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RURAL LABOR POLICIES IN THE AGRICULTURAL DEVELOPMENT STRATEGIES OF THE PEOPLE'S REPUBLIC OF CHINA

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CONTENTS

OVERVIEW OF CHINESE EMPLOYMENT POLICIES	1
PARAMETERS OF THE EMPLOYMENT PROBLEM	7
RURAL ORGANIZATION SINCE 1949	18
LABOR FORCE PARTICIPATION	32
LABOR FORCE UTILIZATION	37
LABOR INCENTIVES	41
LABOR PRODUCTIVITY	48
FUTURE PROSPECTS	60
BIBLIOGRAPHY	63

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Overview of Chinese Employment Policies

The redundant agricultural labor found in the rural areas of many developing countries has been viewed alternatively as the potential tool for producing an agricultural surplus and spurring economic growth or as the politically explosive and virtually unsolvable employment problem of the future. The unemployment problem in rural areas manifests itself in low average productivity and income per capita in the agricultural sector and uncontrolled migration from rural to urban areas. The lure of economic opportunities, social amenities, and educational advantages of the urban areas have turned out to be mirages to the rural migrants who must frequently be content with low-paying jobs in the service sector for the educated and subsistence level street jobs for the uneducated. The industrial sector does not seem to hold the promise of quick relief since it has typically been unable to absorb even the increases in the indigenous urban labor force. Because migration to the cities and industrial centers may not be a viable alternative, policy makers are being forced to reexamine the role agriculture can play in dealing with rural employment problems.

The planners in the People's Republic of China have taken a fairly unique approach to labor policy--unique because labor policy has been well integrated with other components of the development strategy. This stands

in sharp contrast to the piecemeal approach characterized by short-term isolated projects common in other developing countries. In China, labor policy has been one of the most important keys to development with labor substituted for scarce resources, e.g. land and capital. This paper will attempt to show how the Chinese have used labor policy to deal with the problems of rural unemployment and further the development process.

The traditional Chinese agrarian sector was characterized by a low land/man ratio, low productivity of labor with higher productivity of land, and great seasonal fluctuations in the demand for labor with a shortage during planting and harvesting periods and virtual unemployment during the off-season for a majority of landless or poor peasants. The most serious constraints to changing this situation were the limited amount of arable land, the fragmentation of land holdings, and the feudal organization of the rural areas.

When the Communist Party gained control of the Chinese Mainland in 1949 they were confronted with the double challenge of increasing agricultural productivity and either utilizing or supporting a huge supply of rural labor. Increasing agricultural productivity was given high priority because an agricultural surplus was considered a necessary first step in transforming a primarily agricultural country into an industrial power. An agricultural surplus was needed to provide raw materials and fibers for industry and to accumulate savings which could be channeled into industry. A surplus was also needed to support the rapidly growing urban population. "The absolute number of city dwellers increased between early 1950 and the end of 1956 by over 30 million people or 55 percent" (Perkins, 1964, p. 208).

In the early stages of development, Chinese planners relied heavily on the Russian model, which meant collecting the agricultural surplus to finance a rapid industrialization program. But the Chinese were not able to adopt the Russian model without modification because of the precarious food situation in China. The Russians had been able to extract the agricultural surplus from the countryside to be channeled into industrialization without risking widespread starvation. Chinese agriculture was not productive enough to supply a surplus without first increasing output. So while the Russians had used compulsory delivery quotas of agricultural goods to finance industrialization, the Chinese first had to increase agricultural output and then attempt to raise the portion available to the government.

The Communist leadership developed the basis for an agrarian policy during their retreat to Yen-an, from 1936 until the end of World War II. During this period the leadership, especially Mao Tse-tung, reportedly reached the conclusion that manpower was one of the most valuable resources in China because of the scarcity of land and capital and that there was not an overpopulation problem. This conclusion was understandable given the labor shortage that plagued the Communists during the Yen-an Period with the labor demands of fighting the Japanese and Nationalists, maintaining agricultural output, educating new recruits, and establishing a new regional government. Given the conclusion that China should rely on manpower as a key to development and that if labor were fully utilized China would not have a labor surplus, the leadership saw social reorganization as a necessary prerequisite for effective labor policies.

