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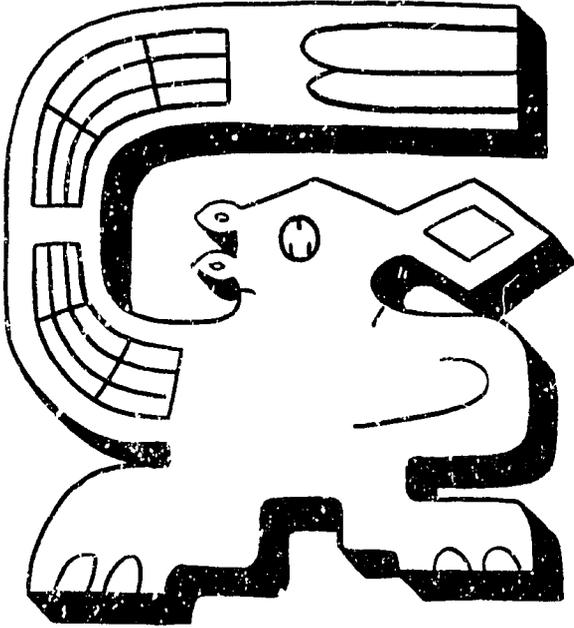
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STRUCTURAL PLANNING IN
DENSELY POPULATED COUNTRIES:
An Introduction With Applications to Indonesia

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STRUCTURAL PLANNING IN DENSELY
POPULATED COUNTRIES: AN INTRODUCTION WITH
APPLICATIONS TO INDONESIA

By WYN F. OWEN

In spite of a number of persistent attempts to prove otherwise, most economists continue to adhere closely to the idea that a market-oriented economy is likely to be more productive and efficient in the long run than a centrally directed one. The market, irrespective of how confined or imperfect it might be in any given situation, registers the essential heartbeat of any exchange economy and it is usually considered by economists to be a big step forward when a government comes to recognize this point. Economic planning then takes on entirely different dimensions from those associated with a command-type economy.

However, it is also true that most national market systems, in reality, are relatively underdeveloped. As yet the surface has hardly been scratched in turning this great social innovation — the market place — to the service of mankind. The market, which takes its form mainly from the structure of industry, also has assumed the role it plays in modern economies as much by chance as by design. This is partly for the reason that economists interested in economic planning have tended to concentrate their attention on the short-run aspects of planning; namely, on the means whereby maximum rates of production might be achieved within the limits of an existing industrial and market structure. This in itself is a challenge of no mean proportions in most developing countries. But the common result is an overtaking of the underdeveloped market system; a paper plan is one thing, its implementation is another. For this reason it is not surprising that planning offices in market-oriented developing countries still are usually found to be replete with assumptions and hopes concerning the way that key government officials, and other people of influence, will pick up the problem of making the plan work in a large number of areas in which the market is doubtfully equal to the task.

There is of course no alternative to this in the short run. However, planning should not end there. The evolution of the market economy need not be left entirely to fate; indeed, it cannot be if the battle against underdevelopment in its world-wide dimensions is to be won. Rather the rate of growth in developing countries must be compounded to much higher levels than those associated with most current development plans through the purposive adaptation of the market system to this end. Fortunately, there is now a sufficient record of experience for the scope of economic science to be expanded to include more of this longer-term dimension in the process of economic planning.

In this paper certain aspects of such structural planning will be considered with particular reference to the agricultural sector of the Indonesian economy.

The latter is particularly interesting from this point of view because of its current ambitious development plan, a plan which will place great strains upon its existing market system. If the plan is to succeed in the long run it will require substantial adaptations of the system to support the anticipated rates of investment and technological change, conservative though these are. Additionally, and perhaps more important, Indonesia is representative of the many less developed countries that are laboring under the additional handicap of having an already dense and still rapidly expanding population; a massive rural subsistence sector threatens to drown out the small modern enclave which, in turn, historically has been strongly oriented to the export market. The plan of the paper is first to draw attention to certain relevant lessons from the record of development in more advanced market-oriented economies and to follow this by posing a number of related questions which appear to deserve consideration as development planning in Indonesia acquires a longer-range perspective

SOME LESSONS FROM EXPERIENCE

It is now a commonplace in economics that the rate of economic growth is a combined function of the rate of investment and the form, or efficiency, of investment. The rate of investment in turn must always be matched somewhere by an equivalent rate of saving — or of abstaining from present consumption.

To the extent that the financing of development is locally derived — and in the long run this is a developmental imperative — it is quite inevitable in any less developed country that much of the “refraining from present consumption”, or the saving, must be generated in agriculture if only for the reason that the farm population is the most numerous. But it also is essential that a substantial part of these potential investment resources be channelled to the support of an expanding nonfarm sector. This constitutes the most basic required change in the form of investment.

Achieving a high rate of saving in agriculture is difficult if not impossible in a stagnant agricultural sector which, to begin with, is overpopulated with poverty-stricken peasants. There is some hope of doing so in a country which is fortunate enough to begin with a large agricultural surplus — such as was true of Russia in 1917. Otherwise there is no real alternative than to ensure that the agricultural sector somehow be brought to achieve a high rate of growth either prior to or in association with industrial development. If this occurs the problem of capital accumulation reduces itself to the task of diverting a share of this productivity increase to investment purposes, a somewhat less painful process than the expropriation of pre-existing levels of production (and in this case, by definition, also of established consumption patterns). The process of development in market-oriented economies has been based essentially on this less painful but, in the long run, far more productive approach.

