e$"); and (3) the 1955-1970 data regarding the changes in the adjusted time-preference rates ( $\Delta T''_{le}$) and the 1955-1972 five-year moving-average data regarding changes in value-added per worker ($\bar{b}$*), wages per worker ($\bar{a}$*) and wage shares ($\bar{a}$ */$\bar{b}$*).

Results of the correlation analysis, such

as Coefficients of Correlation (R), Coefficients of Determination ($R^2$) and Values of F(F), are shown in Table 14, These results indicate that the adjusted time-preference changes are significantly and directly correlated with the corresponding wage-share changes, significantly and inversely correlated with the corresponding changes in value-added per worker, and little correlated with the corresponding changes in wages per worker. The significant correlation between changes in the adjusted time-preference rates and the relevant changes in wage shares implies a confirmation to the effect that the post-war practice of the "lifetime employment" system by the large firms had something to do with the postwar changes in their time preference rates and the corresponding changes in their wage/value-added ratios. The direct correlation, on the other hand, suggests that different degrees of <u>decline</u> in the adjusted time-preference rates were directly associated with the corresponding degrees of <u>decline</u> in the wage shares, and, similarly, different degrees of <u>rise</u> in the adjusted time-preference rates with the corresponding degrees of <u>rise</u> in the wage shares.

This finding is crucial to the hypothesis of the present thesis, which refers to the postwar

Table 14

| X | Y | R | $R^2$ | F |
|---|---|---|---|---|
| 1952 - 1975 | | | | |
| $\Delta T_{le}$ | $b^*$ | -0.7786 | 0.6062 | 16.9 (significant at 1%) |
| $\Delta T_{le}$ | $a^*$ | 0.2058 | 0.0423 | 0.5 (not significant ) |
| $\Delta T_{le}$ | $a^*/b^*$ | 0.8445 | 0.7132 | 27.3 (significant at 1%) |
| $\Delta T_{le}$ | $b_e^*$ | -0.7115 | 0.5062 | 11.3 (significant at 1%) |
| $\Delta T_{le}$ | $a_e^*$ | 0.3928 | 0.1543 | 2.0 (not significant ) |
| $\Delta T_{le}$ | $a_e^*/b_e^*$ | 0.7905 | 0.6250 | 18.3 (significant at 1%) |
| 1955 - 1970 | | | | |
| $\Delta T''_{le}$ | $b^{*''}$ | -0.7792 | 0.6072 | 17.0 (significant at 1%) |
| $\Delta T''_{le}$ | $a^{*''}$ | 0.0078 | 0.0006 | 0.0 (not significant ) |
| $\Delta T''_{le}$ | $a^{*''}/b^{*''}$ | 0.9191 | 0.8448 | 59.6 (significant at 1%) |
| $\Delta T''_{le}$ | $b_e^{*''}$ | -0.6734 | 0.4534 | 9.1 (significant at 5%) |
| $\Delta T''_{le}$ | $a_e^{*''}$ | 0.1690 | 0.0286 | 0.3 (not significant ) |
| $\Delta T''_{le}$ | $a_e^{*''}/b_e^{*''}$ | 0.8846 | 0.7826 | 39.6 (significant at 1%) |
| 1955-1959 Average - 1968-1972 Average | | | | |
| $\Delta T''_{le}$ | $\bar{b}^*$ | -0.7246 | 0.5514 | 13.5 (significant at 1%) |
| $\Delta T''_{le}$ | $\bar{a}^*$ | 0.2270 | 0.0515 | 0.6 (not significant ) |
| $\Delta T''_{le}$ | $\bar{a}^*/\bar{b}^*$ | 0.9099 | 0.8279 | 52.9 (significant at 1%) |

$\Delta T_{le}$ = Change in Time-Preference Rate attributable to the "Lifetime Employment" for the 1952-1975 period.

$\Delta T''_{le}$ = Change in Time-Preference Rate attributable to the "Lifetime Employment" for the 1955-1970 period.

growth of the corporate saving propensities. In view of the rapid postwar industrial growth, the weight of the growing sector had to be much heavier than that of the stagnant sector. Then, it is not far-fetched to argue that the substantial decline over time of the adjusted time-preference rates relevant to the growth-oriented "communal" firms significantly contributed to the overall growth in the corporate saving propensities.

The significant and inverse correlation between changes in the adjusted time-preference rates and the corresponding changes in value-added per worker suggests that different degrees of decline in the average time-preference rates, attributable to the "lifetime employment" system, were closely associated with the corresponding (different) fates of growth in value-added per worker over the relevant postwar periods. This close association is vital from the viewpoint of the postwar growth of income, since it implies that the "lifetime employment" system contributed significantly to the rapid income growth through acceleration of the growth in value-added per worker within the growth-oriented firms and industries. This contribution of the employment system, of course, had to be much greater than its unfavorable effects

on the growth of value-added per worker within the stagnant firms and industries, in the context of the growth-oriented economy for the relevant periods.

The correlation between changes in the adjusted time-preference rates and the corresponding changes in wages per worker is found to be insignificant, but the Coefficients of Correlation for the different sets of data are consistently positive. This result can be interpreted that growth rates in wages per worker indicated no apparent patterns different between the growth-oriented industries and the stagnant industries, but that the wage growth pertinent to the latter, if anything, tended to be slightly greater on balance. It is quite in accordance with the theoretical conclusion that the workers (or the "enterprise" unions) of the stagnant industries were inclined to insist on at least as high rates as ones in the growth-oriented firms, due to these worker' disillusionment, or at least apprehension, of their respective firms' future prospects. Also, the high rates of wage growth relative to the growth rates of value-added per worker in the stagnant industries can be attributed to possible aging of the respective labor forces. Conceivably, the aging was a result of limited inflow, on one hand, and a high rate of outflow, on the other,

of young workers, due mainly to the dismal prospects of the relevant firms. Such aging of a labor force tends to reinforce wage growth under the seniority-based wage structure prevalent in the "communal" firms.

All the above results together suggests the followins:-

> The "lifetime employment" system, over the relevant postwar periods, tended to lower the wage/value-added ratios of the growth-oriented "communal" firms, by accelerating growth of their value-added per worker, while allowing the per-worker wage growth at the rates as low as tolerable to the relevant labor forces. The implied widening gaps over time between the two sets of growth rates were, ceteris paribus, accommodated through the downward pressure, attributable to the employment system, on the average time preference of the relevant labor forces. This effect of the employment system on the growth-oriented firms tended to overwhelm the opposite effect on the stagnant firms in the growth-oriented postwar economy. Consequently, the overall corporate-saving propensities were on the rise over the relevant post war periods

# CHAPTER 4

## SUMMARY AND IMPLICATIONS

The hypothesis set forth in the present thesis asserts that the postwar institutionalization of the "lifetime employment" system among the large firms contributed significantly to the postwar growth of the average corporate-saving propensities through the effects of the employment system on the time-preference rates of the relevant workers. The subsequent discussions, both theoretical and empirical, have focused on the potential effects of the employment system on the corporate-saving growth and have uncovered some evidence suggestive of its actual potency in accelerating corporate savings. Such evidence simultaneously points to a close relationship between the employment system and the postwar income growth, via its effect on the growth of value-added per worker.

### A. Summary of the Analyses

All the above theoretical and empirical discussions of the "lifetime employment" system together are suggestive of the following long-run inter-

dependence of economic variables (where variables in the parentheses below are relevant only to a micro-economic analysis of firm or industry):-

(1) Practice of the "lifetime employment" system, E, is potentially dependent on per-capita real output (or real value-added per worker), y, and other relevant variables, $d_1$, including aggregate demand (or demand for the relevant goods), D, governmental growth policy (or the relevant firm's growth motivation), M, and the prevailing convictions about the future benefits from the "lifetime employment" system, v. An increase in per-capita real output (or real value-added per worker) seems to be related to adoption and reinforcement of the employment practice, an increase in aggregate demand (or demand for the relevant goods), a strengthening of governmental growth policy (or the relevant firm's growth motivation) and a growth of the convictions about the future benefits from the employment system. These relations can be symbolically expressed as,

$$E = f_1(y, v, d_1); \quad \Delta E/\Delta y > 0,$$
$$\Delta E/\Delta v > 0,$$
$$\Delta E/\Delta D > 0,$$
$$\Delta E/\Delta M > 0;$$

(2) Average time-preference rate, T, is potentially dependent on practice of the "lifetime employment" system, E, and other relevant variables, $d_2$, including market interest rates, $\gamma$. A decline in the economy's average time-preference rate (or the relevant firm's average time-preference rate) seems to be related to reinforcement of the employment practice and a decline in market interest rates. These relations can be symbolically expressed as,

$$T = f_2(E, d_2); \quad \Delta T/\Delta E < 0, \quad \Delta T/\Delta \gamma > 0;$$

(3) Profit share relative to wage share (or the ratio of real profit per worker to real wage per worker), r/w, is potentially dependent on average time-preference rate, T, and other relevant variables, $d_3$, including market interest rate, $\gamma$. A rise in the income-share ratio seems to be related to a decline both in average time-preference rate and market interest rates. These relations can be symbolically expressed as,

$$r/w = f_3(T, d_3); \quad \Delta(r/w)/\Delta T < 0, \quad \Delta(r/w)/\Delta \gamma < 0;$$

(4) Per capita real investment (or real investment per worker), i, is potentially dependent on r/w and other relevant variables, $d_4$, including per-capita

real output (or real value-added per worker), y, and market interest rates, $\gamma$. An increase in per-capita real investment (or real investment per worker) seems to be related to a rise both in r/w and y and a decline in $\gamma$. These relations can be symbolically expressed as,

$$i = f_4(r/w,\ d_4);\quad \Delta i/\Delta(r/w) > 0,\quad \Delta i/\Delta y > 0,\quad \Delta i/\Delta \gamma < 0;$$

(5) Per-capita capital stock (or capital/labor ratio), k, is by definition dependent on per-capita real investment (or real investment per worker), i, and other relevant variables, $d_5$, including size of population (or the relevant labor force), L. An increase in per-capita capital stock is related positively to a rise in i and negatively to growth rate in L. These relations can be symbolically expressed as,

$$k = f_5(i,\ d_5);\quad \Delta k/\Delta i > 0,\quad \Delta k/\Delta L < 0;$$

(6) Per-capita real output (or real value-added per worker), y, is potentially dependent on per-capita capital stock (or capital/labor ratio), k, and other relevant variables, $d_6$, including practice of the "lifetime employment" system, E. An increase in y seems to be related to an increase in k and

reinforcement of the employment practice. These relations can be symbolically expressed as,

$$y = f_6(k, d_6); \quad \Delta y/\Delta k > 0, \quad \Delta y/\Delta E > 0;$$

where per-capita real output (or real value-added per worker), y, is defined to be the sum of per-capita wage income (or wage per worker), w, and per-capita profit income (or profit per worker), r, i.e., $y = w + r$; and also, y is defined to be the sum of per-capita real consumption, c, per-capita real saving-investment, i, per-capita government expenditure, g, and per-capita real net export, x-m, i.e., $y = c + i + g + (x - m)$.