Karacher argues that the labor policy developed by the Communists during the Yen-an Period had two main thrusts. The first was to increase

labor force participation rates. The second was to improve the efficiency of labor. (Karacher, 1975, p. 31.) In addition there have been two other themes in Chinese labor policy since 1949. The Communists have pushed to increase the utilization of the labor force and also to improve the incentives offered to the labor force.

Attempts to increase labor force participation rates were largely dependent on institutional changes. The rural sector was reorganized to collectivize land holdings, tools, and labor obligations. It was believed that a collective system would lead to greater participation by formerly underemployed labor. Another aspect of the campaign for increased labor force participation attempted to draw upon segments of the population which have traditionally been exempt from manual agricultural labor. Targets for this program were women, bureaucrats (both urban and rural), Communist cadres, army personnel, students, managers, and the "educated elites." The first attempt to incorporate these elements into the agricultural labor force was based on the gradual reorganization of the countryside into communes. Day care centers and communal dining halls freed women for field work. The retreat from the commune system in 1961 did not change the emphasis on fuller utilization of womanpower in the agricultural sector. This trend has been reinforced in the last year (1975) with more generous work point scales for women, youth, and the older population.

Various campaigns have been launched to reduce the distinctions between manual agricultural labor and more prestigious and better paid "elitist" jobs. The motivations for these campaigns were partly the need to increase the available labor force during the peak seasons and partly the political desire to downplay social class distinctions. The "hsia-fang"

movement has been used to send students, bureaucrats, and factory laborers from urban areas to the countryside for periods ranging from a few weeks to permanent reassignment. Even the "educated elite" are not exempt from required periods of agricultural labor.

Attempts to increase labor force utilization have also been closely tied to the reorganization efforts. The move to larger units of production and planning made large-scale public works projects feasible. This helped to absorb the seasonally unemployed agricultural labor. Also the commune system increased the demand for managers, planners, educators, bureaucrats, health personnel, and laborers in subsidiary activities.

Mass mobilization campaigns have been a major tool in implementing the program of greater utilization. These campaigns have used a mixture of long-range economic and political incentives to rally support for public works projects. (The purpose of these campaigns is to utilize seasonally underemployed agricultural laborers to improve the irrigation and transportation systems, reclaim land, build rural industries, etc.) The projects have usually been organized on a commune or multi-commune level and have therefore benefited from the move to larger units of organization.

Attempts to improve incentives for the labor force have fluctuated between economic and political incentives. For most of the period since 1949, economic incentives have been used to gradually improve the standard of living in the countryside. The majority of income is distributed as reimbursement for earned work points. Even the older population and children over the age of six are expected to accumulate a few work points in collective labor, i.e. everyone who is "able" is expected to "earn"

a living. Many households also have private income either from the cultivation of private plots or from raising livestock or other subsidiary activities.

The central government has manipulated several policies to improve incentives for the rural sector. The terms of trade have been maintained in favor of the agricultural sector. The tax on agricultural output is designed to allow farmers to reap the benefits of increased productivity. The tax is raised only every 5 to 7 years so that in the short run, farmers retain the benefits of increased productivity. Also, the central government has relied on grain imports since the early 1970's to feed North China. The end result of this policy is that the production quotas for farmers in other regions have not been increased in years of agricultural failure and more grain is left for distribution to commune members as income.

Increasing labor efficiency also relied on collectivization and rural reorganization. (It would be misleading to state this goal as only increasing labor efficiency; it is more accurate to say that the strategy is to increase labor efficiency and land productivity.) During the first decade of Communist government the main emphasis was on better utilization of traditional inputs to increase agricultural output. The Communists assumed that there were economies of scale for larger units of production, i.e. the communes, and that the seasonal public works projects sponsored on the commune level would increase productivity for both labor and land by improving irrigation systems, developing better water control, land reclamation, and the development of other infrastructure. After 1961, the Chinese leadership concluded that China was reaching the limits on production that

could be achieved by relying exclusively on traditional inputs. This prompted a change in emphasis from reorganization to modernization of the agricultural sector with technical change. Many of the new policies such as selective mechanization and the use of multiple cropping patterns, chemical inputs, and new seeds will have a profound impact on the amount and nature of the labor demanded. The shift to a more sophisticated technology requires better rural education and agricultural research systems. The modernization of the agricultural sector will therefore have long-run implications for both the quantity and quality of rural labor demanded.