These are rather obvious considerations but what is important as well as obvious bears repeating. What is not so obvious are the essential elements of industrial and market structure which have proved themselves capable of promoting the realization of the two desired results; namely, the achievement of a high rate of growth in agriculture and, simultaneously, the channelling of most — though not all — of the gains in farm productivity to the support of nonfarm investment activities. Difficult though it may seem this in fact

has been achieved by all successful market-oriented economies. Furthermore the basic method has been similar in all cases even though the efficiency with which it has been applied has varied a great deal; the method which was stumbled upon by all of these economies largely independently one from the other will be briefly restated hereunder to provide a background for later applications to the Indonesian economy.¹

A. STRUCTURAL CONDITIONS OF A HIGH RATE OF GROWTH IN AGRICULTURE

Critical to a high rate of growth in agriculture in all successful market-oriented economies have been the following:

1. *Non-factory Farms*: The industrial revolution comprised a technological revolution based on the machine process. In manufacturing activity it rendered technically feasible the factory form of productive enterprise; *that is, a concentrated labour force subject to a common management*. Once the problem of capital accumulation was solved through the emergence of the corporate form of business organization, the days of the small decentralized cottage industrialist were numbered. In agriculture, however, the industrial revolution has not had the same significance. Herein the biological nature of the production process precludes the possibility of concentrating the process of production in time and space in the same way as is possible in industry and trade. The cottage type of enterprise — represented in agriculture by the peasant farmer, or in more highly developed countries by the so-called family farm — continues to retain a substantial competitive advantage over the more capital and labour concentrated, factory type of production organization. In no country in which there has been freedom to experiment with either form of farm organization on an equal competitive basis has the factory farm, so defined,² succeeded in replacing the individual proprietorship type of farm firm based on the family unit of labour. The cost of imposing or retaining the factory form of farm firm has proved to exact a very high price in the defense of dogma and power elites in a number of countries. The collective and state farms of Russia, for example, have proved to be both as costly and technologically absurd as would be the strait jacketing of steel production after the industrial revolution into the limited framework of backyard cottage enterprises in order to preserve, let us say, the eighteenth century values of family life.

The non-factory farm, as it happened, also makes it possible, in economies that are willing to accept this type of farming as being not necessarily technologically obsolete, to achieve certain other advantages. One of these is partly political in nature, yet imbued with economic significance. When a system of small farms is also combined with the right to farm ownership on the part of the operator, or alternatively with high degrees of security of tenure for tenant farmers, it also confers on farmers highly prized intangible benefits that are essentially costless by-products of a particular form of

1. The argument outlined in the next several pages draws heavily upon a more detailed earlier article by the author appearing in *The American Economic Review*, Vol LVI, No. 1, March 1966, pp. 43-70. Herein, however, the argument is generalized and extended in certain respects.
2. It is particularly emphasized that the factory form of production organization is herein restricted in meaning to the definition stated above: a form of production organization involving "a concentrated labour force subject to a common management".

political-economy. These intangible benefits — in the form of economic freedom and security or, more generally, economic citizenship³ — are particularly important since they can provide a *quid pro quo* for the relatively low levels of income which tend to be the lot of farmers in all developing countries.⁴ The overall results have been different where there has been no such *quid pro quo*.

However, of more direct economic significance is an additional by-product of a non-factory form of industrial organization in agriculture. This is the emergence of an industry within a developing exchange economy that bears a close resemblance to the economist's theoretical model of pure competition. What turns out to be most important about this is the potential responsiveness of such an industry to the availability of compatible forms of improved technology. Essentially what it does is to set in motion the following automatic chain reaction: First, any farmer who adopts a per unit cost reducing technology earlier than most other farmers realizes a handsome profit; there is therefore a considerable incentive to do so. Secondly, however, there is no way in which the first adopter in such an industry can reserve the privilege of profit to himself, he cannot prevent other farmers from following suit. Thus, the gain to early adopters under these conditions can never be more than a transitory one. Finally, and equally important, any farmer who does not adopt a proven new technology ultimately finds himself caught in the squeeze between an obsolete cost structure and falling market prices brought about as the supply curve of the industry shifts to the right under the impact of the expanding production of other farmers. Almost inevitably, such a farmer will for all intents and purposes fall out the bottom of the industry, so to speak, as a result of not keeping abreast of the times. The process is described in more detail in every elementary text book in economic theory.

In theory a developing exchange economy will find ways and means of preventing any accumulation of such "drop-outs" from farming through the complementary creation of appropriate alternative opportunities in non-farming industries for those who fail to succeed in the developing farming industry.⁵ However, this invariably has been found to be one of the most difficult of all economic development problems and as a result even the most advanced countries will normally be found to have a larger number of drop-

3. V. Webster Johnson, "Significance of Land Ownership in Land Reform," *Land Economics*, February 1966, pp 21-28, and R. J. Penn, "Economic Development in South America," *Hearings Before the Subcommittee on Inter-American Economic Relations*, Washington, D. C., May 10, 1962, p. 15.
4. It is suggested that herein lies a substantial part of the answer to what Simon Kuznets posed as one of the crucial problems of modern economic growth, namely, "how to extract from the product of agriculture a surplus for the financing of capital formation necessary for economic growth without at the same time blighting the growth of agriculture, under conditions where no easy *quid pro quo* for such surplus is available." See S. Kuznets, "Economic Growth and the Contribution of Agriculture: Notes on Measurement," *International Journal of Agrarian Affairs*, April 1961, pp. 56-75.
5. A developing farming industry is one in which success increasingly is determined by the ability to compete in the market place, since a developed economy is an exchange economy in contrast to a subsistence economy. A subsistence economy, or a subsistence sector, is herein defined as one in which production activity is primarily oriented to the direct consumption needs of the producer rather than to the demands of others. A commercial sector, on the other hand, is one in which production is oriented to the needs of the market in order to obtain purchasing power through exchange.

outs from farming among their rural populations than they have real farmers in the economic sense of the term. It is a conventional error on the part of statisticians to classify both as "farmers". From an economic point of view, both compete for agricultural resources but beyond that their similarity ends. This point is of considerable significance for economic planning, especially in densely populated countries.

2. *Optimum sized, Non-factory farms:* It deserves to be stated separately that non-factory farms are not to be identified with minute peasant plots and certainly should not be assumed to be restricted through time to a fixed land base. In practice most technological advances in farming have proved to be dependent upon a quite substantial and rapid expansion in the size of the peasant or family farm as an economic enterprise. This expansion, it is true, has for the most part been realized through the association of larger and larger amounts of capital with a fairly constant amount of labour.⁶ But commonly it has also been dependent upon a less rapid but none-the-less significant expansion of the land base associated with this fairly constant amount of labour. This is to say that the development of agriculture under competitive conditions requires that there be definite possibilities whereby the spatial size of successful farms can be increased even though, on the average, only little by little. Efficient farms have to be able to move along the dynamic equilibrium path represented by the "optimum size of farm" with respect to land as well as other factors of production. Accordingly, the average area size of commercial farms in all market-oriented developing countries — even though they principally remain family farms — has been steadily increasing through time.