In a nutshell, the afore-mentioned inter-relations imply, as follows:-

Adoption and reinforcement of the "lifetime employment" system, which is encouraged by growing current real income and expected benefits of the employment practice, induces a decline in average time-preference rate of the economy. This declining time-preference, in turn, induces a rise in the relative income-share ratio, namely, profit share relative to wage share, which, in turn, encourages saving and investment to raise the economy's marginal and average propensities to save and invest.

In the meantime, the capital/labor ratio rises to induce a greater economic activity, both in output and expenditure. The growing economic activity, together with a resultant optimism for the future benefits of the "lifetime employment" system, now works for reinforcement of the employment practice, to start a new circle.

## A.1. A Microeconomic Summary

From a microeconomic viewpoint, a growth-oriented firm (or industry), which expects a high long-term growth rate in demand for its product ($d_1$) and in its value-added per worker (y) under the condition of intensifying competition both in the product market and the labor market of new school-graduates ($d_1$), tends eagerly to adopt the potentially cost-reducing and productivity-enhancing employment practice, namely, the "lifetime employment" system. Practice of this employment system tends to establish over time a common interest for the management and labor in a long-term growth and prosperity of their firm, and this common interest tends to lower over time the representative time-preference rate (T) of the firm's constituents. The declining time preference, in turn, tends to increase over time the profit per worker (r) relative to the wage per worker (w). An increase in the r/w ratio now tends to

encourage a higher rate of investment per worker in both physical and human capital and also in research and development, owing to the presence of the product market competition and of the employer-employee common interest. The new spurt of the firm's investment activities, together with its cautious attitude toward the growth of the "permanent regular" workers (L), tends to raise its capital/labor ratio (k) over time. A rise in the technology-embodied capital/labor ratio tends to accelerate the growth of labor productivity and, hence, the growth of the value-added per worker. This, in turn, tends to reinforce the firm's commitment to the employment practice and the solidarity between management and labor. These favorable chain reactions tend to continue, until the demand for the relevant product shows signs of a long-term stagnation, the growth rate of the value-added per worker starts to dwindle, or some combination of the two emerges.

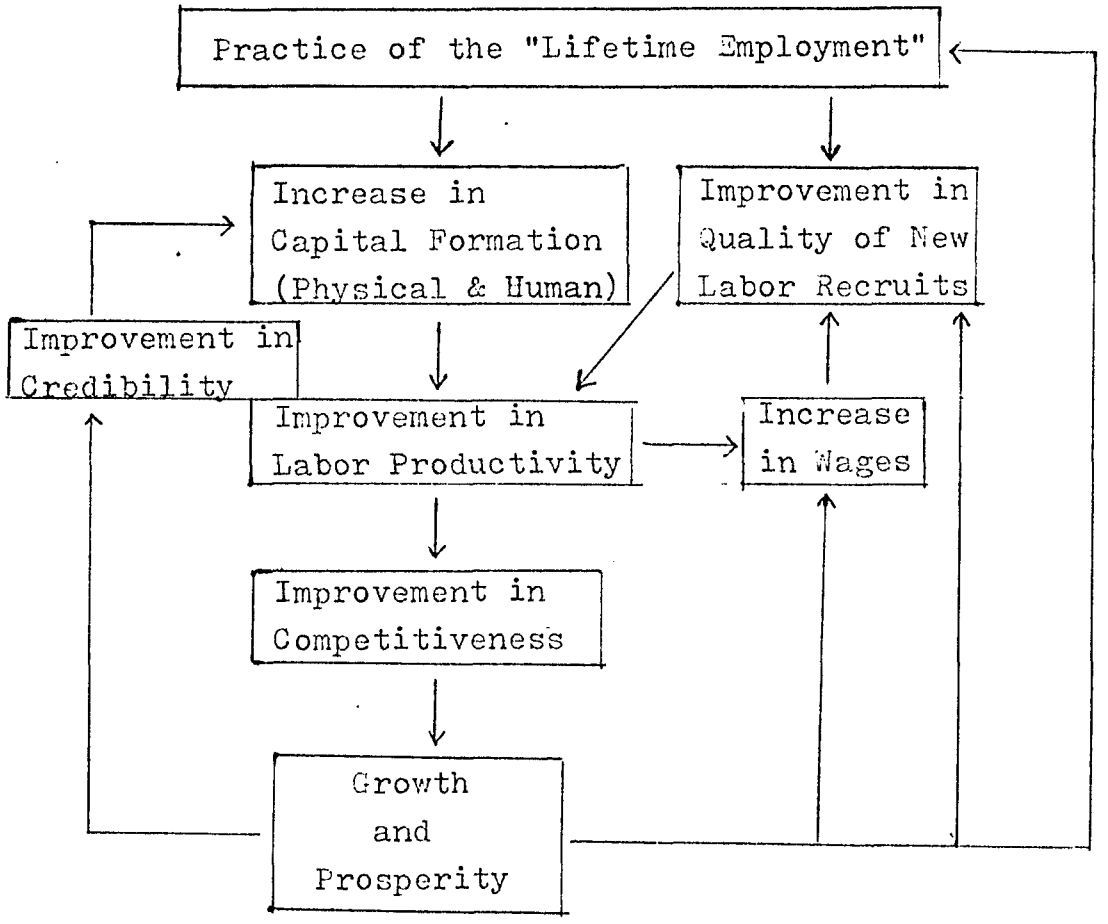
In addition to the above, it is likely that there are a couple of favorable side effects. First, as the firm grows and prospers, the credit-worthiness of the firm improves and outside borrowing becomes easier and cheaper. This tends to allow an accelerated capital formation at a lower cost. Secondly, direct and indirect effects of the employment practice tend to

make the firm more competitive in the market for new school-graduates and more attractive to high achievers, and, thus, tends to improve the average labor productivity of the firm over time. All these interactions are schematically presented in Figure 21.

In the case of a relatively stagnant firm, however, the practice of the "lifetime employment" system may not work so favorably. Instead, the employment practice tends to give rise to a vicious circle toward further stagnation. Such a case is the one, in which demand for the firm's product ($d_1$) has shown a sign of a long-term stagnation and/or the growth rate of the firm's value-added per worker (y) has stagnated for a significant length of time. The former indication tends to implant among the firm's workers a serious doubt about the firm's future ability to fulfill the commitment relevant to the "lifetime employment" system (such as maintenance of the accustomed practice of seniority-based wages and retirement allowance, a long-term employment guarantee, etc.), while the latter tends to encourage the employer making some changes in the employment practice. In either case, the average rate of time preference (T) of the firm's constituents tends to rise. This rise, in turn, tends to influence in a downward direction the ratio of the profit per worker to

Figure 21

A Growing Firm



the wage per worker (r/w) and give also a downward pressure in the growth rate of capital formation (i). This implies a slower growth of the capital/labor ratio (k) and the labor productivity. Therefore, the firm's value-added per worker (y) relative to that of a representative firm in the relevant industry or sector tends to decline over time. This slow growth of the value-added per worker now leads to a smaller rise in the firm's average wage than that of the representative firm in the relevant industry or sector. Then, the relatively slow growth in the firm's value-added per worker (y) and wage per worker (w) tend to implant more doubt among the workers about the future course of the "lifetime employment" system and the firm itself. This tends to increase the average time preference (T) and lead to another round of the vicious circle.

From the above description of the chain reactions it is quite clear that, ceteris paribus, only the relatively fast-growing firms can take best advantage of the "lifetime employment" system for their further growth and prosperity. As soon as either the growth rate of the demand for the relevant goods or that of the value-added per worker slacken, whichever comes first, the benefits of the employment practice tend to diminish and are eventually overwhelmed by the costs of the practice.

## A.2. A macroeconomic Summary

When the above chain reactions are viewed from a macroeconomic standpoint, a growth-oriented economy tends to accelerate its growth over time by adopting the "lifetime employment" system in its growth sector. Such an employment practice tends to encourage the generation of savings internally for the needed capital formation, especially when foreign borrowing is difficult and/or when foreigners' direct investments in the economy is not desired for some reason.

