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Gower

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*Intersectoral Inequalities between Agriculture and Non-agriculture:
Implications of the Japanese Experience*

INTRODUCTION

Intersectoral inequalities or income disparities between the agricultural and non-agricultural sectors have been much discussed by agricultural economists since the subject was first raised by Petty (1690) nearly 300 years ago. Drawing from the scanty empirical evidence available up to that time Petty concluded that 'there is much more to be gained by manufacture than husbandry, and by merchandise than manufacture'. Later, Clark called this 'Petty's Law'. He devoted himself to collecting empirical evidence for many countries relating to the law, and found general patterns of structural changes in connection with intersectoral inequalities as well as with the process of economic development (Clark, 1951). There has been much discussion on income disparities between farmers, or rural people, and non-agricultural workers, or urban people, in relation to out-migration from the agricultural sector to the non-agricultural sector, or referring to rural poverty and income distribution problems (Schultz, 1953; Bellerby, 1956; Lewis, 1958; Fei and Ranis, 1964; and Schuh, 1982).

Intensive empirical studies on changes in the intersectoral inequality of output per worker as well as in the structural transformation in the course of Modern Economic Growth (MEG) were made by Kuznets (1963 and 1971). From those studies, which covered mainly the Western developed countries, he derived an important hypothesis that income inequality tended to widen in the early phase of MEG, then narrowed in the later phase. This the well known 'Kuznets' U-shape curve'. If this law can be applied to contemporary developing countries, the inequality which is one of the important problems of their economic and social development must necessarily occur there. How about the actual performance? Empirical studies covering developing countries were undertaken by Chenery and Syrquin (1975) and Ahluwalia (1976). Although the curve was confirmed using cross-section data, historical evidence using time series data is still not clear-cut.

To obtain a better perspective on the trends of changes in inequality and various related aspects for contemporary developing countries, Japan's

long-term experience, for which quantitative data have been estimated and analysed by Ohkawa and his associates (Ohkawa and Shinohara, 1979), may present a good 'bridge' between the developing and developed countries, because it is a record of a latecomer with surplus labour in an earlier period of MEG under unfavourable resource endowments (man/land ratio), which characterize a majority of contemporary developing nations particularly in Asia.

The purpose of this paper is to provide internationally transferrable knowledge on the secular trends in intersectoral inequalities and related factors in the course of MEG, which may be derived from the Japanese historical experience.

ANALYTICAL FRAMEWORK

Concepts of intersectoral inequalities

Three kinds of intersectoral inequalities are to be focused on in this paper: (a) inequalities in output (GDP) per worker; (b) inequalities in personal factor income per worker; and (c) inequalities in per caput income between farm and non-farm households. Wage differentials are not discussed explicitly. These concepts will be discussed, using both real and nominal prices respectively. Indicators of inequalities are measured as the ratios of various economic variables between the two groups. The agricultural sector or farm households will be used as the bases or denominators of these ratios.

Differences in output per worker are the most conventional indicators of inequality based upon aggregate macro statistics. *Output per worker in real terms* can be considered as a simple rough indicator of partial average labour productivity without making any adjustments for changes or differences in labour days or hours, quality, and composition. It may indicate the level of technology by sector in a crude sense. *Output per worker in nominal terms* reflects changes in terms of trade as well as real productivity among the sectors. In general, a higher rate of productivity increase in a sector leads to lower prices relative to the other sectors if the markets work competitively. Thus, the inequality in this concept tends to change more slowly than the real productivity gaps between the sectors. A price support for a less productive sector brings about the same effect. The sectors to be compared are the agricultural sector and the non-agricultural sector, but this will be defined more precisely later on.

Personal income per worker means labour income per worker for the non-agricultural sector and the sum of labour income and land rent per worker for the agricultural sector. In Japan agricultural land belongs to the farmers themselves or landlords-cum-cultivators in general, except for a particular period to be referred to later. Thus, farmers' income is a mixed income of imputed wage and rent. To get these factor incomes, sectoral output was multiplied by their respective factor shares.