In any developing agricultural sector provision must therefore be made somehow for the successful farmer to acquire additional amounts of land through time, preferably in relatively small and relatively convenient area units. Since this is not an easy thing to accomplish it deserves special attention in the planning process. One essential precondition to flexibility in the area size of farms is an active land market whereby the price of land can be brought into close relation to its productive capacity in its best agricultural use. Quite clearly, too, systems of land tenure have an important bearing upon the efficiency of this particular adjustment process. In most countries the availability of a sufficient supply of rentable land — and correspondingly the existence of a certain proportion of essentially absentee landlords — has proven to be an important characteristic of farming systems that are sufficiently flexible from this point of view.⁷

3. *Complementary Government Policies:* A system of farming developed along the above non-factory lines creates conditions under which relatively small investments on the part of government, injected at strategic points, can have a quite phenomenal impact on the rate of technological advance

6. For purposes of this discussion a peasant or family farm is defined as a farm on which the total amount of hired labour does not exceed the amount of labour contributed by the household of the operator. The usual pattern under such farming conditions is for family labour to be supplemented by outside labour principally employed to help meet peak seasonal work demands or cyclical deficiencies in the farm household's internal labour resources. In the United States, for example, the average family farm employs less than the equivalent of 0.5 of a man-year of non-family wage labour.
7. Alan Harrison, "Some Features of Farm Business Structures," *Journal of Agricultural Economics*, June 1965, p. 334.

in the industry. Foremost among the complementary roles that Government can play is the support of research into new methods and forms of production in agriculture, together with the establishment of an efficient farmer's informational system whereby this research — whether public or private — can be spread rapidly and widely throughout the industry. Government intervention in this area is essential largely for the reason that the relatively small size of the optimum sized commercial farm places severe restrictions upon the scope for research and development activities within the framework of the farm firm itself. The large numbers of farms and their resulting wide geographical distribution also present natural obstacles to the rapid dissemination of knowledge about new techniques throughout such an industry.

It is not surprising that it has become a common practice for governments in developing countries to establish agricultural experiment stations and extension services to "help the farmer" with this problem. It is fair to say, however, that to date, for the most part this has been done in a relatively unsystematic way in most countries and with little realization of the total impact of such policies. What is stressed in this context is its tendency to speed up the process of technological advance in the industry as a whole whereby the profits of the early adopters of new techniques are rendered more transitory than would otherwise be the case. The real "pay-off" under this policy is not, as is normally implied, to the individual farmer. The early adopters still realize a profit but by far the greatest share of the benefit goes to society as a whole in the form of more rapidly increased supplies of farm products at more rapidly reduced relative prices. It is only in recent times that the quite phenomenal rates of social return on relatively small amounts of public funds expended in this way have begun to be realized.⁸ In the future it might be expected that enlightened governments will channel increasing public funds to the fueling of the fires of agricultural progress in the manner described. They will, however, be the more enlightened if they first encourage the emergence of a commercial farming sector based on near-optimum sized farms.

Two other types of government policies toward agriculture in market-oriented economies can be expected to have an impact similar to the subsidization of agricultural research and extension. The first of these are realistic policies aimed at the stabilization of farm prices and their maintenance at appropriate minimum levels. Price stability in agriculture is essential if the farmer is to plan ahead, and a great deal of the normal instability is quite unnecessary and indeed often quite damaging to the realization of efficiency in the allocation of resources throughout the industry.⁹ In the absence of any control over prices on the part of the competitive farmer, government or government sponsored industry-wide agencies must assume this role if it is to be performed at all. But equally important is the fact that most farm investment on the part of family farmers is financed out of farm incomes and is not raised in the commercial credit market. This is not to imply that the development of specialized systems of farm credit is unnecessary. But the more important point is that there is no real substitute for maintaining farm prices above that critical minimum below which an insufficient number of the best farmers will earn the wherewithal

8. E. O. Heady, *Agricultural Policy under Economic Development*, (Ames: Iowa State, 1962), pp 600-01; and T. W. Schultz, *The Economic Organization of Agriculture*, (New York, 1953), pp 120-21.
9. W. W. Cochrane, *Farm Prices: Myth and Reality*, (Minnesota, 1958), pp. 19-20

to invest in new technologies at a rate compatible with the desired overall rate of growth of the economy. Most countries that have experienced rapid rates of growth have devised some form of farm price support policy. But even so, subsidization of farm prices normally tends to be biased on the low side from the point of view of maximum potential rates of growth. They usually are the product of urban-industrial oriented politicians and economists obsessed with the need for the worker's vote or with the dangers of wage-push inflation. In fact, as will be emphasized later, such subsidies rarely come close to returning to the farm sector more than a small fraction of the fruits of its own contribution to the overall development process. For this reason there is rarely very much merit in arguments that assume a direct causal connection between any premium price paid to the actual farmer under government farm price support policies and urban inflationary trends.

The other critical area for government involvement in the agricultural development process is in the expansion and encouragement of related transportation and marketing facilities. A market-oriented farm economy can emerge only to the extent that farmers are brought into reasonably direct contact with the consumers of their products and with the suppliers of the factors of production they need for the modernization and efficient operation of their farms. The process of agricultural development in the type of farming system that has been described will be accelerated automatically, the wider and the more operable these contacts are. Government can play a strategic role in this respect, especially with regard to transportation facilities and market information services.

B. STRUCTURAL CONDITIONS OF A HIGH RATE OF SAVINGS IN AGRICULTURE

We turn now to the question of how, in a market-oriented economy, there can be an assurance that a sufficient share of the gains to productivity in a developing agriculture will be diverted to the potential support of an enlarging non-farm sector. There have been two principal ways in which this has occurred in the past. In such an economy this process also can be quite automatic and rarely constitutes a factor that limits the rate of development, given an agriculture organized along the lines indicated above.