Parameters of the Employment Problem

Data Limitations

Before expanding the preceding comments on Chinese labor policies, the limitations of this research must be outlined. There are three basic constraints that will be particularly important in limiting the scope of this paper: the lack of reliable data on China, the paucity of information on the political and economic planning processes in China, and the inconsistent use of economic terms in the Chinese literature.

There has been a long and stormy controversy in the ranks of "China watchers" over the validity of the official Communist Chinese statistics, especially in the areas of population, employment, agricultural and industrial production, and economic growth rates. There has been an equally heated controversy over the Western, particularly American, attempts to quantify these same variables for China.

Liu and Yeh have argued that the statistical data gathered before 1957 are unreliable because of the inadequate size, experience, and collection techniques of the statistical bureaucracy. This may have been

especially true in the agricultural sector since there was a tendency to underreport production during the early years of the People's Republic. But it was for this period (1949-1957) that Western scholars had access to aggregate economic data which have been used to judge more recent statistics released by the Chinese. The period during the Great Leap Forward (1958-1961) was characterized by over-enthusiastic estimates generated to fit the expectations of Peking. After this fiasco Peking halted the release of all aggregate economic data in 1960. This means that national and provincial data on budgetary revenues, expenditures, population, and agricultural output are not available in any systematic way. Since that time "China watchers" have had to be content with pulling isolated statistics from newspaper articles and radio reports. Now data on even the most basic aspects of the Chinese economic system are not available, are unreliable, or are incomplete. Although in some cases the lack of data can be attributed to the Chinese obsession with secrecy, in most cases it is clear that the Chinese simply do not have the data.

Although this lack of statistical information on China is definitely a handicap when attempting to do research on the agricultural sector, the problem may not be as severe as it first appears. First, there are many scholars working on this problem and developing estimates on relevant economic variables so that even though precise figures are not available, broad estimates and trends are. Second, the data problem for China is not that different from what is found in most underdeveloped countries; either the data are not collected or not made public. Third, the decision-making process has been largely decentralized in China in the last decade. Therefore a general discussion of employment policies may be more helpful than

specific examples of isolated programs because of the wide variation in local conditions.

The second limitation mentioned was the paucity of information on the political and planning processes in China. Information has been selectively released by the Chinese government but knowledge of the workings of the government remain largely a matter of speculation. It is possible to say that economic decision-making has been decentralized but it is not possible to say exactly how the national and local levels interact in establishing plans, setting agricultural quotas, and instigating large scale-public works programs.

Another problem inherent in doing research on China is the inconsistency of the Chinese economic jargon. Not only are economic terms used differently than usage in other socialist countries, but there is also inconsistency in the usage of terms among various writers and publications.

These data limitations make it impossible to discuss labor policy in terms of specific projects, goals, objectives, or program evaluations. Therefore the aim of this paper will be to discuss labor policy only on the macro level with more emphasis on trends than on micro results. Also this paper will attempt to show how labor policy fits into the broader Chinese development plan; i.e. the possible interaction between employment policy and technical change, etc.

The following sections will give a broad overview of the demographic and geographic characteristics of the Chinese agricultural sector.