In the case of a growth-oriented economy coming relatively late in the production of industrial goods and competing with the well-established industrial economies in the growing domestic and international markets ($d_1$), adoption of the "lifetime employment" system by the economy's growth sector tends to lower over time the average time preference (T) of the relevant labor force and, hence, that of the representative member of the economy. This decline in the average time preference, in turn, tends to increase the ratio of the capital share to the labor share and, hence, the ratio of the profit per capita (r) to the wage per capita (w). This increase in the r/w ratio implies a decline of the consumption share (c) and an increase of the saving share (s) in the G.N.P. per capita. The increasing share of saving tends to influence downward

the economy's average interest rate and encourage new capital formation.[124] This, together with a growing demand for capital formation, tends to increase the

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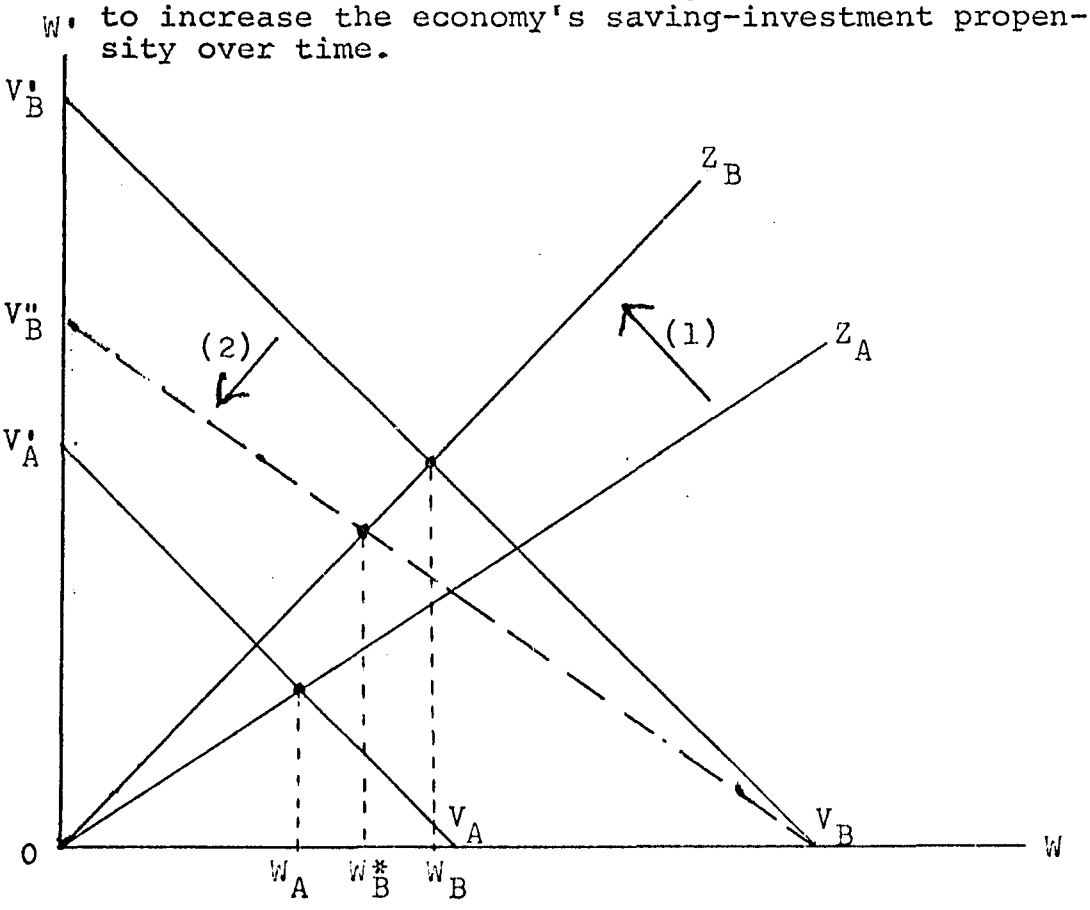
124. As the average time-preference rate declines from the level relevant to $Z_A$ to the level relevant to $Z_B$ over the interim period, under the condition of growing value-added per capita, the consumption per capita (or the wage per capita) tends to increase from $W_A$ to $W_B$. As a result, the saving per capita tends to rise from $(V_A-W_A)$ to $(V_B-W_B)$. This rise in the saving per capita and the saving ratio (namely, from $(V_A-W_A)/V_A$ to $(V_B-W_B)/V_B$) tend to exert a downward pressure on the average interest rate. In the meantime, there tends to be a secondary effect on the consumption per capita: i.e., the consumption per capita and the saving per capita now amount to $W_B^*$ and $(V_B - W_B^*)$, respectively. Thus, the decline in the average interest rate tends to increase the economy's saving-investment propensity over time.



per-capita investment (i), the capital/labor ratio (k), the labor productivity, and the per-capita G.N.P. in turn. The growing per-capita G.N.P. (y) suggests an increase in the aggregate demand ($d_1$) and an increase in the demand especially for the products of the growth sector. This tends to accelerate the expansion of the growth sector in the economy and spread further the practice of the "lifetime employment" system (E). This reinforcement of the employment practice, in turn, tends to give a further downward pressure to the average time preference (T) of the economy and sets off another round of the favorable chain reactions.

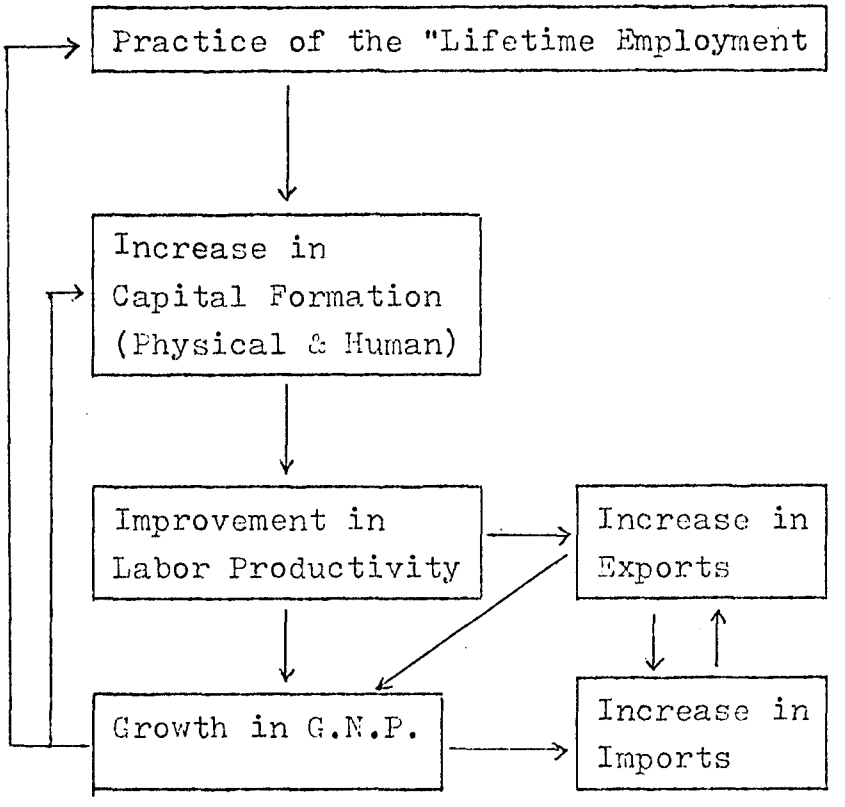
These interactions of the economy's variables also induce some favorable side-effects. As a result of the growing labor productivity, the average price of the exportable goods tends to decline (and/or the average quality of the exportable goods tends to improve without a significant price rise). This is viewed by the foreign consumers as a shift outward of supply of the exportable goods, and the volume and value of the economy's exports per capita increase under the conditions of a greater-than-unitary elasticity of the demand and less-than-perfectly-flexible exchange rates. Also, as a result of the growing G.N.P. per capita (y), the volume and value of the economy's imports per capi-

ta (m) tends to grow, since its demand for the importable goods tends to shift outward along with the increase in the per-capita G.N.P. This increase in the total volume of trade among the trading partners also induce a greater scale economic activities within these economies. Another side-effect is that an increase in the rate of capital formation per capita (i) sets off a multiplier effect on the G.N.P. per capita, and the growing per-capita G.N.P. also tends to set off an accelerator effect on the investment per capita, which again generates a multiplier effect on the G.N.P. per capita, and so on. All these interactions are indicated in Figure 22.

The above favorable chain-reactions may not continue forever. As the economy grows faster and faster, a bottleneck tends to develop among the factors of production, especially in terms of labor. Since the practice of the "lifetime employment" system tends to encourage recruitment of new school-graduates as future "permanent regular" workers, a serious excess demand tends to develop first in such labor markets and drives up the beginners' wage levels. This, together with the seniority-based wage determination, starts to accelerate the wage share of the economy in due course, unless the growth of the value-added per

Figure 22

A Growing Economy



worker by a rapid incorporation of the technological advance sufficiently offsets the average wage increase. When the wage per capita (w) begins to rise relative to the profit per capita (r), some of the economy's investments tend to be discouraged or discontinued, resulting in a possible reduction of the per-capita investment (i). When such a reduction occurs, the growth rate of the per-capita G.N.P. tends to dwindle, due to the multiplier effect of the investment. If this situation continues for a sufficiently long period, the economy's expectation for the future growth rates tends to be altered downward, and, as a result, the economy's average time preference (T) tends to be influenced upward, since some doubt tends to develop among the economy's "permanent regular" workers about the future course of the "lifetime employment" system (especially about the job security, the seniority-based determination of wages and retirement allowance). Then, in due course, the ratio of the profit share to the wage share (r/w) moves downward, while the economy's average interest rate moves upward, to a possible inducement of a vicious circle to the detriment of the economy's growth in the future.

One thing crystalized from the above analysis is that the favorable effect of the "lifetime employment" system even on a growth-oriented economy may not last

forever. The very force generated by the employment practice for acceleration of economic growth tends to surpress itself in due course, unless an offsetting advance in terms of labor-saving and productivity-enhancing techniques accompanies the economic growth. Even in the absence of such an offset, however, a timely adoption of the "lifetime employment" system particulary by the economy's growth sector may carry the economy into an advanced stage of industrialization, before its favorable effect wears out.