1. *Chronically Adverse Farmers' Terms of Trade*: A further by-product of the differing impact of the industrial revolution on agriculture, in contrast to manufacturing and trading activities, lies in the way in which it conditions a differing typical market structure in the two sectors. While agriculture tends to become a more perfectly competitive industry, the tendency is for manufacturing and trading to become more and more concentrated and more and more characterized by monopolistic or oligopolistic conditions. This is the more likely the smaller the country and the more prone it is to nationalize its major industries.

The effect of concentration on non-farm industry is somewhat debatable with respect to the desirability of its impact on the form and rate of investment and growth in this sector, but its implications with regard to the transfer of savings from the farm sector to the non-farm sector in a market economy is quite clear. The significant power acquired by the monopolist, whether government or private, is the power to delay, or more politely "to manage", the rate of technological advancement in an industry in order that the rate or the cost of obsolescence of old plant and inventories can be kept within reasonable bounds from the point of view of the producer. The competitive

farmer simply does not have this power and no one has ever seriously advocated limiting the rate at which the farmer should adopt new technologies in order that smaller amounts of displaced farm equipment might have to be left to rust at the farmer's expense. In the type of economy in which the competitive farmer operates, obsolete methods, equipment, or labour for that matter, have no administered prices or values. As a result and especially under the impact of government subsidized agricultural research and extension, the benefits of farm technological advance tend to be passed on to the urban-industrial consumer considerably more rapidly than are the not inconsiderable benefits of technological advances in manufacturing and trading activities passed on to the farmer. This differing rate of participation in the benefits of progress supports an indirect but none-the-less quite significant and dynamic form of intersectoral taxation administered, not by the government, but through the market place. The more rapidly agriculture develops in a market-oriented economy the more rigorous will be the incidence of this hidden form of taxation of agriculture. Indeed, as mentioned in an earlier section, the danger is that it can become, more easily than not, so exacting, reflecting itself in such low residual incomes in agriculture, as to stifle the hand that feeds it: namely, the rate of farm technological advance.

In some countries following the general model outlined, such as Japan during its early stages of development, this hidden form of taxation has been preceded and supplemented by forms of direct taxation of agriculture with impressive results.¹⁰ However, it should be noted that in Japan this high level of taxation was not without its *quid pro quo*. The latter took the form of providing, essentially in exchange for this taxation, more significant rights for the landlord over the land he controlled. In addition to providing interim investment resources to the non-farm sector while the national market system was in its formative stages, the Japanese approach involved using an administered price of land as a means of drawing a subsistence-oriented farm sector into an active involvement in the developing exchange economy. The landlords found it necessary to create a market surplus to pay the tax, and this they did by collecting high rents-in-kind from their tenants. In a later — post World War II — land reform program the tenant farmers were to receive more significant rights to the land as part of the process of granting them increasing independence in the management of their farms, and of their increasing direct involvement in the exchange economy.

However, in passing, it is well to recognize the limitations of direct taxation where there is little or no *quid pro quo*. A case in point was the Russian policy of forced deliveries of grain from the collective farms. The subsequent record of agricultural production and marketing in Russia provides a classic case of farmers pitted against the rest of the economy, rather than one of a voluntary involvement of farmers in an overall national development process. The collective farm thereby emerged more as an instrument of exploitation than as a vehicle of liberty. There is also reason to question whether in the long run it proved to be a very efficient instrument of confiscation, compared with the market-oriented approach described above.¹¹

2. *Farm Financed Investment in the Human Factor*. In addition to the transfer of farm savings to the non-farm sector through the medium of the

10. K. Ohkawa and H. Rosovsky, "The Role of Agriculture in Modern Japanese Economic Development," *Economic Development and Cultural Change*, October 1960, pp. 62-63

11. L. Sirc, "Economics of Collectivization," *Soviet Studies*, January 1967, p. 369.

market price squeeze, the farm sector, in all developing countries, can also contribute a great deal to the overall process of capital accumulation through the medium of the labour factor. It is only in recent times that the importance of investment in the human factor has begun to be seriously recognized by economists.¹² Of key significance there is the cost of raising human beings to a productive age. It is a cost that is still very poorly documented and publicized in most countries and, indeed, if it were, it would probably have a greater impact on the control of world population than anything that has been devised to date. The cost everywhere is extremely high and, furthermore, it may be assumed that the relative cost of production of human beings with equivalent levels of skill is higher the less developed the country.

The developmental process involves a progressive transfer of labour resources from the farm to the non-farm sector, essentially as a one way process, or unilateral transfer. Furthermore, it may usually be assumed that the labour that succeeds in making the transition is both labour at a prime productive age and labour with the highest opportunity cost in agriculture itself; that is, the most highly trained and adaptable. This tends to be true if only for the reason that labour migrating from the farm has to be at least competitive with the urban unemployed and this in spite of the fact that the latter has the advantage of being already adjusted to the skill requirements and the conditions of life in the city. But whatever its skill, the fact remains that the worker arriving from the farm sector is an essentially costless acquisition to the non-farm sector, and this is especially so if the rural educational system attended by the migrant is both relatively well developed and primarily financed by local taxation (as is the case, for example, in the United States). The amount of accumulated savings, embodied in the human factor, which is transferred in this way from the farm to the non-farm sector each year can be very considerable in any rapidly developing economy.