Land Characteristics and Use

Although the total land mass of the People's Republic of China is slightly larger than the continental United States (973 million hectares

and 768 million hectares respectively), much of the land area of China is unsuited for agriculture. The arable land available in China is estimated to be only two-thirds that of the United States. The comparison improves somewhat if sown land is considered instead of arable land because the Chinese rely heavily on double or triple cropping techniques in areas where the climate is favorable for agriculture. "Consequently, the sown area in the People's Republic of China was estimated in 1964 to be 150 million hectares, compared to a sown area of 116 million hectares in the U.S., where much arable land was idle because of production or area restrictions. Were this comparison made for 1974 when much of the idle land in the U.S. had been returned to production, the figures for sown land would probably be 155 million hectares in the PRC and 136 million in the U.S." (American Plant Studies Delegation, 1975, p. 19.) Deleyne estimated there are 1,400 to 1,600 square meters of cultivated surface per inhabitant--the uncertainty being due to the imprecise population estimate--and 1,800 square meters per person in the countryside. (Deleyne, 1973, p. 63.) The problem of land shortage is aggravated by wide differences in population density. "The mountainous and arid Northwest comprising 42 percent of the land area accounts for 4 percent of the population; while 96 percent of the population, some 750 million people, are crowded into the southeast region which is only 8 times as large as Texas." (Wei, 1974, p. 215-216.)

Population

The Chinese government does not release and evidently does not know the exact size of the population in the People's Republic of China. A good example of the uncertainty concerning population estimates was the statement made in 1971 by Vice Premier Li Hsien-nien,

We have been racing against time to cope with the enormous increases in population. Some people estimate the population at 800 million and some at 750 million. Unfortunately, there are no accurate statistics in this connection. Nevertheless, the officials at the supply and grain department are saying confidently, "The number is 800 million people." Officials outside the grain department say the population is 750 million only" while the Ministry of Commerce affirms that the "number is 830 million." However, the Planning Department insists that the number is "less than 750 million". The Ministry of Commerce insists on the bigger number in order to be able to provide goods in larger quantities. The planning men reduce the figure in order to strike a balance in the plans of the various state departments. (Ashbrook, 1975, p. 35.)

The official Census conducted in 1953 set the total population of the country at 582 million. This was the only wide-scale attempt to conduct a census and has been widely criticized as unreliable.

Understandably the same kind of uncertainty extends to estimates of rates of population growth. The estimates offered usually fall in a range from 1.9 to 2.2 percent and Chinese publications frequently give the growth rate as "approximately 2 percent." This is a significant decrease from the 3.7 percent birth rate found from a 5 percent population sample taken at the time of the 1953 Census. (Hou, 1968, p. 333.)

It is even more difficult to assess how successful birth control programs have been in the rural areas. It can be safely assumed from the accounts of foreign visitors that the reorganization of the rural social structure has not ended the preference for large families. Because reimbursement to the household is on the basis of work points accumulated, able-bodied male children are still considered the best form of social security for parents. All accounts agree that the birth rate is higher in rural than urban areas.

The Labor Force

There has been a substantial increase in the labor pool available to both industry and agriculture since the late 1960's which promises to strain the existing employment policies during this decade.

The working population has been increasing since 1963 by over 2 percent a year. It can be estimated that, from 1968 on, the age groups reaching working age will be from 20 million to 25 million. The age groups who can opt for retirement will be much less numerous, so that from 10 to 15 million new jobs will have to be created every year for young men and women if they are not to be underemployed in the country. But, according to plausible estimates, the number of new urban jobs does not exceed 500,000 a year. From 1980, on the contrary, there will be a dip in the numbers of new recruits to the labour market, reflecting the drop in the birth rate and the increase in infantile mortality during the three famine years of 1960 to 1962. (Deleyne, 1973, p. 57-58.)

Between 80 and 85 percent of the total population of China lives in rural areas. This includes workers engaged in rural industries, education, commerce, and other non-agricultural pursuits as well as the agricultural work force. Estimates of the percentage of the population engaged in the agricultural sector range from 70 to 85 percent depending on the definition of agriculture used. The official Communist data available are very sketchy. In the post-1949 period the Chinese government has defined agricultural population as the population supported primarily from agricultural income. This definition covers full-time farmers, part-time farmers who engage in subsidiary occupations and those who engage only in subsidiary occupations directly related to agriculture such as those involved in the preliminary processing of agricultural products. Using this definition, the pre-1949 estimate of the percent of population in agriculture was 73 percent. The official post-1949 estimate given by Peking is that from 73 to 77 percent