Per caput household income is income per caput, including income from the major occupation and side-jobs by all the family members as well as

from asset ownership. The households being compared are farm households on the one hand and non-farm households on the other. Households are basic units, particularly in rural areas, both for production and consumption. In general, consumer prices differ between rural and urban areas. Such price differentials as well as price changes are adjusted in the case of *per caput household income in real terms*, so that this indicator must be more appropriate than the nominal term figures to compare income disparities between the two types of household in a real sense.

Dualistic growth and sector classification

In explaining the Japanese experience of intersectoral inequalities, the concept of 'dualistic growth', that is the co-existence of 'modern' and 'traditional' sectors (Ohkawa, 1972), is applied here. 'In the Japanese economy, modern sectors are those which use techniques and forms of organization imported from the West. Traditional sectors employ techniques and organization indigenous to Japan' (Ohkawa and Rosovsky, 1968). The classification of sectors of the economy in this paper follows Ohkawa as well as Kuznets (1971). Agriculture, forestry, and fisheries are treated as typical traditional sectors and are called the 'A sector'. Manufacturing, mining, construction, transportation, communications and public utilities are considered as typical modern sectors and are called the 'M sector'. The remaining part of the sector is called the 'S sector' which has mixed characteristics. The non-agricultural sector which consists of M and S sectors is termed the 'NA sector'.

The traditional versus modern dichotomy in the literature has mainly referred to differences in production techniques. In addition, however, I would like to stress the co-existence of 'different ways or preferences of living' between rural and urban people, which can be considered as an additional aspect of the traditional-modern thesis. The traditional ways of living would prefer relatively indigenous living standards, a self-sufficient subsistent life, and a mutually helping large family size depending on inherited asset bases. In contrast, the modern way of living would prefer Western standards, a purchasing-base life, and independent small family size depending on recently acquired asset bases. Such contrasting characteristics of two types of life styles would be common in the earlier period of economic development. In this regard, farm households could be expected to typify traditional ways of living while urban worker households those of modern ways of living. Farmers' traditional behaviour, referring not only to production aspects but also to life style preferences, will be used to explain the existence of wide intersectoral inequalities later on.

Phasing of the dualistic growth

A phasing approach, namely, demarcating the entire period of modern economic growth into identifiable and relatively unified phases of growth, is useful not only in examining the modern Japanese experience but also in making Japan's historical experience internationally transferrable. In considering the changes in relative growth rate and share of the A sector in

the economy, labour market conditions in the A sector, and structural transformation, three phases of economic growth are defined based upon Ohkawa's various studies, as well as Minami's (1973) and Yamada's (1980).

JAPANESE HISTORICAL EXPERIENCE

Phases of Japan's dualistic growth

Phase I: 1885/89 to 1915/19. Modern economic growth emerged in this phase as indicated by a sustained high growth rate of the M sector as seen in Table 1 (Ohkawa and Rosovsky, 1965). However, the shares of the A sector in the total number of workers and in GDP were still high, the growth rate of the A sector was relatively high compared to later periods and accelerated through technological development in agriculture (Hayami, et

TABLE 1 *Salient characteristics of the Japanese economy by phases*
(in per cent)

	Phase I		Phase II		Phase III
	Ia 1885/89 to 1905/09	Ib 1905/09 to 1915/19	IIa 1915/19 to 1935/39	IIb 1955/59 to 1960/64	1960/64 to 1975/79
Growth rate of GDP					
Total	3.4	3.9	3.3	10.1	7.9
A Sector ¹	1.5	2.3	0.7	1.8	1.4
M Sector ¹	6.1	6.5	6.2	17.1	9.6
Growth rate of workers					
A Sector	0.1	-0.7	-0.4	-2.9	-4.9
M Sector	1.5	3.2	1.8	4.6	2.1
Growth rate of prices					
A Sector	5.1	6.2	1.3	4.6	7.8
M Sector	3.5	6.3	-0.0	0.7	4.3
Share of A sector ²					
in Total Workers	73-67	67-58	58-45	37-30	30-12
in GDP	43-36	36-31	31-18	15-10	10-5

Sources: Ohkawa and Shinohara, 1979; *Labour Force Survey*, 1980; and *Annual Report on National Accounts*, 1981.