But this is by no means all. There is still another aspect of the question of farm sector investment in the human factor which is especially important in densely populated countries. The farm sector does not only finance most of the costs of raising farm children who ultimately leave the farm for non-farm employment; it also bears the cost of raising, and the continuing costs of maintaining, all other "drop-outs" from the industry, until such time, if any, as they find non-farm employment opportunities. Unlike the corporation in the industrial-urban sector of most countries the farming industry has rarely ever had the right or the ability to "plough its redundant labour into the streets" where, in accord with the principles of the modern industrial welfare state, it would become a charge upon the total national budget financed by the farmer and non-farmer alike.¹³ Rather the farm sector must normally continue to support its own redundant labour by allocating a part of its land resources to its continued use in the form of sub-commercial or subsistence

12. T. W. Schultz, "Investment in Human Capital," *American Economic Review*, March 1961, pp. 1-17.

13. A classical exception occurred during the early history of England wherein the enclosure movement allowed a developing commercial farming sector to displace large numbers of peasant farmers from their land. However, in this case, the national welfare program that emerged under the Poor Laws was largely financed on the basis of taxes levied on the landlords and thereby on the farm sector. See R. M. Garnier, *Annals of the British Peasantry*, (London, 1908).

farms. This situation may be expected to continue indefinitely if the form and the rate of development in the non-farm sector remains too low or too irrelevant to provide any alternative employment opportunities for this national stockpile of labour which has, in effect, retreated back to a subsistence way of life.

Rarely has an urban industrial sector in any developing country fully met this challenge. More commonly, and notwithstanding the impact of the Keynesian revolution on economic policy formulation, varying degrees of unemployment in the urban industrial sector itself stand between the drop-outs from the commercial farm sector and the possibility of their finding employment in the non-farm sector. Even in the most highly developed countries where the proportion of the total labour force remaining in agriculture is small, the continuing special social welfare charge levied on the farm sector can be quite large. For example, in the United States, informed estimates of the amount of redundant labour backed up in agriculture in 1960 placed it at close to two-thirds of the size of the recorded (urban) unemployed.¹⁴ In less developed and more densely populated countries the redundant labour force in agriculture commonly is so large that the modernized, commercial sector becomes reduced to critically small proportions relative to its essential role in the process of economic growth. In these circumstances there is also a natural tendency for policies to emerge that neither fit the needs of the commercial farmer nor the subsistence farmer for the very good reason that there is no common policy that can effectively serve both of these groups.

APPLICATIONS TO A DENSELY POPULATED, DEVELOPING COUNTRY

Against this background it is possible to view some of the challenges facing developing countries like Indonesia from a somewhat different perspective. The question is, can the agricultural economy of Indonesia be modified in such a way as to take fuller advantage of the automatically growth-oriented processes that have been described? In other words, what are some of the related longer-range policy considerations that should be receiving consideration even as the initial 5 year plan is in process of being launched?

In summary, the central thesis that emerges may be stated as follows: First, while there are a number of technologies largely neutral to farm size and market structure such as improved seed and increased applications of fertilizer and insecticides, which appropriately should be exploited within the framework of short-run planning in Indonesia, in the long run agricultural development policy therein will need to pay increasing attention to certain structural changes which alone will provide the necessary conditions for continued economic growth. Secondly, agricultural development in the form of an expanded net marketed surplus from the agricultural sector is the essential role of the emerging commercial farming sector; however, this sector is extremely small in the Indonesian economy, and the question of the optimum size for commercial farms remains yet to be resolved. Thirdly, the characteristics of an efficient commercial farming system are quite well established. However, in order for an adequate sized and efficient commercial

14. F. T. Bachmura, *Agricultural Unemployment and Underemployment and Government Program Approaches*, ERS, USDA, March 1963, p. 14; and W. E. Hendrix, "Relation of Chronic Low Farm Incomes to Major National Economic Policies," *Journal of Farm Economics*, May 1962, p. 540.

sector to emerge in Indonesia it will need to be protected from the choking effect of surplus population to at least the same degree as the urban industrial sector is provided such protection. In order to accomplish this objective, and at the same time reduce the mass exodus of redundant farm labour to the cities, there needs first to be developed an efficient rural subsistence sector with its own specialized set of policies. Finally, the strong tradition of smallholder agriculture in Indonesia provides favourable conditions for the purposive development of such a rural subsistence sector, but a full complement of relevant policies has yet to be devised.

The differentiation of a commercial farming sector and a rural subsistence sector from the amorphous mass of population dependent upon the land of Indonesia constitutes the first step toward the development of relevant policies for each of these sectors. In practice this cannot be other than a complicated task. However it is relatively simple to state the principal guidelines that need to be followed in the pursuit of this objective. These are consistent with the essentially different roles that these two sectors have to play in the development process.

1. *Farm Sizes in the Two Rural Sectors:* The role of the commercial sector is to maximize the net marketed surplus of farm products from the land at its disposal and based on price and cost relationships for land, labour and capital established in a market place in which the commercial farmer takes his chances along with non-farm commercial activities as well as other commercial farmers. This means that optimum sized commercial farms will comprise *the maximum amount of land* that can be farmed at a profit by an appropriate set of labour where the latter uses a relatively advanced level of technology for the particular farming area. Other things being equal, the average area size of farms operating at or near the optimum may be expected to increase through time. Likewise, developmental policies should be based on the assumption that the commercial farmer will become increasingly oriented to production for exchange rather than to production for direct consumption and toward the utilization of an increasing proportion of purchased factors of production. That is, their long-term economic welfare will become increasingly a function of security of exchange in place of the security of land ownership which is so much more important to members of a subsistence economy.

The role of the subsistence sector, on the other hand, is to make a maximum direct contribution to the support of redundant farm labour from the limited amount of land that can be set aside for essentially social welfare purposes. As such, the optimum sized subsistence farm plot is one that comprises *the minimum amount of land* that is necessary to assure to the household concerned the minimum acceptable standard of subsistence living after taking account of all the supplementary employment opportunities that can be made available to members of the household in the commercial farm sector and/or in the non-farm sector¹⁵ While current birth and death rates in countries like Indonesia will inevitably result in an increasing number of people falling into the rural subsistence sector for many years to come, the ultimate result

15. Conceptually, the objective is to approach an equilibrium situation at which the marginal product of the composite unit of household labour available to work on the subsistence plot approaches zero, in contrast to the optimal conditions for the commercial sector wherein the VMP of the labour committed to the farm production process equals the established wage level (or residual income) for this sector.

of successful economic development must be to reduce the amount of land left to its use and also the average size of individual subsistence plots; real development must result in a gradual absorption of more and more of the associated population into non-farm activities. While their short-run welfare might be, in large part, a function of continued access to a piece of land and of the possibility of producing therefrom increasing quantities and varieties of basic consumption goods, their long-run welfare and security must be sought in and through the quantity and quality of developing job opportunities in the non-farm sector.