of the total population is engaged in agriculture. (Liu and Yeh, 1965, p. 183.) This corresponds closely to the estimates derived by Liu and Yeh for the period 1949 to 1956. (Liu and Yeh, 1965, p. 184.) This meant that the agricultural population ranged in size from 532 to 468 million persons for 1956 depending on the population estimate used. (Liu and Yeh, 1965, p. 184.) The official statistics released in 1957 showed a somewhat smaller percentage engaged in agriculture, 72 percent of the total population. This may be due to the employment fluctuations during the Great Leap Forward. At the same time the Chinese government listed 16 to 17 percent of the population in the secondary sector and 11 to 12 percent in the tertiary sector. (Deleyne, 1973, p. 61.) It seems reasonable to assume that in the period since the Great Leap Forward the employment distribution has returned to former patterns and that approximately 73 to 77 percent of the total population is engaged in agriculturally related employment.

Rural Unemployment Rates

The Chinese, unlike some other Communist countries, have conceded that urban unemployment exists and have occasionally even given estimates of the magnitude. (Hou, 1968, p. 372.) But rural unemployment data are nonexistent, and to work with the available estimates one must be willing to accept a large margin of error. There is rarely a clear distinction between employed and unemployed in the rural sector and the question usually becomes one of measuring the intensity of employment.

Most of the information on the employment situation in pre-Communist China comes from the work done by John Lossing Buck in the early 1930's.

The following figures from that study give a rough idea of the employment picture in traditional China.

Some 45 percent of the rural males and 9 percent of the rural females over seven years of age were found by Buck to engage exclusively in agricultural occupations of all kinds, while another 27 percent of the men and 20 percent of the women supplemented agriculture with other work. Non-agricultural tasks (including household duties) were the sole occupation of 20 percent of males and 59 percent of females, while only 7 percent and 11 percent of each sex respectively were idle throughout the year. Men were responsible for 80 percent of all farm labour, women for 13 percent, and children for 7 percent. Two man-equivalent labour units were employed on average per farm, of which family labour accounted for 1.7 units and hired labour for only 0.3 percent of a unit. It is to be expected (although no study on this point is to hand) that women's contribution to agriculture has increased, in numbers working and even more in effectiveness, since the decline of the custom of footbinding, a decline which was rapid after the 1911 Revolution.

In the winter season, from November to February, agricultural work is slack; time spent at this period accounted, according to Buck, for 80 percent of the 1.7 months of idleness averaged by able-bodied men of working age.

Shortage of labour at the peak seasons of agricultural activity (harvesting, transplanting of rice and irrigation) was found by Buck to be widespread. (Donnithorne, 1967, p. 32-33.)

Buck's work has unfortunately been used extensively to project the labor requirements of China. The whole organization of the rural sector has changed drastically since 1949, and projections from this earlier period are clearly not valid.

In brave attempts to overcome the problems with estimating post-1949 unemployment levels, several authors have offered estimates. Most of these estimates are for the period before 1957, i.e. before the Great Leap Forward. Lui and Yeh reported high unemployment rates for nonagricultural laborers in rural areas. Their estimates ranged from 18 million unemployed non-agricultural males in rural areas in 1952 to 21 million in 1957. (Liu and Yeh, 1965, 1965, table 24, p. 102-103.)

Chi-ming Hou, while stating that the evidence on rural unemployment was not conclusive for the early Communist period, cited several studies which reported some "surplus" labor in the mid-1950's.

Farmers spent only two-thirds of their time directly on farms; and there was a 26 percent surplus of labor in six agricultural cooperatives in Hopei; 30 percent in 18 agricultural cooperatives in Shensi; 17 percent in 497 agricultural cooperatives in Kiangsi; and 35 percent in 18 agricultural cooperatives in Szechwan (Li Yuan-chen, "The Problem of Surplus Labor in Present-Stage Agriculture in Our Country," Chiao-hsueh yu yen-chien, No. 2, Feb. 4, 1957, p. 17). (Surplus is apparently defined in terms of time not used on farm work.) According to a larger survey of 26,000 agricultural cooperatives in 1955, a "labor unit" only worked 96 "labor days" a year, with a half of a year's time being "unproductive." It was also reported, however, that for the "full labor units" idleness was seasonal, whereas there was a year-round surplus of "half labor" and "subsidiary labor" (Li, 1957, p. 20). (Hou, 1968, p. 378-379.)