Notes: ¹ See the text for definitions of the A and M sectors.

² Two figures mean changes from the first at the beginning period to the last at the end period.

al., 1975). Phase I may be characterized as a phase of dualistic growth in which the development of the modern sector was heavily dependent on the positive performance of the traditional sector. This phase is divided into two sub-phases, *Phase Ia* (1885/89 to 1905/09) and *Phase Ib* (1905/09 to 1915–19). The major difference between them is growth in number of workers in the A sector: number of workers was increasing in Phase Ia but decreased in Phase Ib. Such change was important as ‘the first turning point of the labour market conditions’ in the traditional sector. However, the essential characteristic of the entire Phase I was still that of ‘labour surplus’ or ‘unlimited supplies of labour’.

Phase II: 1915/19 to 1960/64. the M sector maintained sustained growth during this phase, though interrupted by World War II. But the A sector stagnated significantly in the prewar sub-phase, Phase IIa (1915/19 to 1935/39). As industries rapidly developed, opportunities for non-farm investments increased, and the shift from ‘innovation landlords’ to ‘parasitic landlords’ progressed in this period (Hayami, et al., 1975). Under this situation, the rate of technological progress in agriculture slowed, being discouraged in particular by the increasing inflow of cheap rice from colonies and by the unfavourable terms of trade for agriculture during the Great Depression. In Phase IIb (1955/59 to 1960/64), the postwar economic spurt occurred. The growth rate of the M sector was extremely high at 17 per cent per annum, while that of the A sector remained less than 2 per cent. Labour inflow to the NA sector from the A sector began to increase and by the end of this phase, surplus labour in the A sector disappeared. There is a consensus that the period around 1960/64 was ‘the second turning point of the labour market’, from the phase of unlimited supplies of labour to the phase of limited supplies of labour (Minami, 1973). Phase II is characterized as a phase of dualistic growth where the modern sector achieved an accelerated sustained growth leaving the traditional sector behind, which resulted in significant structural transformation during the period (Table 1).

Phase III: 1960/64 to 1975/79 (onward). The growth rate of the M sector in this phase was not as high as in the previous phase but still remained at a high level of about 10 per cent in spite of the oil crises and the world economic depression. But growth in the A sector was low. Consequently, the outflow of labour from the A sector increased and the number of workers in the A sector decreased by about 5 per cent per annum under the condition of limited supply of labour. Thus, the agrarian structure as well as agricultural technology have been fundamentally altered by development in the A sector. Phase III can be characterized as a phase of dualistic growth where the traditional sector is forced to transform by the modern sector’s development under conditions of limited supply of labour.

Inequalities in output per worker between agriculture and non-agriculture

The ratio of output per worker between the M and A sectors in real terms (the real M/A ratio), which is a rough indicator of productivity differences between the M and A sectors, shows an increasing trend in both the pre and

post-war periods (Table 2, Panel A). This implies that the productivity gaps between the modern and traditional sectors have widened as a whole. This trend was significant in Phases Ia and II. In Phase Ia the number of agricultural workers increased and the rise in agricultural productivity remained relatively small. In Phase IIa agricultural growth slowed and in

TABLE II *Selected indicators of intersectoral inequalities, Japan*
(in per cent)

	Phase I		Phase II		Phase III		
	Ia	Ib	IIa	IIb			
	1885/89	1905/09	1915/19	1935/39	1955/59	1960/64	1975/79
A Ratios of output per worker							
M/A, real	1.5	2.8	2.8	5.1	2.0	2.7	3.0
M/A, nominal	2.4	3.3	3.4	4.8	3.6	4.1	2.8
NA/A, real	3.7	4.2	3.6	4.1	2.8	3.2	2.8
NA/A, nominal	3.5	3.6	3.0	3.7	3.2	3.8	2.7
B Ratios of factor income per worker							
NA'/A', nominal	2.7	2.6	2.2	2.5	2.6	3.0	2.3
C Ratios of household income per caput							
NF/F, nominal	1.9	2.2	2.1	3.0	1.4	1.4	0.9
NF/F, real	1.3	1.5	1.4	2.1	1.2	1.3	0.8