Another significant macroeconomic effect of the "lifetime employment" system is potentially manifested with respect to the economy's savings and interest rates. The employment practice, when adopted by a growth-oriented economy, tends over time to lower its average time preference, increase its saving relative to its consumption, give a downward pressure to its average interest rate, raise profitability of new investments and increase the investment share in its G.N.P. in turn.

This tendency relevant to the "lifetime employment" system is supported by actual Japanese data in Tables 15 and 16, which show respectively the average interest rate on loans made by all commercial banks, and the share of the gross domestic investment in the G.N.P.

## Table 15

AVERAGE INTEREST RATE ON LOANS

MADE BY ALL. COMMERCIAL BANKS

| Year | Average Interest Rate (%) |
|---|---|
| 1950 | ---- |
| 1951 | ---- |
| 1952 | 9.29 |
| 1953 | 9.08 |
| 1954 | 9.09 |
| 1955 | 8.98 |
| 1956 | 8.44 |
| 1957 | 8.41 |
| 1958 | 8.51 |
| 1959 | 8.12 |
| 1960 | 8.17 |
| 1961 | 8.00 |
| 1962 | 8.21 |
| 1963 | 7.79 |
| 1964 | 7.90 |
| 1965 | 7.80 |
| 1966 | 7.48 |
| 1967 | 7.32 |
| 1968 | 7.46 |
| 1969 | 7.41 |
| 1970 | 7.66 |
| 1971 | 7.59 |
| 1972 | 7.05 |
| 1973 | 7.19 |
| 1974 | 9.11 |
| 1975 | 9.10 |

Source: The Economic Planning Agency, Gendai Nippon Keizai No Tenkai (The Evolution of the Modern Japanese Economy), Okurasho Insatsu-kyoku, Tokyo (1976), Page 587.

## Table 16

PERCENTAGE SHARE OF GROSS DOMESTIC INVESTMENT

IN GROSS NATIONAL PRODUCTS

(1970 Yen)

| Year | G.N.P. (¥100,000,000) (Y) | Gross Domestic Investment (¥100,000,000) (I) | (Corporate Fixed Investment) | $\frac{I}{Y}$ x 100 (%) |
|---|---|---|---|---|
| 1950 | 112,631 | 18,631 | ( -----) | 16.5 |
| 1951 | 126,130 | 22,424 | ( 9,472) | 17.8 |
| 1952 | 140,829 | 25,999 | ( 10,795) | 18.5 |
| 1953 | 151,639 | 29,385 | ( 13,032) | 19.4 |
| 1954 | 155,840 | 26,978 | ( 12,165) | 17.3 |
| 1955 | 172,683 | 34,557 | ( 13,217) | 20.0 |
| 1956 | 183,307 | 39,832 | ( 18,334) | 21.7 |
| 1957 | 197,589 | 46,140 | ( 21,686) | 23.4 |
| 1958 | 209,366 | 45,438 | ( 20,219) | 21.7 |
| 1959 | 232,731 | 56,996 | ( 26,312) | 24.5 |
| 1960 | 261,838 | 72,910 | ( 36,530) | 27.8 |
| 1961 | 297,128 | 95,605 | ( 47,279) | 32.2 |
| 1962 | 316,149 | 91,799 | ( 47,802) | 29.0 |
| 1963 | 355,747 | 112,609 | ( 52,579) | 31.7 |
| 1964 | 398,498 | 122,696 | ( 60,987) | 30.8 |
| 1965 | 415,918 | 126,063 | ( 55,411) | 30.3 |
| 1966 | 462,190 | 149,068 | ( 67,226) | 32.3 |
| 1967 | 522,582 | 185,309 | ( 85,577) | 35.5 |
| 1968 | 589,044 | 215,634 | (105,607) | 36.6 |
| 1969 | 653,681 | 246,144 | (131,253) | 37.7 |
| 1970 | 721,440 | 284,168 | (144,378) | 39.4 |
| 1971 | 774,006 | 293,423 | (149,278) | 37.9 |
| 1972 | 849,807 | 328,133 | (161,842) | 38.6 |
| 1973 | 904,352 | 367,455 | (185,126) | 40.6 |
| 1974 | 902,680 | 325,980 | (158,988) | 36.1 |
| 1975 | 930,566 | 310,678 | (142,217) | 33.4 |

Source: The Economic Planning Agency, Gendai Nippon Keizai No Tenkai (The Evolution of the Modern Japanese Economy), Okurasho Insatsu-kyoku, Tokyo (1976), Pages 578 and 579.

for the period between 1950 and 1975. Thus, it is significant to note that the practice of "lifetime employment" by the Japanese economy (especially by its growth sector) may partially explain the growth trend of the economy's average propensity to save and, alternatively, the growth trend of the investment (physical) share[125] in the economy's income.

B. Policy Implications

The Japanese economy seems to have entered a new phase in 1970s with significantly reduced growth rates and somewhat puzzled industrial relations domestically and tension-filled trade relations internationally. The decline in the rate of economic growth and the rapidly changing age structure of the labor force from a pyramidal pattern toward a pillar pattern have induced an increasing attention to (1) seniority-based wage structure, (2) retirement age and allowance and (3) reliance on new school-graduates vs. mid-career workers, all of which are directly related to the practice of the "lifetime employment" system.

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125. The growth trend may be considerably steeper, if human capital investment is also included.

A.1. Microeconomic Policy Implications

This new focus of attention to the above question reflects in a sense a struggle of both the employers and the workers for maintenance of the employment practice under the changing economic and demographic conditions, since rescission of the "lifetime employment" system is not the focal point.[126] The employers under the circumstances are particularly inclined to gradually replace the seniority weight (or the length-of-service weight) by some efficiency weight and also gradually to reduce the retirement allowance to some nominal amounts. The workers on their part are seriously interested in modification of the current wage structure by such a seniority weight commensurate with changing needs of workers over their work-life cycle, extention of the retirement age into 60s and expansion of the retirement allowance sufficient to insure a stable standard of living after retirement. Both the employers and the workers tend to agree on the necessity of revitalization of the mid-career workers rather than the current heavy

126. A struggle on the part of the workers is chronologically documented from the viewpoint of the older "permanent regular" workers of Mitsubishi Denki K.K. (Mitsubishi Electric Corporation) in Chūkōnen No Shohōsen (A Prescription for the Middle-and-Old Age), edited by Reiki Okui and published by Mitsubishi Denki Rodokumiai (Mitsubishi Electric Labor Union) in 1979.

reliance on the vitality of new school-graduates.

All these matters are, however, mutually related under the "lifetime employment" system. Due to the chronic excess demand for the annual school-graduates, the wages of the younger workers have risen much faster than those of the older workers, and, as a result, the wage difference between the younger and the older have rapidly shrunk. This situation has given an impression to the older that their wage growth was sacrificed for the rapid growth of the younger workers' wages. As a result, the former start to feel that, despite their untiring efforts for the growth of their respective firms and continuous loyalty to their employers, they have been rewarded by the management with deception and betrayal. This type of feeling tends to lead to a psychological alienation from their firms and a loss of motivation toward their work. It may also rock the boat, the "lifetime employment" system itself.

Most of the workers also tend to be apprehensive of their compulsary retirement about 55 years of age and the inadequacy of retirement allowance for maintaining a stable standard of living after their retirement, especially in view of the lack of strong governmental policy regarding its financial support

for old age. In order not to reduce drastically their accustomed living standards, therefore, most of the retirees are compelled to take jobs in firms other than their long-associated firms, with substantially reduced compensation and without a long-term employment guarantee. Many workers wonder why the employment guarantee by their respective firms can not be extended for ages over 60, given the expectation that in 1980 the average age of the economy's labor force will exceed forty.[127] They argue that those workers about the compulsary retirement age, being more loyal and experienced, can easily match whatever wage differences between them and new school-graduates with the former's higher productivity, if they are assigned to appropriate positions fitting to their ages and experiences. Also from the workers' viewpoint, their cooperation with the respective management in the matter of retirement allowance hinges considerably on an extension of guaranteed employment.

An important ramification of the workers' sentiment about the matters of retirement, wage structure, etc. is that once the average worker is sufficiently disappointed in his future prospects with his respective firm, his attitude toward the work and the firm tends to change drastically. As a result, the currently