Hou stated that regardless of the conclusions reached about rural disguised unemployment in the strict sense, "there is little doubt that seasonal unemployment had reached such proportions that a fuller utilization of manpower was necessary." (Hou, 1968, p. 379.) Emerson also found evidence of underemployment. He cited the results of a 1955 survey which showed that "in selected cooperatives in four provinces the labor force was without gainful employment on 17 to 35 percent of all workdays." (Emerson, 1968, p. 420.)

Therefore it can be concluded that in the period before the Great Leap Forward, which began in late 1957, there was significant unemployment in the rural areas--a great deal of it being the seasonal unemployment associated with the agricultural cycle.

The policies of the Great Leap Forward will be explained in more detail in the next section, but it should be noted here that the Great Leap Forward

had two main goals: to increase agricultural production and to speed industrial growth. Industry was given priority over agriculture. Labor was the key input in both sectors since there was an acute scarcity of capital thus attacking both the problems of economic development and seasonal unemployment. But in many cases the policies of the Great Leap Forward were carried to excess. The labor force was overworked and labor incentives were reduced as the communes moved to distributing necessities "according to need." Labor shortages were widely reported as the peasants were asked to devote more time to non-agricultural pursuits. (See Hou, 1968, p. 381.)

It is safe to say that during the Great Leap Forward, rural underemployment was reduced. But the increased participation and utilization of the labor force which resulted from the GLF policies were tempered by the unauthorized outflux of rural inhabitants to urban areas and the virtual work stoppages on some communes. As Hou points out, it is difficult to evaluate the results of intensive labor utilization. Many other contingent factors may have contributed to the economic setbacks during the GLF--making it impossible to sort out the costs and benefits of the more intensive use of labor.

Since 1960 there have been few attempts to estimate the magnitude of underemployment in rural areas. A report by Dawson suggests that per-unit labor requirements for staple crop production have increased because of more intensive cultivation (Dawson, 1970, p. 160). Another summary by Reynolds reported the same conclusions and stressed the impact of reorganizing the rural sector which resulted in greater labor demands for non-agricultural activities (Reynolds, 1975, p. 424).

It is impossible to try and deal with the post-1960 employment situation quantitatively. It is only possible to discuss trend and policies with broad generalizations that will be elaborated on later.

While there is a low land/man ratio in China it is still assumed that the marginal product of rural labor is greater than zero.

. . . There is ample evidence that the marginal product of labor in China is not yet zero. There are always areas where the land can be made more level and where the irrigation canals can be lined, but labor productivity in such activities is very low. The transport of farm products to the markets or railhead also consumes large amounts of labor when the goods are carried on human backs or animal-drawn carts. There are also brief periods of peak labor demand principally when farmers have only a few days or weeks to harvest one crop and transplant the second. At such times, the addition of more workers can make a substantial difference in the amount of grain output eventually achieved.

If, when other factors are held constant, the marginal product of rural labor is not zero, it is unlikely that it is high or even above the level necessary to provide the additions to the rural population with enough to eat. (Perkins, 1975, p. 354-355.)

Land development, irrigation schemes, and other activities associated with agricultural infrastructure continue to draw heavily on the rural labor force. Much of the labor is drawn from seasonally unemployed agricultural workers but the larger projects reduce the amount of rural labor available for crop cultivation.

(Quote from Vice Premier Tan Cheng-lin, in charge of agriculture) According to Tan's estimate, ordinary construction work on the farm (such as ground leveling, field consolidation, soil improvement, erosion control, etc. alone) usually occupied about 20 percent of the total labor units. The percentage would be much higher, if the extra seasonal work (winter-spring) were included.