Sources: The same sources as Table 1; Otsuki and Takamatsu, 1978; Minami, 1981; Yamada, 1980; *Farm Household Economic Surveys*, various issues; and *Family Income and Expenditure Survey 1963-1980*, 1981.

Note: See the text for explanation of each ratio and the meaning of M, A, NA, NF and F. Real terms data were obtained by deflating nominal data by respective price deflations for which base years were 1934/36 for data before World War II and 1975 for data after the war.

Phase IIb the industrial spurt was so big that agricultural improvement could not catch up. In contrast agricultural improvement slowed down in Phases Ib and III. In Phase Ib agricultural development was significant and in Phase III agricultural mechanization, which led to productivity increases for agriculture, was induced by the substantial labour outflow from the A sector to the M sector.

Since the terms of trade have changed favourably for the A sector against the M sector during the entire period, the rise in the nominal M/A ratio was much smaller than the real M/A ratio in Phases I and II. Significantly, the nominal M/A ratio declined distinctly in Phase III, which was brought about mainly by the high price support policy for agricultural commodities in this period.

The ratios of output per worker between the NA (= M + S) and A sectors (the NA/A ratios) both in nominal and real terms have different trends than the M/A ratios. Changes in these ratios were much smaller than for the M/A ratios and show no particular secular trends for the entire period.

The S/A ratios had declining trends (not presented in Table 2) and the NA/A ratios are the weighted average of the trends of the M/A and S/A ratios. This may imply that the mixed characteristics of the S sector have stabilized the expanding inequality between the M sector, a typical modern sector, and the A sector, a typical traditional sector. It should be noted, however, that the intersectoral inequalities in output per worker between the A and NA sectors narrowed not only in Phase III but also even in Phase Ib.

The most important finding is the fact that sharp declines appeared in the nominal M/A and NA/A ratios during Phase III. Thus, the 'Kuznets' U-shape curve', has occurred for the Japanese economy at least in nominal terms recently.

Relatively stable intersectoral gaps in personal income per worker

Output per worker is not the same as labour return per worker because output contains interest on capital and land rent as well as returns to labour. Thus, factor shares should be taken into consideration in comparing the levels of personal earnings per worker by different sectors. The labour share of the NA sector had a distinct declining trend in the prewar period, then levelled off after the war (Minami, 1981), while the labour share was rather stable for agriculture for the entire period (Yamada, 1980). Farmers or landlords-cum-cultivators received not only their labour return but also land rent as well. Thus, land rent is also added to their personal income. But the rent received by absentee-landlords must be omitted from the income of the A sector. It is impossible to estimate such rents precisely for all periods. I made a tentative estimate only for Phase IIa when absentee landlords were significant, as stated earlier. The figures NA'/A' in Panel B in Table 2 are the adjusted ratios of NA/A in Panel A to compare such personal income between the NA and A sectors. Note that the adjusted ratios become small and stable except for 1960/64. Income gaps per worker between the NA and A sectors are smaller and more stable than indicated from the conventional ratios of output per worker.