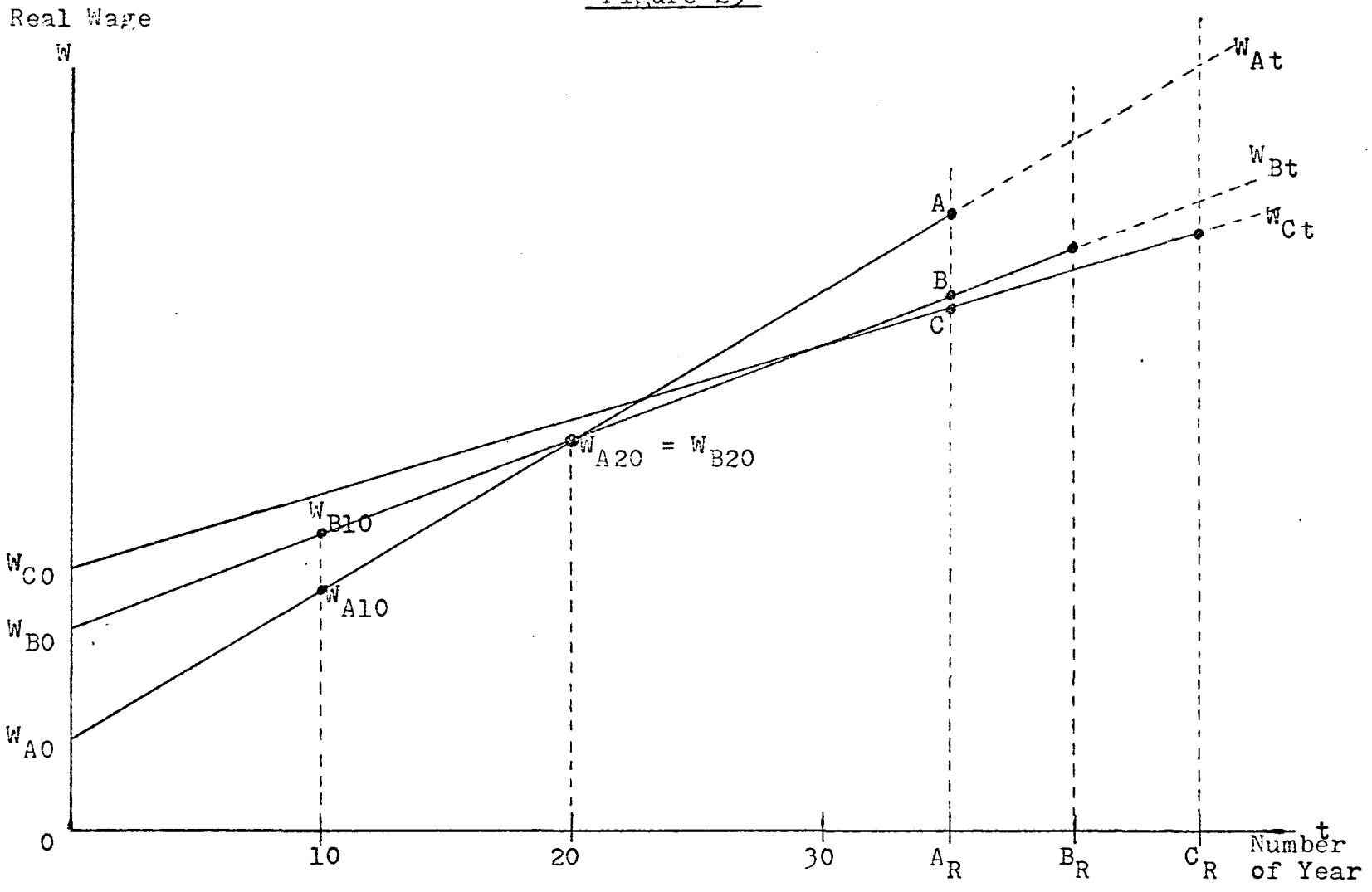
127. Ibid., p. 273.

enjoyed benefits from the "lifetime employment" system in terms of the employer-employee solidarity and common interest, internal growth inducement and labor productivity can be adversely affected over time, as inferred from the theoretical framework presented in Chapter 2.

In order to avoid the potentially unfavorable long-term consequence of generally disaffected workers, each firm practicing the "lifetime employment" system needs to make a comprehensive review of the current state of the employment practice, in relation to its expectation of a long-term demand for its product and a consequent estimation of its long-term labor requirement. A most fundamental consideration for its future labor policy must be maintenance or improvement of the workers' optimism about their long-term prospects within the firm, on the assumption that the current wage share in the firm's value-added is at its tolerable maximum. One useful method for this purpose is an approximate indexation of the work-life real wage growth, based on each cohort's employment year, educational background and initial real wage, as far as the annual additions of school-graduates are concerned. Some other consideration and adjustment are required in the case of workers who have been employed mid-career as the firm's "permanent regular" workers.

A simplified example of such method for those employed directly from their respective schools is shown in Figure 23. Only three cohorts of a similar educational background, namely, Cohort A, Cohort B and Cohort C, are considered in the figure, and they are assumed to be employed 10 years apart between Cohort A and Cohort B, and between the latter and Cohort C, for the purpose of showing diagramatically significant differences among them in terms of their respective initial wages, productivity and projected retirement ages. Each member of Cohort A receives the real wage $W_{AO}$ in the initial year, and his wage growth over the guaranteed work-life is expressed by the slope (a constant slope for simplicity) of Curve $W_{AO}$-$W_{At}$, while representative members of Cohort B and Cohort C receive the respective initial wages $W_{BO}$ and $W_{CO}$, and their wage growth rates over the work-life are expressed by the slopes of Curve $W_{BO}$-$W_{Bt}$ and Curve $W_{CO}$-$W_{Ct}$, respectively. The average wage of Cohort A after ten years of service becomes $W_{A10}$, which is considered to be significantly greater than the initial wage of Cohort B, or $W_{BO}$, and the average wage of Cohort B after ten years of service becomes $W_{B10}$, which is, in turn, supposed to be significantly higher than the initial wage of Cohort C, or $W_{CO}$, and so on.

Figure 23


Real Wage
W
$W_{At}$
$W_{Bt}$
$W_{Ct}$
A
B
C
$W_{A20} = W_{B20}$
$W_{B10}$
$W_{A10}$
$W_{C0}$
$W_{B0}$
$W_{A0}$
0
10
20
30
$A_R$
$B_R$
$C_R$
t
Number of Year

The initial real wage for each cohort is assumed to be determined largely by the market forces of demand and supply in each year[128] and is also assumed to be increasing over time as it has been the case. The essential idea here is that the average wage of one cohort must not exceed that of an older cohort, in order to avoid a psychological alienation of the latter from their firms.

This method can also accommodate labor productivity growth over time. The area $OW_{AO}AA_R$, which indicates the total wage income to a representative member of Cohort A for his guaranteed work-life, is shown to be smaller than the area $OW_{BO}BA_R$, which represents the total wage income to a representative member of Cohort B for the equivalent length of service in the same firm. The latter area is, in turn, shown to be smaller than the area $OW_{CO}CA_R$, which represents the total wage income to an average member of Cohort C for the equivalent duration of service, and so on. The differences among these areas (or the total wage incomes), then, indicate part of the projected productivity differences among these cohorts.

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128. This "market-determined" wage is, however, strongly constrained by the built-in condition that initial wage of each cohort should not exceeds the current wage of a previous year's cohort.

Further, the indexation method takes into consideration a projected extention of guaranteed work-life based upon the firm's long-term labor requirement, given the projected constraints in labor supply, such as an estimated long-term decline in the annual infusion of school graduates into the labor force, a projected trend of initial-wage increase, etc. In the figure it is shown that individuals in Cohort A retire after $A_R$ years of service, individuals in Cohort B after $B_R$ years of service, and individuals in Cohort C after $C_R$ years of service. This implies a gradual lengthening of the guaranteed work-life.

The retirement allowance for each cohort can be calculated on the basis of the average slope of each work-life wage curve (or line) and the length of each guaranteed work-life, i.e., $R_{ai} = f_i(s_i, t_i)$, where i = A,B,C. One over-simplified example of the retirement-allowance determination utilizing a straight-line work-life wage curve is, as follows:

$$R_{ai} = cs_it_i,$$

where $R_{ai}$ = retirement allowance

$i$ = Cohorts A,B,C, etc.

$c$ = a constant multiplicant

$s_i = \frac{W_{iR_i} - W_{i0}}{t_i}$, which is the slope of the work-life wage line

$W_{iR_i}$ = the retirement-year annual real wage

$W_{i0}$ = the initial-year annual real wage

$t_i$ = the number of the guaranteed-employment years.

The equation can be rewritten as,

$$R_{ai} = c\left(\frac{W_{iR_i} - W_{i0}}{t_i}\right)t_i$$

$$= c(W_{iR_i} - W_{i0})$$

$$= cd_i, \text{ where } d_i = W_{iR_i} - W_{i0}.$$

Thus, the average retirement allowance of each cohort, $R_{ai}$, is now simply the annual-wage differential, $d_i$, between the retirement-year and the initial-year real wages, multiplied by whatever constant, c.

Such an indexation of the base-wages of each firm's "permanent regular" workers, if it becomes known to the members of each cohort and if the initially projected slope of the work-life wage curve for each cohort is kept reasonably undisturbed for the guaranteed work-life, the workers' negative feeling about the firm's current wage determination can be largely avoided. Instead, an equitable constant-rise in the real base-wages over the respective work-life, together with

short-run stimula to hard work through appropriate reward-oriented allowances, may maintain or improve each cohort's work motivation throughout the guaranteed work-life, other things remaining constant. Also, a gradual extension of the guaranteed work-life, combined with the related retirement-allowance determination may very well be supported by the workers at large (or the enterprise union). This manner of base-wage determination, which takes into consideration the average work-life productivity growth projected by the management, may at least partially satisfy the management's desire for an efficiency-weighted wage determination. Along with this base-wage determination, the management, if it so desires, can also increase the efficiency weight through appropriate allowances. Further, the real retirement allowance can be gradually reduced over time through the simple method, namely, $R_{ai}=cd_i$, and, if a faster reduction is desired in view of the lengthening guaranteed work-life, the constant multiplicant, c, can be reduced over time at a steady rate. Most importantly, the indexation method of the base-wage determination and the retirement-age and retirement-allowance determination may make an important contribution for a long-term preservation of the potential benefits arising from the practice of the "lifetime employment" system.

B.2. Macroeconomic Policy Implications

From a macroeconomic viewpoint, it is highly advisable for the Japanese government to adopt a long-term policy for maintenance of the economy's accustomed rates of growth, especially through measures to encourage productivity-enhancing investments in both human and physical capitals. If such a high rate of growth conflicts with other economic goals, a very gradual adjustment to an appropriate rate of economic growth is recommendable. The purpose of this recommendation is to prevent the economy's average time preference from rising prematurely. When the time preference starts to rise, it may affect over time the economy's average interest rates and rates of capital formation, and may cause in due course a long-term "stagflation."