Available statistics on the distribution of farm sizes in various countries are generally consistent with the idea that in a free market economy the area sizes of farms tend to polarize around these two different optima for commercial and subsistence farms, and, if the argument presented is sound, such a trend needs also to be promoted as an integral part of national developmental policy. That is, apart from such variations in subsistence plots as are necessary to accommodate differences in size of households and in qualities of land, there is little justification for large numbers of farms falling between the two optima since they meet the efficiency conditions of neither of the two rural subsectors.

But the question still remains, what is the likely optimum size of commercial farms and subsistence plots in Indonesia at the present time? Also, how should these two types of farms be distributed throughout the country? No definitive answer to these questions can be given in the absence of more detailed relevant studies than have been conducted to date. However certain related issues deserve to be commented upon.

In the first place it is obvious that the future development of the commercial farming sector in particular must begin from what now exists. The first task in Indonesia will be to identify what currently constitutes its real commercial sector. Available data are rather confusing on this point. For example, it is conventional to divide the Indonesian farm economy into the two categories of "estate farming" and "smallholder" agriculture with the strong implication that the former, as the export or cash sector, is analogous to the commercial sector as here defined, while the latter, being also the food producing sector, represents the subsistence farming sector. This is misleading for several reasons. As is well known, by far the greater part of the main export crops are produced by smallholders (well over two-thirds of the rubber and a much greater proportion of the coffee and the tobacco).¹⁶ Many of these smallholders clearly deserve to be classified as commercial farms along with the plantations. But equally relevant is the fact that by far the most important cash crops of all in Indonesia are its major food crops and above all rice and maize, which occupy respectively about 35 per cent and 25 per cent of the land of Java.¹⁷ It is reasonable to assume that among the most important present and potential commercial farmers in Indonesia are to be found the rice farmers of Java. However they still wait to be differentiated from the rest for policy-making purposes.

A further problem is presented by reason of the fact that a large proportion of the smallest farms in Indonesia are found on the top grade, irrigated rice lands. As a result many Indonesian subsistence farmers - from any accept-

16. Nugroho, *Indonesia: Facts and Figures*, (Jakarta, 1967).

17. By contrast the plantation areas constitute only about 9 per cent of the entire cultivated area in Indonesia and only 7 per cent of the cultivated area in Java.

able economic meaning of the term — engage in substantial, though primitive, levels of exchange. That is, they sell or barter rice in exchange for other consumption goods, including inferior forms of food crops, in order to realize a more nutritionally and seasonally balanced diet.¹⁸ For purposes of this analysis such first order exchange must be viewed as compatible with the subsistence sector of the Indonesian economy. Correspondingly, it is only when a farm produces a significant net marketed surplus with respect to the non-farm sector that it fully qualifies for incorporation in the commercial farming sector.

The important determining factor with regard to optimum size farms in the food crop areas of Java will be found to be the unit of power around which the farm enterprise is built. If this is to be human power the result will be different than if oxen are to represent the typical commercial farm's source of power. If it is practical to shift to small mechanical cultivators, a trend which is underway in Sumatra, then the appropriate area of land for such farms probably will be larger still. However, the degree to which the development of a viable commercial farming sector is limited by the mass of subsistence farmers in Java is illustrated by the extremely small number of farms with anywhere near four hectares of land, an area which, reportedly, can be cultivated with a pair of oxen and otherwise farmed by a good sized household supplemented by a limited amount of outside labour. A recent household survey conducted by the Gadjah Mada University in the Jogjakarta area,¹⁹ comprising a representative sample of some 163 farm families farming one twentieth of an acre or more, found only three per cent of the families to be cultivating more than one hectare with the maximum farm size being five hectares. It is instructive to note, however, that this three per cent of farms were in fact cultivating 19 per cent of the land in the sample area and supplying 29 per cent of its total market sales of farm products.²⁰

It is quite clear that if the commercial farming sector in Java is to be expanded, this can only be done by increasing the efficiency of land use in the subsistence sector with respect to the contribution it makes to the direct support of its dependent population in order that more land can be released to near optimum sized commercial farms. The potential for doing this appears to be quite considerable. For example in the Jogjakarta survey mentioned above it was found that the 31 per cent of the holdings that fell between 0.05 and 0.15 of a hectare in size, absorbed only 6 per cent of the sample land area but supported 29 per cent of the rural population in the sample area. A further 20 per cent of the holdings falling between 0.15 and 0.25 of a hectare in size supported an additional 18 per cent of the population at the expense of only 7 per cent more of the land. While this question also deserves careful study it is not inconceivable that plots of 1/10 of a hectare,

18. A survey in the Jogjakarta area, referred to later, found that "farms" of from 1/20 to 1/4 of a hectare in size actually marketed 30.4 per cent of their output of agricultural products. The corresponding figures for farms between .25 and 2 hectares and for farms over 2 hectares were 21.3 and 41.4 per cent respectively.
19. An area which probably is reasonably representative of the whole of Java
20. Certain comparative figures are of interest. In the United States (1954), 40% of the farms used 76% of the farm land and supplied 91% of marketed farm products. U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture*, (Washington, 1954). In India, 14% of the farms (ten acres or more) used 64% of the farm land supplied 60% of the marketed farm crops. V. Dubey, "The Marketed Agricultural Surplus and Economic Growth in Underdeveloped Countries," *The Economic Journal*, 1963; pp 689-702.

or less, would be of sufficient size in the Indonesia subsistence sector, and especially so if combined with an active policy for the creation of complementary off-farm employment opportunities.²¹ In this event a substantial part of the land in the sample area which is now in farms of sizes ranging from 0.15 to 2 hectares (75 per cent of the farms in the survey area) might be shifted to the commercial farming sector. This would represent a quite revolutionary policy development, but without such a move it is very difficult indeed to confidently anticipate a sustained rate of growth in Indonesian agriculture of the type that would in turn be sufficient to undergird a high rate of urban-industrial development.