Hence the current situation (1960) is that only a little more than 50 percent of the farm labor units could be devoted to the task of crop production. (Dawson, 1970, p. 160.)

As the technical transformation and "green revolution" that began

in China's agricultural sector in 1964 continues, the quantity and quality of rural labor demanded will change. In some areas more labor-intensive methods, such as more intensive cultivation and multiple-cropping methods are being used. In other areas less labor-intensive techniques, such as mechanization and electric powered irrigation systems are being used. While it is impossible to draw conclusions about the net results of these changes, it can be assumed that the quality of labor will need to change as the need for better educated and scientifically trained agricultural laborers increases.

The policies of the central government are meant to promote local and regional "self-sufficiency" in food. The switch from grain cultivation to more labor-intensive products--vegetables, meat, fruit, poultry, etc.--will increase the demand for labor.

The drive for economic diversity is manifested in the rural industrialization schemes. As the communes expand local industries--as well as public services--there will be more opportunity for diversified employment for seasonally underemployed and redundant agricultural labor.

Rural Organization since 1949

Collectivization

The key to Chinese employment policy is in the collective form of rural organization. The Chinese argue that this system virtually eliminates the concept of unemployment in rural areas and that a collective system is also more conducive to agricultural development because it makes large-scale land improvement and irrigation projects possible and prevents a bimodal pattern of economic development with most of the benefits accruing to the rich. Collectivization has been important for all four thrusts of

Chinese employment policy: increasing participation, utilization, productivity, and incentives. The present rural organization of China is a unique system.

This section includes a historical overview of the step-by-step collectivization process which moved the countryside within a decade from a disjointed collection of small farmers to a highly centralized system of communes. Then there will be a discussion of the present state of rural organization and the changes that have taken place in the last 15 years. Finally, there is a discussion of the advantages and disadvantages of collectivization as related to employment policy.

Land Reforms, 1949-1952

When the civil war ended in China in 1949, agricultural output was a fraction of the prewar level. Perkins estimated that "Production was perhaps two-thirds of the prewar level and the amount that was marketed had fallen to 21 percent of the total output from a prewar level estimated in one source at as high as 53 percent." (Perkins, 1964, p. 209.) The end of the fighting and the accompanying reopening of urban-rural trade channels, repair of the irrigation facilities and dikes, and the price stability maintained by the government all helped to increase slowly agricultural production. Under these conditions the Communist party instituted a far-reaching program of land reforms.

The first major agricultural policy reform undertaken by the government was the Agrarian Reform Law of 1950 which attempted to eliminate the landlord system and redistribute rural capital to the poorer peasants. Land reform resulted in 46 million hectares of land being redistributed among

300 million peasants. The land, which represented about 45 percent of the total arable land, had formerly been owned by between 10 and 12 million persons. Two-thirds of the land was taken from landlords and one-third from rich peasants, and was redistributed so that two-thirds was given to poor peasants and one-third to middle-income peasants. (Gurley, 1974, p. 387.) The reforms did not attempt to attain complete income equality. Many of the rich peasants were allowed to keep much of their land and other assets, and income differentials among rich, middle-income, and poor peasants were still maintained after the reforms.

The political objective of the reform was to solidify the support of the poor and middle-income peasants, the main supporters of the Communist Party, by redistributing income and capital in the rural areas. Gurley argues along the line presented by the Chinese government that the process of land reform was instrumental in creating a psychological milieu in the rural areas that made other reforms possible. This also created a base of manpower willing to support government innovations (see Gurley, 1974, p. 338).

There were several problems that resulted from the land reforms. Because the resale or rental of land was not forbidden, some of the redistributed land quickly gravitated back to the rich peasants. The reforms reduced the average size of farm units and increased the already serious problem of field fragmentation. This led to an inefficient use of labor and ruled out the effective use of mechanization. Another problem was that the government was not able to step in immediately and provide services that would have been provided by the old landlords, such as renting implements, extending credit, marketing services, and processing of output.

There is some measure of agreement that the effect of the land reforms on agricultural output was not substantial and some authors even feel that it was unfavorable (see N. R. Chen, 1969, p. 89).