If the current tendency in the narrowing of wage differentials among different age groups continues unchecked, along with the relatively stagnant business activities, an increasing proportion of the labor force in the economy's leading industries may become disenchanted about the actual practice of the "lifetime employment" system. This worker disenchantment may over time raise the average time preference of the economy, reduce its average propensity to save,

increase its average interest rates, reduce the profitability of investment, dampen the rate of capital formation per capita in due course. As a result, the economy's growth rate of labor productivity tends to suffer, and its prices tend to rise faster. The rising domestic prices tend to encourage imports and discourage exports under the given highly elastic demands for imports and exports and less-than-perfectly flexible exchange rates. This, together with the stagnating capital formation, tends to further stagnate economic activities. As the economy loses its vitality over time, its ability to maintain the accustomed and expected rates of real-wage growth tends to diminish, forcing the older the more to bear the brunt of the wage squeeze. The wages of the youngest, namely, the new school-graduates, tend to be least affected by the economic stagnation (though the size of employment may be somewhat affected), since such wages tend to reflect a long-run demand and supply for annual school-graduates. Then, there tends to be worsening of the psychological alienation from the respective firms of the more loyal workers, and the potential benefits of the "lifetime employment" suffer along with the rising time preference of the relevant workers and, hence, the average time preference of the economy.

Thus, a vicious circle toward more stagnant economic activities and labor productivity tends to set in, and, as a result, a prolonged period of "stagflation" may ensue.

A stagflation in Japan may contribute in a way to balancing of its international trade and reduction of its external tension, but this manner of trade adjustment is analogous to "killing a bull for its horns". Instead, a high economic activity in Japan in comparison with other economies may contribute more than a retardation of its growth to its trade equilibrium and amicable economic relations with other nations in the long run.

In relation to another macroeconomic measure, if the government is politically compelled in the future to adopt a stronger policy regarding financial support of the senior citizens, only a gradual move over a long duration of time is strongly recommended. In this respect, it is also advisable to arrange the rates of contribution among different age-groups to an appropriate pension fund in a manner such as to make the younger contribute more in proportion to their wage income. In this way, each worker from the starting point of his work-life may be conditioned to save for his old age, and this forced saving may

counter-balance some potential erosion of the economy's marginal and average propensity to save, due to an eventual rise in the average time preference.

The above policy-related recommendations both for microeconomic and macroeconomic purposes primarily aim at preservation of the potential benefits of the "lifetime employment" system, through prevention of the economy's time preference rising too fast, from a long-term view of the economic development of Japan. The first and most important emphasis here is a high rate of economic growth compatible to the maintenance of optimistic posture of the economic entities. This, coupled with only a gradual adjustment in the matters of seniority-vs-efficiency oriented wage determination, compulsary retirement age and retirement allowance, national pension plan, etc. tend to contribute toward preservation of the potential benefits of the "lifetime employment" system into the future.

# APPENDIX

## Wage/Value-Added Ratios

Source: Ministry of International Trade and Industry, Census of Manufactures (1952-1975)

Definitions:

small firms --- firms employing 30-99 workers
large firms --- firms employing 1,000 or more workers

A --- y intercept of the relevant trend line
B --- slope of the relevant trend line
$\overline{X}$ --- arithmetic mean
s --- standard deviation
c --- coefficient of variation
R --- coefficient of correlation

| Year | Transport Equipment | | precision Instruments | |
|---|---|---|---|---|
| | (small) | (large) | (small) | (large) |
| 1952 | 0.536 | 0.593 | 0.524 | 0.697 |
| 1953 | 0.526 | 0.520 | 0.537 | 0.670 |
| 1954 | 0.480 | 0.594 | 0.493 | 0.696 |
| 1955 | 0.466 | 0.722 | 0.495 | 0.556 |
| 1956 | 0.469 | 0.590 | 0.498 | 0.580 |
| 1957 | 0.478 | 0.414 | 0.463 | 0.521 |
| 1958 | 0.506 | 0.430 | 0.490 | 0.594 |
| 1959 | 0.500 | 0.397 | 0.493 | 0.506 |
| 1960 | 0.466 | 0.306 | 0.477 | 0.454 |
| 1961 | 0.475 | 0.331 | 0.493 | 0.505 |
| 1962 | 0.479 | 0.320 | 0.458 | 0.480 |
| 1963 | 0.462 | 0.321 | 0.468 | 0.417 |
| 1964 | 0.474 | 0.295 | 0.479 | 0.418 |
| 1965 | 0.508 | 0.325 | 0.518 | 0.502 |
| 1966 | 0.509 | 0.323 | 0.497 | 0.416 |
| 1967 | 0.471 | 0.309 | 0.512 | 0.391 |
| 1968 | 0.451 | 0.293 | 0.463 | 0.454 |
| 1969 | 0.449 | 0.337 | 0.449 | 0.437 |
| 1970 | 0.461 | 0.307 | 0.470 | 0.478 |
| 1971 | 0.443 | 0.350 | 0.426 | 0.432 |
| 1972 | 0.489 | 0.369 | 0.525 | 0.485 |
| 1973 | 0.478 | 0.359 | 0.498 | 0.543 |
| 1974 | 0.477 | 0.408 | 0.510 | 0.425 |
| 1975 | 0.510 | 0.440 | 0.549 | 0.470 |
| A | 2.7432 | 20.3078 | 1.0383 | 17.8123 |
| B | -0.0012 | -0.0101 | -0.0003 | -0.0088 |
| $\bar{X}$ | 0.482 | 0.402 | 0.491 | 0.505 |
| s | 0.024 | 0.118 | 0.029 | 0.088 |
| c | 0.050 | 0.293 | 0.059 | 0.175 |
| R | -0.338 | -0.610 | -0.068 | -0.706 |

| Year | Ordinary Machinery (small) | Ordinary Machinery (large) | Electric Machinery (small) | Electric Machinery (large) |
|---|---|---|---|---|
| 1952 | 0.509 | 0.499 | 0.448 | 0.419 |
| 1953 | 0.514 | 0.575 | 0.463 | 0.361 |
| 1954 | 0.501 | 0.510 | 0.451 | 0.350 |
| 1955 | 0.486 | 0.616 | 0.443 | 0.382 |
| 1956 | 0.478 | 0.483 | 0.447 | 0.407 |
| 1957 | 0.433 | 0.415 | 0.412 | 0.291 |
| 1958 | 0.474 | 0.432 | 0.448 | 0.268 |
| 1959 | 0.469 | 0.373 | 0.438 | 0.247 |
| 1960 | 0.441 | 0.335 | 0.425 | 0.242 |
| 1961 | 0.437 | 0.355 | 0.445 | 0.220 |
| 1962 | 0.445 | 0.319 | 0.441 | 0.240 |
| 1963 | 0.454 | 0.380 | 0.458 | 0.269 |
| 1964 | 0.467 | 0.375 | 0.489 | 0.278 |
| 1965 | 0.505 | 0.387 | 0.499 | 0.320 |
| 1966 | 0.494 | 0.372 | 0.490 | 0.306 |
| 1967 | 0.446 | 0.343 | 0.469 | 0.282 |
| 1968 | 0.424 | 0.327 | 0.445 | 0.281 |
| 1969 | 0.432 | 0.327 | 0.445 | 0.274 |
| 1970 | 0.401 | 0.323 | 0.457 | 0.278 |
| 1971 | 0.458 | 0.348 | 0.484 | 0.316 |
| 1972 | 0.496 | 0.393 | 0.495 | 0.302 |
| 1973 | 0.461 | 0.372 | 0.480 | 0.321 |
| 1974 | 0.453 | 0.367 | 0.488 | 0.367 |
| 1975 | 0.522 | 0.373 | 0.572 | 0.445 |
| A | 2.7221 | 15.8842 | -5.2730 | 1.4977 |
| B | -0.0011 | -0.0079 | 0.0029 | -0.0006 |
| $\bar{X}$ | 0.467 | 0.400 | 0.464 | 0.311 |
| s | 0.032 | 0.080 | 0.033 | 0.060 |
| c | 0.068 | 0.201 | 0.070 | 0.193 |
| R | -0.255 | -0.695 | 0.634 | -0.071 |

| Year | Chemical Products (small) | (large) | Steel & Iron (small) | (large) |
|---|---|---|---|---|
| 1952 | 0.307 | 0.418 | ----- | ----- |
| 1953 | 0.296 | 0.300 | ----- | ----- |
| 1954 | 0.270 | 0.324 | ----- | ----- |
| 1955 | 0.274 | 0.294 | o.439 | 0.414 |
| 1956 | 0.270 | 0.279 | 0.352 | 0.349 |
| 1957 | 0.282 | 0.382 | 0.392 | 0.357 |
| 1958 | 0.305 | 0.394 | 0.531 | 0.552 |
| 1959 | 0.294 | 0.309 | 0.436 | 0.391 |
| 1960 | 0.290 | 0.284 | 0.412 | 0.407 |
| 1961 | 0.311 | 0.254 | 0.429 | 0.350 |
| 1962 | 0.322 | 0.268 | 0.463 | 0.542 |
| 1963 | 0.295 | 0.250 | 0.459 | 0.508 |
| 1964 | 0.305 | 0.234 | 0.452 | 0.391 |
| 1965 | 0.300 | 0.245 | 0.482 | 0.450 |
| 1966 | 0.302 | 0.230 | 0.483 | 0.425 |
| 1967 | 0.284 | 0.205 | 0.395 | 0.344 |
| 1968 | 0.272 | 0.214 | 0.419 | 0.441 |
| 1969 | 0.255 | 0.193 | 0.404 | 0.365 |
| 1970 | 0.247 | 0.183 | 0.387 | 0.376 |
| 1971 | 0.275 | 0.213 | 0.446 | 0.447 |
| 1972 | 0.269 | 0.249 | 0.421 | 0.375 |
| 1973 | 0.266 | 0.227 | 0.346 | 0.307 |
| 1974 | 0.247 | 0.291 | 0.359 | 0.332 |
| 1975 | 0.317 | 0.370 | 0.554 | 0.486 |
| A | 2.1902 | 9.9239 | 1.2443 | 4.0468 |
| B | -0.0010 | -0.0049 | -0.0004 | -0.0019 |
| $\overline{X}$ | 0.286 | 0.275 | 0.431 | 0.410 |
| s | 0.021 | 0.065 | 0.054 | 0.068 |
| c | 0.074 | 0.235 | 0.125 | 0.169 |
| R | -0.322 | 0.537 | -0.048 | -0.168 |