Per caput income disparities: an explanation by traditional behaviour of farmers

As observed in the above section, there have been sizable productivity gaps between the A and NA sectors in all the phases of dualistic growth in Japan. Even though the adjusted ratios of factor income per worker are much smaller than the productivity ratios, these ratios show that NA ratios are more than twice those for the A sector for the entire period. Why and how did such significant intersectoral inequalities continue to exist for such a long time? One explanation is the 'traditional behaviour' of farmers and their families. To compensate for low productivity or low earning per

worker in the A sector, it has been common for wives, older family members, and even children to work on the farm, particularly in the prewar period. In this period, the average number of farm workers per farm household was 2.5 persons. They worked not only on the farm but also in off-farm jobs, if such employment opportunities existed. In the prewar period, however, there were not many such job opportunities in rural areas. Many rural youngsters left home to work in urban areas and sent remittances to their parents. But the job opportunities in urban areas were not enough to absorb all excess rural labourers so that many people remained in rural areas as 'surplus labour' in Phases I and II. The share of the income from off-farm jobs in the total farm household income is estimated as about one-fourth in the 1930s. In the post-war period it has increased continuously reaching three-quarters of the total income in 1980. This has been brought about by the significant expansion of off-farm job opportunities even in rural areas along with the post-war economic growth. At present 'part-time family farming' is one of the significant characteristics of Japanese agriculture (Kada, 1980). By working more total hours than non-farm people, farm household income was raised to some extent in the prewar period and to a greater extent in the post-war period. However, since the family size of the farm households has always been larger than the non-farm households, income per caput has been lower in the farm households than in the non-farm households.

How have the disparities in income per caput between the farm and non-farm households changed in the past? A problem is that there are few reliable data to examine this question for the prewar period. For the post-war period we have randomly sampled household economic surveys, by which we measure the income gaps. For the prewar period, however, there were no such data available and we have to resort to data estimated using simplifying assumptions. In this paper I have utilized the estimates by Otsuki and Takamatsu (1978). These are not adjusted for differences in family size and in price levels between the farm and non-farm households, for which I have made the adjustments. The series of the ratios of income per caput between the farm and non-farm households thus adjusted are presented in Panel C in Table 2 as the nominal and real NF/F ratios.

The real NF/F ratios, which adjust both the family size and the rural-urban price differentials, reveal that the gaps are not as large as indicated in Panels A and B, and are rather stable around 1.3 to 1.5 during Phases I and II, except for 1935/39. These levels and patterns are very close to those of personal consumption per caput estimated by Ohkawa (1973). In 1975/79, the ratios became less than 1.0, which means that per caput income of farm households has exceeded the incomes of non-farm households in Phase III. This might be reflected by an increase in urban to rural migration of people who recently came back from urban areas to their native rural areas. The appearance of such reverse indication of income per caput between the farm and non-farm households must correspond to the observed u-shape curve phenomena in output per worker. Except for the 1975/79 case, there have always been differences in income per caput between farm and non-farm

households. How can sustained gaps be explained? The existence of 'traditional behaviour' of farmers can explain them to a considerable extent.

For the majority of farmers, who are used to living in rural areas according to their traditional ways, there must be a preference for living in rural areas rather than to move from there to urban areas, even if there exist monetary income differences between the two areas. It is difficult to estimate such preferences empirically. Of course, some of the younger generation would have no such preference so that they might be eager to find jobs in urban areas. But as the mode of the majority of rural people in the prewar period in particular, such preference should exist under associated various social and institutional circumstances (Bellerby, 1956). We may assume that the rather stable levels of 1.3 to 1.5 in the real NF/F ratios we have seen in the prewar period might be reflecting the fact that there would be a kind of socially genuine equilibrium situation existing between rural and urban people which acted as a social stabilizer in the prewar period, except for Phase IIa in which the ratio increased substantially.

CONCLUSIONS: IMPLICATIONS OF THE JAPANESE EXPERIENCE

After World War II many countries became independent. At that time their economies and societies were essentially 'traditional', but soon after 'modern' sectors were established and developed along with the international transfer of technology and capital. Thus, 'dualistic growth' started there some time after their independence. The patterns of the growth are not necessarily the same for each country because their initial conditions and development strategies were not the same. However, there are some common economic characteristics, particularly in Asia and Africa: these are the large agricultural share in the economy, unfavourable man/land ratios, high population pressure, and the existence of large technological backlog transferable from abroad.