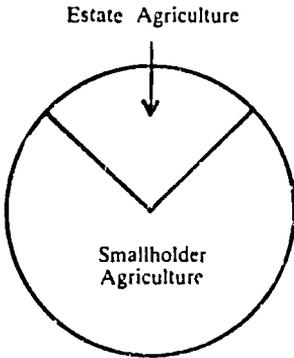


Figure 1.

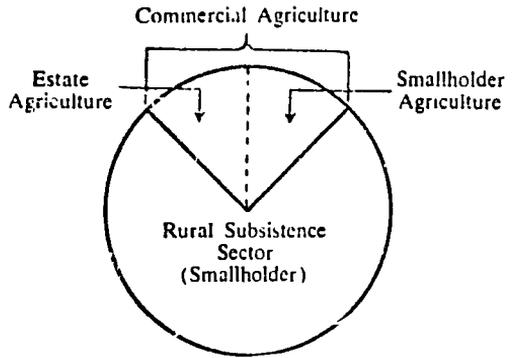


Figure 2.

2. *The Plantation versus the Smallholder:* A shift from the conventional subdivision of farming in Indonesia represented in Figure 1 to that represented in Figure 2 will serve to bring into sharper focus, among other things, the question of whether the plantation — the estate farm — is really a viable long-run unit of exploitation. It is of course possible that the Indonesian plantation is a special case of the factory farm which, in certain areas at least, has the capacity to stand on its own feet in direct competition with optimum sized, commercial smallholders. But, from an economic viewpoint, the question must be considered to be far from resolved. In the final analysis this issue has little to do with who controls the estates — foreign or domestic private interests or local government representatives. Rather it is a matter of whether the most efficient of all these alternative types of plantations is competitive enough. But whatever the answer to this question, its resolution should be seen as an issue which is purely an internal one to the commercial farming sector and not one that really involves the rural subsistence sector at all. That is, no one would seriously argue that the plantation is a more efficient supporter of population than it is a producer of cash crops; the

21 By way of comparison it might be noted that the private plots associated with the Russian collective and state farms averaged 0.29 hectares per household in the 1950's on land with only a fraction of the natural productivity of the land of Java. In Russia these plots absorbed 25 per cent of the rural manpower and produced 33 per cent of the total agricultural production using less than 4 per cent of cultivated land. About 80 per cent of the output of these subsistence plots was consumed by the peasants concerned, and this percentage has been increasing through time. J. A. Newth, "Soviet Agriculture: the Private Sector 1950-1959," *Soviet Studies*, October 1961, p. 171.

present concern over the adverse effect on productive efficiency of the extensive featherbedding on the nationalized plantations attests to this fact. Perhaps in future years, some of the lands of the estates will need to be withdrawn from commercial agriculture as part of the overall developmental strategy to assist in the immediate support of the rural subsistence population, but this question is a side issue to agricultural development *per se*. If the plantation survives at all, in the long run it will survive as a commercial farm and not as a population-supporting institution, and it would seem to be a reasonable assumption that it will have difficulty sustaining itself as a commercial farm under open competitive conditions. The differentiation of an efficient commercial sector in Indonesia will take place at the expense of both estates and the middle range of small holdings.

3. *Geographical Distribution of Commercial and Subsistence Farms:* One of the most strategic long-run planning questions for long-range planning in Indonesia concerns the most appropriate geographical distribution of commercial farms — whether smallholdings or plantations — *vis-a-vis* subsistence holdings. In the hope that it may help to stimulate further investigation of this question certain propositions of likely validity are stated hereunder. First, it is likely that subsistence farmers *per se* can safely be assumed to be much less mobile than present or potential commercial farmers. Thus a planned rural subsistence sector needs to be developed around existing areas of greatest concentration of subsistence farmers rather than on the frontiers of settlement. The development of new lands in the outer islands of Indonesia thus is probably best restricted to optimum sized commercial farms and to settlers likely to accommodate themselves easily to the economic world of commercial farming. Second, to the extent that there is any necessary extension of rural subsistence areas in the future, these should probably be developed around existing urban-industrial areas or around potentially new urban-industrial growth points. Such will serve to maximize off-farm employment opportunities, the ease with which an appropriate educational system can be devised, and also the potential unearned income that might accrue to the subsistence population through the medium of rising land values. Third, and complementary to the previous two points, subsistence holdings should, for the most part, be concentrated rather than scattered at random among commercial farms in order both to protect the latter from the insidious effects of excess labour and to facilitate the development of relevant alternative employment opportunities for the subsistence sector; the degree of scatter should be limited by the amount and type of farm employment opportunities that are available for off-farm labour on efficient commercial farms. Fourth, and related thereto, in the commercial farming areas special efforts should be directed to the promotion of a rapid amalgamation of the farms that, through time, fall into the non-commercial category under the impact of market forces and to the encouragement of the migration of the resulting redundant labour from the commercial farming areas to non-farm sector activities. Fifth, the production of industrial crops should be restricted pretty much to the commercial sector, and consistent therewith but with wider applications, commercial farming should be relied upon for the exploitation of lands having strong comparative advantages in single, or a limited number of lines of production versus land adaptable to multiple-crop and animal production. By the same token, subsistence land holdings should be concentrated as far as possible on land capable of supporting diversified production since the condition of economic efficiency in the subsistence sector is strongly weighted in the direction of labour-intensive, diversified land use. On the other hand a high and

increasing level of specialization both of farms and farming areas is an essential characteristic of commercial agricultural development. Finally, all things considered, a substantially greater share of the rice lands, especially in the outer islands, but also in Java, undoubtedly should be assigned to optimum sized commercial farms.