| Year | Foodstuffs (small) | Foodstuffs (large) | Printing & Publishing (small) | Printing & Publishing (large) |
|---|---|---|---|---|
| 1952 | 0.321 | 0.342 | 0.438 | 0.334 |
| 1953 | 0.317 | 0.313 | 0.444 | 0.325 |
| 1954 | 0.289 | 0.252 | 0.447 | 0.265 |
| 1955 | 0.277 | 0.337 | 0.401 | 0.284 |
| 1956 | 0.293 | 0.290 | 0.463 | 0.296 |
| 1957 | 0.293 | 0.202 | 0.460 | 0.323 |
| 1958 | 0.282 | 0.440 | 0.473 | 0.328 |
| 1959 | 0.310 | 0.293 | 0.485 | 0.364 |
| 1960 | 0.295 | 0.280 | 0.474 | 0.378 |
| 1961 | 0.303 | 0.315 | 0.471 | 0.353 |
| 1962 | 0.311 | 0.160 | 0.472 | 0.357 |
| 1963 | 0.302 | 0.258 | 0.464 | 0.380 |
| 1964 | 0.335 | 0.316 | 0.493 | 0.383 |
| 1965 | 0.344 | 0.298 | 0.502 | 0.395 |
| 1966 | 0.337 | 0.271 | 0.512 | 0.295 |
| 1967 | 0.329 | 0.330 | 0.491 | 0.286 |
| 1968 | 0.310 | 0.396 | 0.481 | 0.289 |
| 1969 | 0.308 | 0.339 | 0.470 | 0.282 |
| 1970 | 0.308 | 0.294 | 0.465 | 0.327 |
| 1971 | 0.320 | 0.313 | 0.473 | 0.345 |
| 1972 | 0.348 | 0.305 | 0.480 | 0.381 |
| 1973 | 0.338 | 0.281 | 0.479 | 0.369 |
| 1974 | 0.340 | 0.296 | 0.474 | 0.369 |
| 1975 | 0.341 | 0.354 | 0.487 | 0.381 |
| A | -3.5330 | -1.3061 | -3.1975 | -3.4354 |
| B | 0.0020 | 0.0008 | 0.0019 | 0.0019 |
| $\overline{X}$ | 0.315 | 0.303 | 0.471 | 0.337 |
| s | 0.021 | 0.056 | 0.023 | 0.040 |
| c | 0.066 | 0.186 | 0.048 | 0.118 |
| R | 0.666 | 0.103 | 0.583 | 0.342 |

| Year | Pulp & Paper (small) | (large) | Nonferrous Metals (small) | (large) |
|---|---|---|---|---|
| 1952 | 0.422 | 0.287 | ----- | ----- |
| 1953 | 0.394 | 0.274 | ----- | ----- |
| 1954 | 0.385 | 0.318 | ----- | ----- |
| 1955 | 0.360 | 0.327 | 0.467 | 0.288 |
| 1956 | 0.373 | 0.320 | 0.386 | 0.350 |
| 1957 | 0.364 | 0.356 | 0.409 | 0.287 |
| 1958 | 0.398 | 0.410 | 0.492 | 0.399 |
| 1959 | 0.380 | 0.331 | 0.377 | 0.380 |
| 1960 | 0.374 | 0.322 | 0.389 | 0.273 |
| 1961 | 0.367 | 0.367 | 0.385 | 0.301 |
| 1962 | 0.381 | 0.381 | 0.442 | 0.394 |
| 1963 | 0.398 | 0.398 | 0.412 | 0.422 |
| 1964 | 0.393 | 0.402 | 0.413 | 0.338 |
| 1965 | 0.402 | 0.312 | 0.439 | 0.340 |
| 1966 | 0.399 | 0.308 | 0.358 | 0.317 |
| 1967 | 0.393 | 0.393 | 0.394 | 0.316 |
| 1968 | 0.429 | 0.310 | 0.401 | 0.337 |
| 1969 | 0.393 | 0.303 | 0.289 | 0.312 |
| 1970 | 0.376 | 0.304 | 0.377 | 0.333 |
| 1971 | 0.386 | 0.386 | 0.433 | 0.355 |
| 1972 | 0.406 | 0.406 | 0.424 | 0.330 |
| 1973 | 0.362 | 0.362 | 0.347 | 0.256 |
| 1974 | 0.338 | 0.278 | 0.367 | 0.342 |
| 1975 | 0.444 | 0.444 | 0.550 | 0.505 |
| A | -0.2630 | -3.7700 | 2.0252 | -2.6064 |
| B | 0.0003 | 0.0021 | -0.0008 | 0.0015 |
| $\bar{X}$ | 0.388 | 0.346 | 0.407 | 0.342 |
| s | 0.023 | 0.048 | 0.055 | 0.056 |
| c | 0.060 | 0.138 | 0.134 | 0.164 |
| R | 0.100 | 0.311 | -0.094 | 0.166 |

| Year | Rubber Products (small) | Rubber Products (large) | Glass, Ceramics & Stone Products (small) | Glass, Ceramics & Stone Products (large) |
|---|---|---|---|---|
| 1952 | 0.433 | 0.286 | 0.558 | 0.329 |
| 1953 | 0.414 | 0.291 | 0.530 | 0.240 |
| 1954 | 0.408 | 0.187 | 0.516 | 0.223 |
| 1955 | 0.424 | 0.217 | 0.468 | 0.212 |
| 1956 | 0.421 | 0.255 | 0.474 | 0.215 |
| 1957 | 0.442 | 0.233 | 0.466 | 0.244 |
| 1958 | 0.432 | 0.278 | 0.481 | 0.286 |
| 1959 | 0.445 | 0.316 | 0.451 | 0.262 |
| 1960 | 0.426 | 0.276 | 0.434 | 0.221 |
| 1961 | 0.442 | 0.207 | 0.412 | 0.260 |
| 1962 | 0.416 | 0.286 | 0.399 | 0.266 |
| 1963 | 0.442 | 0.296 | 0.373 | 0.248 |
| 1964 | 0.465 | 0.296 | 0.395 | 0.256 |
| 1965 | 0.477 | 0.326 | 0.436 | 0.297 |
| 1966 | 0.469 | 0.308 | 0.419 | 0.323 |
| 1967 | 0.452 | 0.287 | 0.389 | 0.263 |
| 1968 | 0.442 | 0.340 | 0.378 | 0.287 |
| 1969 | 0.428 | 0.393 | 0.386 | 0.267 |
| 1970 | 0.442 | 0.372 | 0.402 | 0.301 |
| 1971 | 0.423 | 0.340 | 0.430 | 0.295 |
| 1972 | 0.441 | 0.352 | 0.417 | 0.318 |
| 1973 | 0.435 | 0.394 | 0.378 | 0.262 |
| 1974 | 0.444 | 0.443 | 0.390 | 0.311 |
| 1975 | 0.519 | 0.497 | 0.469 | 0.391 |
| A | -2.8820 | -16.3680 | 10.5236 | -6.6639 |
| B | 0.0017 | 0.0085 | -0.0051 | 0.0035 |
| $\bar{X}$ | 0.441 | 0.312 | 0.436 | 0.274 |
| s | 0.024 | 0.073 | 0.051 | 0.042 |
| c | 0.054 | 0.234 | 0.117 | 0.154 |
| R | 0.505 | 0.824 | -0.712 | 0.592 |

| Year | Textile (small) | (large) |
|---|---|---|
| 1952 | 0.442 | 0.342 |
| 1953 | 0.442 | 0.318 |
| 1954 | 0.409 | 0.342 |
| 1955 | 0.399 | 0.297 |
| 1956 | 0.423 | 0.307 |
| 1957 | 0.444 | 0.341 |
| 1958 | 0.447 | 0.476 |
| 1959 | 0.430 | 0.308 |
| 1960 | 0.409 | 0.332 |
| 1961 | 0.416 | 0.341 |
| 1962 | 0.437 | 0.363 |
| 1963 | 0.421 | 0.374 |
| 1964 | 0.437 | 0.441 |
| 1965 | 0.469 | 0.495 |
| 1966 | 0.451 | 0.437 |
| 1967 | 0.434 | 0.425 |
| 1968 | 0.441 | 0.464 |
| 1969 | 0.432 | 0.513 |
| 1970 | 0.425 | 0.547 |
| 1971 | 0.457 | 0.564 |
| 1972 | 0.450 | 0.523 |
| 1973 | 0.410 | 0.360 |
| 1974 | 0.481 | 0.581 |
| 1975 | 0.499 | 1.058 |
| A | -2.6996 | -30.3900 |
| B | 0.0016 | 0.0157 |
| $\overline{X}$ | 0.438 | 0.440 |
| s | 0.023 | 0.159 |
| c | 0.054 | 0.362 |
| R | 0.482 | 0.697 |

## BIBLIOGRAPHY


Abegglen, James C., The Japanese Factory, The Free Press, Glencoe, Illinois, 1958.

_____, Management and Worker: The Japanese Solution, Sophia University and Kodansha, Tokyo, 1973.

Allen, G.C., Japan's Economic Recovery, Oxford University Press, New York, 1958.

Ando, A., and Modigliani, F., "The 'Life Cycle' Hypothesis of Saving, Aggregate Implications and Tests," American Economic Review (March, 1963).