What changes have appeared in the intersectoral inequalities there under these conditions in the past? There is evidence to indicate that the productivity gaps between the A and M sectors, or the traditional and modern sectors, have widened in most Asian countries during the past two decades (Yamada, 1981). Such expanding gaps were smaller in nominal terms because the terms of trade have changed in favour of the A sector in many cases during the same period. These changes are consistent with the Japanese experience we have observed above. During the period income disparities per caput between the F and NF households had no particular trend in the case of Taiwan, China (Kuznets, 1980) and the disparities fluctuated along with the changes in policies in the case of Korea, according to official statistics. These two economies are relatively developed, but have not yet entered Phase III, though their own development phases do not necessarily correspond to the Japanese experience.

Some implications can be drawn from the Japanese experience to obtain

a better perspective on the trends in the intersectoral inequalities in the contemporary developing countries. These are as follows (using the terminologies in Table 2):

1 The real M/A ratios will continue to widen, while the nominal M/A ratios will widen more slowly than the real ratios because of favourable changes in the terms of trade for the A sector. However, the rates of change will differ according to their different phases. The key factors are the trends in changes in agricultural workers and agricultural development relative to industrial growth.

2 The NA/A ratios will show more moderate changes than the M/A ratios because of the mixed effects of the changes in S/A ratios which will differ by countries.

3 The NA'/A' ratios will show more moderate changes than the NA/A or M/A ratios. These ratios will be rather stable in many countries.

4 The real NF/F ratios will be stable in most countries; but in some countries, such as NICs, these may fluctuate according to the rapidity of structural transformation and development policies, particularly price policies. However, if some countries fail in appropriate agricultural development corresponding to population growth and general economic development, the ratios will increase.

5 The traditional behaviour of farmers and rural people and their off-farm jobs should not be disregarded in social stabilization in order to offset the possible income inequalities generated from economic growth. In relation to this issue, the healthy development of farm households or family farming units in rural areas, not only in production aspects but also in living or consumption aspects, is imperative.

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DISCUSSION OPENING – PHILIPPE LACOMBE

The paper given by our colleague Mr Yamada seems to me to be an excellent example of quantitative history, allowing both the relative importance and the performance of the agricultural sector to be viewed in perspective. In respect of various sectors of the Japanese economy and of different phases of the nation's economic history, Mr Yamada has examined a synthesis of the economic indicators for productivity and for the returns per worker or per family. Through this long-term study, we are able to follow the way in which disparities developed, whether of productivity or of return, and to examine the factors which gave rise to them, on the basis of the relationship between agriculture and the economy as a whole.

This study can therefore be seen as belonging to that category concerned with inter-sector relations. Mr Yamada himself relies upon it in seeking particularly to prove the hypothesis that disparities were somewhat accentuated at the beginning of the process of economic development,

followed by a subsequent reduction. The whole of the research was carried out with the aim of being able to transfer the knowledge gained to other situations.

Based as it is on quantitative data, this study calls in the first instance for some observations on the statistics used in it. We would do well to look on the one hand at the alleged disparities and, on the other, at the explanation put forward for their persistence. Finally, we need to ask ourselves some questions about the possible general applicability of these results.

1 The statistical questions

My comments can be summarized under three headings, as follows:

- (a) Only mean averages are examined. Perhaps because of the impossibility of doing so, Mr Yamada does not at any point consider those factors which indicate dispersion: these would have been extremely useful, in the first place for showing the significance of the averages and, secondly, in looking at the reproduction of the disparities revealed in terms of those averages.
- (b) To clarify reality, Mr Yamada makes adjustments to his statistical series. These adjustments, justifiable in intention, are in fact difficult to achieve. If we look only at the case of returns on land: part of this is derived from non-farming owners, whilst another fraction is incorporated with the return on the labour of working farmers. Mr Yamada goes on to estimate this return and the way in which it is divided up. The analysis is thus concerned with returns which, in part, are calculated or estimated and which do not represent a true, actual return. There is a probability that the returns alleged to accrue to working farmers are not in fact achieved.
- (c) The extension of the two-job pattern to Japan is such that it cannot but complicate population censuses: the attachment of those with two jobs to a particular category of employment is difficult precisely because they belong to more than one category. This state of affairs can import bias when working out the statistical denominators.