4. *Contrasting Policies:* The central argument in this paper is that unless and until the basic validity of a two-sector approach to rural economic development planning is recognized in countries like Indonesia, it will not be possible to proceed very far with relevant policy formulation. Several types of policies that may be expected to yield high dividends in a well structured commercial farming sector were referred to in the early parts of this paper. What will be stressed in the concluding remarks is the need to evolve a companion set of policies in these, and in several other, respects for the rural subsistence sector. In almost every instance it will be found that, to be consistent with the differing nature and purposes of the two rural subsectors, quite different policy emphases will be needed in each case.

The differing needs of the two subsectors with respect to complementary industrial development provide one good example. In the case of the commercial farming sector the main objective must be to develop manufacturing, processing and service activities that are complementary to the farm production process itself. To a large extent this involves a shifting of certain component activities off the farm to take advantage of the economies of specialization and of scale that apply to the production of farm power and such production requisites as fertilizer and to the processing and marketing of farm products. In the case of the rural subsistence sector, the central objective is the creation of additional employment opportunities for the population concerned. To a limited extent these opportunities might take the form of increasing part-time employment in an expanding commercial farming sector and especially in processing and supply firms serving commercial agriculture. However, the most numerous opportunities are to be found in such directions as the promotion of craft cottage industries, employment of the rural subsistence sector labour in rural public works²² and, most important of all, in the location of industrial development so as to take the fullest possible advantage of this reserve of undertutilized labour. A geographical concentration of the rural subsistence sector is clearly an advantage in this regard.

A second example is in the area of education and extension work. There is much to be said for providing specialized education in the science and arts of agriculture for a substantial number of the farm youth in the commercial farming sector to prepare them for assuming the management of farm enterprises in subsequent generations. However, this emphasis on the education of children in the subsistence sector obviously has very little merit. In this case the task is to provide education relevant to the non-farming economic activities wherein alone is to be found the principal long-run economic opportunity for these young people. In any event, to the extent that they must continue to find part of their livelihood in the cultivation of subsistence plots, the type of education appropriate thereto is a world removed from that which has as its objective the production of an efficient commercial farm manager.

22. T Balogh, "Agricultural and Economic Development: Linked Public Works," *Oxford Economic Papers*, February 1961, pp. 27-42.

Similarly, in the case of agricultural extension work, the task of working with commercial farmers is one thing; that of working with the rural subsistence population is quite another. A very large pay-off in increased productivity and in the size of the net marketed surplus may be expected from the services of a relatively small number of highly skilled extension workers, working directly with individual commercial farmers. This clearly deserves high priority in development planning. On the other hand, the possibility of devising an effective system of research and extension for subsistence farmers is one for which there is little precedence; it is novel and is complicated by reason of the large numbers of households involved, the necessary emphasis on diversified and intensified land use, and the necessary interdependence of farm and non-farm work in the total household economic activity. This should not in any way obscure the need nor the potential for expanding productivity through labour-intensive techniques under subsistence farming conditions. The point is that this potential is unlikely to be economically exploitable through an individualized extension service of the type that is needed and justifiable for commercial farmers. Rather it likely needs to be based on a cooperative group approach which in turn, will be facilitated if the distribution of the rural subsistence population is relatively concentrated. Activities along the lines of the Bimas program²³ in Indonesia are much to be commended as a step in the direction of the development of an effective rural subsistence sector extension service.

Sharp contrasts can also be drawn between what is appropriate land tenure policy for subsistence plot holders and for commercial farmers. In the rural subsistence sector primary emphasis needs to be given to a land tenure system that will maximize individual security and equality while at the same time providing a basis for cooperative action and for control through the medium of group consensus. In this sector, transfers of land probably should not take place through the medium of the market, as in the commercial sector, but rather need to continue to be subject to procedures that take account of such basic subsistence economy variables as the changing sizes and composition of dependent households through time. Customary rules associated with pre-modern stages of development of various countries are probably much more relevant to land tenure policy formation in a rural subsistence sector than is the record of experience in commercialized agriculture. For example, the fragmentation of holdings through the inheritance process can be argued to be both a logical and a necessary condition of efficiency in a rural subsistence sector. By contrast, fragmentation makes for inefficiency in land use, and the subdivision of farms through the inheritance process can prove contrary to the necessary trend toward larger sized farms in a commercial farming sector. Similarly, while ownership of land can be argued to be preferable to tenancy on the part of subsistence plot holders, land ownership by the farm operator in the commercial sector if, due to other influences than land productivity it can only be acquired at a premium price, can be detrimental to efficiency. Its opportunity cost is a less than efficient complement of other factors of production. It is for this reason that successful commercial farmers in most advanced countries tend to rely quite heavily on rented land to the extent that this is available on reasonable terms of tenancy, since it commonly proves to be cheaper to rent land from a landlord than to buy it on credit.

23. A. Rieffel, *An Evaluation of the BIMAS Program in Indonesia*, (Djakarta, September 3, 1968), pp 1-8, (mimeo.).

Such contrasts between appropriate policies for commercial agriculture and for a rural subsistence population could be extended to several other areas. However, sufficient has been said in this context to emphasize the fact that a double-pronged approach to agricultural development policy in any densely populated country is quite essential. What also becomes apparent is that an area in which economic science has thus far made its least contribution is in providing guidance with regard to effective policy formation for the rural subsistence sector. Since the latter will continue to constitute the major sector in all densely populated economies for many decades to come, no analysis of these economies can be adequate which proceeds on the assumption that the sub-commercial farmer can be ignored. This is a common assumption in economic analysis which has as its only justification the fact that countries with low population density have dominated the world's developmental record to date.

Rather every effort should be made to glean from historical experience all lessons relevant to the task of devising an appropriate policy for a rural subsistence sector viewed as an alternative national welfare program to industrial featherbedding operations and direct unemployment compensation. In this context such historical population supporting institutions as the Poor Houses and the Small Holder Movement in England,²⁴ the Private Farm Plots in Russia²⁵ and the Ejidos²⁶ in Mexico, to mention only some of the more obvious examples, will assume much greater significance with respect to development theory than they have to date.

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24. F. M. Garnier, *Annals of the British Peasantry*, (London, 1908).

25. Newth, *op. cit.*

26. W. P. Glade and C. W. Andersen, *The Political Economy of Mexico*, (Madison, 1963), p. 171.