Ara, Kenjiro, "Jikan-Senko To Chochiku" (Time-Preference and Saving), Kindai Keizai-gaku Jiten (Modern Economics Dictionary), ed. by Yamada, Koizumi, Shinohara, Miyazawa and Ara, Kobun-sha, Tokyo, 1966.

Araki, Nobuyoshi, Gendai Nippon Boeki-ron (Contemporary Theory of the Japanese Trade), Toyo-Keizai Shinbun-sha, Tokyo, 1969.

Ballon, Robert J., "A European Views the Japanese", The Wheel Extended (Summer, 1978).

_____, The Japanese Employee, Sophia University and Tuttle, Tokyo, 1969.

Benedict, Ruth, The Chrysanthemum and the Sward: Patterns of Japanese Culture, New American Library, New York, 1974.

Bieda, K., The Structure and Operation of the Japanese Economy, John Wiley and Sons Australsia Pty Ltd., Sydney, 1970.

Boltho, Andrea, Japan: An Economic Survey 1953-1973, Oxford University Press, London, 1975.

Branson, William, Macroeconomic Theory and Policy, Harper and Row, New York, 1972.

Brzezinski, Zbigniew, The Fragile Blossom: Crisis and Change in Japan, Harper and Row, New York, 1972.

Bureau of Statistics, Prime Minister's Office, Nippon Tokei Nenkan (Japan Statistical Yearbook), Okurasho Insatsu-kyoku, Tokyo, 1952-1975.

_____, Nippon No Tokei (Statistics of Japan), Okurasho Insatsu-kyoku, Tokyo, 1976.

Cohen, Jerome B., Economic Problem of Free Japan, Princeton University Press, Princeton, New Jersey, 1952.

Cole, Robert E., "Permanent Employment in Japan: Facts Fantasies," Industrial Labor Relations Review (Oct., 1972).

Cumming, William K., "Understanding Behavior in Japan's Academic Marketplace," The Journal of Asian Studies (Feb., 1975).

Denison, Edward F. and Chung, William K., How Japan's Economy Grew So Fast: The Sources of Postwar Expansion, The Brookings Institution, Washington, D.C., 1976.

Dore, Ronald, British Factory - Japanese Factory: The Origins of National Diversity in Industrial Relations, University of California Press, Barkeley, 1973.

Fisher, Irvin, The Theory of Interest, Kelley and Millman, New York, 1954.

Friedman, Milton, A Theory of the Consumption Function, Princeton University Press, Princeton, New Jersey, 1957.

Fukada, Yusuke, "The Japanese View of Work", The Wheel Extended (Summer, 1978).

Hanami, Tadashi, Labor Relations in Japan Today, Kodansha International, Tokyo, 1979.

Hodgson, James D., "The Wonderous Working World of Japan", The Wheel Extended (Summer, 1978).

Horie, Masanori, Nippon No Rodosha Kaikyu (Working Class of Japan), Iwanami Shoten, Tokyo, 1962.

Ishihara, Takekazu, Kigyonai Chingin Kakusa (Wage Differentials Within Firms), Nippon Rodo Kyokai, Tokyo, 1970.

Kajinishi, Mitsuhaya, Nippon Keizai-Shi (Economic History of Japan), Ochanomizu Shobo, Tokyo, 1970.

Kanamori, Hisao (ed.), Boeki To Kokusai Shushi (Trade and Balance of Payments), Nippon Keizai Shinbun-sha, Tokyo, 1970.

_____, Nippon Keizai O Domiruka (How to View Japan's Economy), Nippon Keizai Shinbun-sha, Tokyo, 1967.

Keizai Kikaku-cho, Gendai Nippon Keizai No Tenkai: Keizai Kikaku-cho 30 Nen-Shi (Evolution of the Modern Japanese Economy: 30-Year History of the Economic Planning Agency), Okurasho Insatsu-kyoku, Tokyo, 1976.

_____, Sengo Keizai-Shi (Postwar Economic History), Okurasho Insatsu-kyoku, Tokyo, 1957.

Keynes, John Maynard, The General Theory of Employment, Interest, and Money, Harcourt Brace & World, New York, 1964.

Kishida, Shunsuke (ed.), Nippon No Zaisei (Japanese Public Finance), Toyo Keizai Shinposha, Tokyo, 1978.

Kitada, Yoshiharu, Nippon No Boeki (The Japanese Trade), Shin Nippon Shuppan-sha, Tokyo, 1972.

Kojima, Kenji, Nippon No Chingin (Wages in Japan), Iwanami Shoten, Tokyo, 1969.

Livingston, J., Moore, J., and Oldfather, F. (ed.), The Japan Reader 2: Postwar Japan: 1945 to the Present, Penguin Books, Hamondsworth, Middlesex, 1973.

Maruo, Naomi and Nagayama, Yasuhiko, Sekai No Keiei-Sanka Wa Kokomade Susunda (Workers Participation in the World Has Come This Far), Diamond-sha, Tokyo, 1975.

Minami, Hiroshi, Psychology of the Japanese People, University of Toronto Press, Toronto, 1971.

Mitsufuji, Tadashi and Hagisawa, Kiyohiko, "Recent Trends in Collective Bargainning in Japan," International Labor Review (Feb., 1972).

Mizoguchi, Toshiyuki, Personal Savings and Consumption in Postwar Japan, Kinokuniya, Tokyo, 1970.

Nakamura, Takatoshi, Nippon No Daikigyo (Large Corporations of Japan), Iwanami Shoten, Tokyo, 1961.

Nelson, Richard R., "Growth Models and the Escape from the Low-level Equilibrium Trap: The Case of Japan," Economic Development and Cultural Change (Oct., 1959).

Nippon Rodo Kyokai (ed.), Keiei Sanka No Ronri To Tenbo (Logics and Views of Workers Participation), Nippon Rodo Kyokai, Tokyo, 1976.

Nishida, Kozo, Nippon-teki Keiei To Hatarakigai (The Japanese-style Business Administration and Rewards for Work), Nippon Keizai Shinbun-sha, Tokyo, 1978.

O.E.C.D., OECD Tainichi Rodo Hokokusho (Revies of Manpower and Social Policies: Manpower Policy in Japan), Nippon Rodo Kyokai, Tokyo, 1972.

Okochi, K., Karsh, B., and Lavine, S.B. (ed.), Workers and Employers in Japan, Princeton University Press, Princeton, New Jersey, 1974.

Otsubo, Kenichiro, "The Smaller Enterprise and the Application of Labor Legislation in Japan," International Labor Review (Aug.-Sept., 1972)

Patrick, Hugh and Rosovsky, Henry (ed.), Asia's New Giant: How the Japanese Economy Works, The Brookings Institution, Washington, D.C., 1976.

Patric, Hugh (ed.), Japanese Industrialization and Its Social Consequences, University of California Press, Los Angeles, 1976.

Rohlen, Thomas P., For Harmony and Strength: Japanese White-Collar Organization in Anthropological Perspective, University of California Press, Berkeley, 1974.

Rodosho, Rodo Hakusho (White Paper on Labor), Rodosho, Tokyo, 1952-1975.

Sazanami, Yoko, Keizai Seicho To Kokusai Kyoso-Ryoku (Economic Growth and International Competitiveness), Toyo Keizai Shinpo-sha, Tokyo, 1968.

Shinohara, Miyohei, Structual Changes in Japan's Economic Development, Kinokuniya, Tokyo, 1970.

_____, "The Structure of Saving and the Consumption Function in Postwar Japan," Journal of Political Economy (Dec., 1959).

Shishido, Toshio, Nippon Keizai no Seichoryoku (Growth Capacity of the Japanese Economy), Diamond-sha, Tokyo, 1977.

Shirai, Taishiro, "Prices and Wages in Japan: Towards an Aiti-Inflationary Pricing," International Labor Review (March, 1971).

Stoikov, Vladimir, "Size of Firm , Worker Earnings, and Human Capital: The Case of Japan", Industrial Labor Relations Review (July, 1973).

Sumiya, Mikio (ed.), Nipponjin No Keizai-Kodo (The Japanese Economic Behavior), Toyo Keizai Shinpo-sha, Tokyo, 1972.

Taira, Koji, Economic Development and the Labor Market in Japan, Columbia University Press, New York, 1970.

_____, "Japanese 'Enterprise Unionism' and Inter-firm Wage Structure", Industrial Labor Relations Review (Oct., 1961).

_____, "Growth, Trends, and Swings in Japanese Agriculture and Industry", Economic Development and Cultural Change (Jan., 1976).

Takahashim Nobuko, "Women's Wages in Japan and the Wuestion of Equal Pay," International Labor Review (Jan., 1975).

Takahashi, Takeo, Sicho Keizai No Saihakken (Rediscovery of the Growth Economy), Nippon Keisai Shinbun-sha, Tokyo, 1972.

Tiedemann, Arthur E. (ed.), An Introduction to Japanese Civilization, Columbia University Press, New York, 1974.

Tomiyasu, Nagateru, Shushin Koyo To Nenko Joretsu (Lifetime Employment and Seniority System), Rodo Hogaku Shuppan, Tokyo, 1973.

Tsunoda, Ryusaki, de Bary,Wm. Theodore, and Keene, Donald (ed.), Source of Japanese Tradition, Columbia University Press, New York, 1971.

Tsuru, Shigeto, Keizai O Ugokasu Mono (Things which move An Economy), Iwanami Shoten, Tokyo, 1959.

Uzawa, Hirofumi, "Time Preference and thePenrose Effect in a Two-Class Model of Economic Growth", Journal of Political Economy (July/August, 1969).

Watanabe, Tsunehiko, "Improvement of Labor Quality and Growth---Japane's Postwar Experience", Economic Development and Cultural Change (Oct., 1972).

Yakabe, Katsumi, Labor Relations in Japan: Fundamental Characteristics, International Society for Educational Information, Inc., Tokyo, 1974.