2 The identification of disparities

On average, disparities decrease if agricultural productivity increases either through improved performance or through a reduction in manpower, or if prices increase. They increase when the situation is reversed. They are therefore subject to the influence of technological development, of patterns of behaviour among farmers, of non-agricultural employment and of prices: Japanese economic history provides us with extremely interesting evidence on these macroeconomic relations. They may be more or less classical, but they are decisive if we are to understand the development of agriculture. The hypothesis put forward at the start of the paper, however, postulating a reduction in disparities, is not fully verified. It is not verified by the totality of factors. So far as productivity is concerned, it is validated only in terms of nominal value, during the present period of time, and it is strongly influenced by recent fluctuations in agricultural prices occasioned by price support programmes.

These results appear to me to demonstrate that there is no automatic,

general, spontaneous tendency towards a reduction of inequalities. Rather than seeking desperately to indicate a trend, the interest lies in showing the interplay of the mechanisms which can accentuate or reduce the disparities. For that very reason, however, there is a need to study the behaviour patterns of those who manage the mechanisms, that is, farmers, suppliers, customers, the State, consumers.

Parity and disparity constitute the result of social groups confronting interests contradictory to their own and placed in differing situations which bring with them behaviour patterns some of which are imposed on others. Examination of these patterns of behaviour leads us to a third series of comments on the persistence of disparities.

3 The persistence of disparities

This is in effect explained by Mr Yamada as being the traditional behaviour pattern of farmers, often bringing together several activities (part-time farming) which results from a preference for an existing situation, even where that works against their own interests.

I agree wholly with the stress laid on the extent of part-time farming in Japan, but it does not seem to me to be a measure of the reduction of disparities. Rather, it is an indication that parity of agricultural with non-agricultural incomes cannot be achieved by farmers from agricultural production alone. Even if, by reason of part-time farming, the congruence of farm and non-farm incomes is close to unity, part-time farming still shows the disparities. Mr Yamada explains that the persistence of the income disparities, of which the farmers are the victims, is due to their preference for carrying on activity in a rural environment, conserving a style of life as well. Far from being based on any socio-psychological preference, no matter what disparity, this pattern of behaviour really results from the absence of accessible alternatives. Given their circumstance, many farmers do not have any alternative; their only logical possibility is to carry on their agricultural production, possibly combined with an activity outside the farm.

It is of course this lack of alternatives which results in these disparities being perpetuated, with society profiting from it. If farmers were able to become masters of their own situation and to control their own production, as certain states or commercial operators are able (or attempt) to do, the disparities would be less. Their perpetuation is not something given by nature but is produced by social organization.

That is the reason why I do not share his optimistic approval of an acceptable, justified disparity of between 1.3 and 1.7 to the disadvantage of farmers. I would invite him to consider this relationship from the point of view of stimulating inter-sectoral exchange or of social balance. There is nothing which allows us to assert that such a relationship is normal or natural. It results from the workings of the social system and from unequal relations between social groups.

If Mr Yamada bases his argument on this socio-psychological preference, he doubtless does so to widen our often over-simplified economic explana-

tions. This concern I share; but such an enlargement of view should not lead us to imprecise, uncertain concepts. In my view, an enlargement of view needs to result from examining circumstances, the behavioural patterns resulting from those circumstances and the contradictions which may also flow from them.

I am surprised that the behaviour of the other consuming parties involved are not examined. Who benefits from the growth of agricultural production? Does the modern sector benefit from it? What is the State's role? Just staying in the area of quantitative techniques in which Mr Yamada excels, analysis of the distribution of the productivity gains will enable us to clarify these questions.

4 *The general application of the results*

To sum up, Mr Yamada shows a readily understandable concern to come up with knowledge transferable to other countries, particularly developing countries. It seem to me that the circumstances of Japan are manifestly too different for us to be able to follow him in that argument, unless in terms of considerations which are so generalized as to be banal.

I should like to suggest an alternative reading of his work. He has thought of it as allowing general trends to be spotted before their existence is shown to be proved. To me it is more a description of the case of Japan, with all its specific circumstances; and this is essential if one is to go on to make comparisons. Rather than as a framework for identification, I see it as a framework for comparison. Looking from the point at which we are in this work, there is more to be got from an analysis of one example and from its comparison with others than from seeking, on the basis of a single example, to identify general trends.

These remarks, which I have been charged with putting forward, should not be allowed to detract from a most positive impression of this meticulous work, truly worthy of a professional researcher and which, quite apart from its own inherent quality, suggests a number of complementary studies. I should therefore like to thank Mr Yamada most cordially for his outstanding achievement.

GENERAL DISCUSSION* – RAPPORTEUR: J. P. G. WEBSTER

These two papers created a good deal of interest and there were many who commented on the contents.

One participant noted Professor Westermarck's definition of equity which concerned a 'satisfactory' income. If this was accepted we should be concerned with how many people were *below* this level rather than with the spread of incomes. He also raised the question of the sensitivity of the income measures to the valuation of family labour. Should this be on the basis of opportunity costs rather than some sort of substitution cost as is often done? Also we should be concerned with total household income

*Papers by Westermarck and Yamada.

rather than simply that part of household income which is agricultural in its origin.

Another participant warned that an increase in dispersion of agricultural incomes may also imply a reduction in the dispersion of across-sector incomes. If larger farmers get richer, agricultural incomes may thus get closer to industrial incomes. He also asked Dr Westermarck to spell out the relationship between managerial ability and farm size.

A participant from the United States indicated that his country's experience mirrored that of the six countries studied by Westermarck. An USDA study had shown that larger farmers benefit more than smaller farmers in the areas of price policy, credit, taxation, and extension and research services. Proposals to modify the situation had recently been shelved. He also said that small farmers derived a large part of their incomes from non-agricultural services. Other participants enquired of Dr Yamada as to the reasons for changes in relative incomes. As compared with Western Europe, income per worker seemed low. Why? However labour productivity in European agriculture seems to have grown faster. What were the reasons behind this? Is growth in Japanese agriculture limited by technical bottlenecks or by adverse effects of high growth in the non-agricultural sector.

Other points raised included questions about the apparent non-neutrality of technology with respect to small and large farmers. One extension worker noted that many small farmers, when defining their objectives, included such non-economic variables as 'independence' and 'rural way of life'. Perhaps we should attempt to measure utility rather than income.

Dr Westermarck in reply, thanked participants for their comments and questions. He agreed with the opener with respect to the use of opportunity cost as a means of valuing family labour. But how to measure it? He accepted the need to include off-farm income, but said that it could not be included if the aim of the study was to look at differences in technical efficiency between groups of farms, for example large versus small. He also indicated that some of the questions raised could be answered only by a national income approach and not by his more micro-orientated methods.

Dr Yamada, also in reply, accepted that there were statistical problems in the derivation of the ratios in his paper. Examples included the imputation of rents and income from part-time farming. These were difficult problems when considering a study dealing with a hundred years. He also emphasized the distinction between the 'traditional' and the 'modern' way of life – with its different sets of values. Whilst he accepted that Japan was unique, there were perhaps lessons which countries with similar population growth rates and stages of agricultural development might find useful. Both technical bottlenecks and the availability of off-farm jobs could partially explain some of the relationships seen. But also important were the institutional aspects of land ownership and the maintenance of high rice prices leading to high land prices. Farmers often would not sell their land even if the agricultural portion of their income has fallen to a very low level.

Dr Yamada had then to stop because time had run out. He apologized to

those questioners who had not been adequately answered.

Participants in the discussion included D. K. Britton, M. Upton, D. Rossetti, M. Viallon, M. Ruf, Y. Suzzi, R. J. Dancey, D. Paarlberg, C. H. Van der Meer, M. G. Chandrakanth and Yang Boo Choe.