Mutual-Aid Teams, 1952-mid-1955

Traditionally work in the fields peaked during the planting and harvesting seasons and those periods were characterized by acute labor shortages. Farmers had frequently pooled their labor and their draft animals during the peak seasons in an attempt to reduce the strain of these seasonal fluctuations. The first organizational reform introduced by the Communists was the mutual-aid team which attempted to utilize this traditional pattern. Seven or eight households cooperated to use draft animals and farm implements as well as their own labor. The ownership of the capital goods and land remained with the individual farmers and the teams functioned only during the busy agricultural seasons. Later some teams were organized on a permanent basis to allow the pursuit of subsidiary activities, such as irrigation projects, livestock rearing, etc. during the winter months. Another goal was to promote the purchase and utilization of capital goods (draft animals and implements) that could be financed by a levy on each member equal to 1 to 5 percent of the value of his annual output.

By 1954, almost 10 million mutual-aid teams, about half of them seasonal and half permanent, were in operation, and they comprised 58 percent of all peasant households. (Gurley, 1974, p. 389.) Throughout this period the goal was to organize the mutual-aid teams so that the privately owned land would be managed and worked in larger parcels but with each household maintaining private ownership of the factors of production and privately disposing of its share of the output. The main exceptions to

this were some implements and animals that were purchased collectively by team members.

Agricultural Producers' Cooperatives, mid-1955-Spring 1956

The Chinese government had maintained the position that socialistic reforms were a prerequisite for any major technical change in the agricultural sector, but until the fall of 1955 the government had stressed the importance of socializing the rural areas slowly. In 1955 this policy was revised and collectivization was given more emphasis.

Several factors contributed to the decision to move from mutual-aid teams to cooperatives. First, the consolidation of production units and centralized planning would enable the government to increase its control over the distribution of output, investment, and consumption, which was viewed as necessary for industrial growth. Larger agricultural production units would help to overcome the severe problem of field fragmentation which not only wasted land but also made irrigation projects and the use of large implements uneconomical. Another problem facing the government was the erosion of the political benefits from land reforms. The poor peasant had become indebted to the middle-income and rich peasants, the old landlord system was being reestablished by the sale of land, and rural unemployment was increasing. Since the Communist leadership drew its main support from the lower level peasantry this was a potentially threatening political situation. These reasons, plus the confidence gained from the excellent harvest in 1955, prompted the push for immediate reform of the countryside.

During the last half of 1955 and early 1956 almost all households were

organized into agricultural producers' cooperatives containing from 30 to 40 households. This represented a major shift to more centralized control in the agricultural sector. Land, farm implements, draft animals, and groups of trees were to remain privately owned but the use of these inputs was to be centrally planned by the cooperative management on the basis of targets handed down by the government. The cooperatives reimbursed members for the land and tools used in accordance with a locally determined rent schedule. Also, members were allowed to keep small plots for private use. The cooperative management was instructed to attempt to acquire draft animals, large implements, and groups of trees by purchasing these from the members at locally determined prices. The distribution of the harvest was also turned over to the cooperative management. First, the obligation to the government in the form of taxes and required sale to government agencies was honored. Then the "cost of production" was deducted, along with an investment fund which usually amounted to about 8 percent of the total output. Owners of land and other resources were paid rent and finally the residual was distributed among the members as income.

The basic unit of production within the cooperatives, the team, was organized along the lines of the old mutual-aid teams with seven or eight households. Contracts were given by the cooperatives to the production teams to maintain local work incentives. The peasants were then rewarded by the team on the basis of the number of "labor-days" earned.

Collectives, Spring 1956-August 1958

The third stage of the agricultural reforms was to organize the elementary Agricultural Producers' Cooperatives into advanced Agricultural

Producers' Cooperatives (also known as Collectives). By the end of 1955, official estimates claimed that 4 percent of the households were in collectives, but by February 1956 the figure had climbed to 51 percent, in June 63 percent, and by December 88 percent. (Walker, 1965, p. 12.) The formation of the collectives was a major step in socializing the agricultural sector. Collectives encompassed between 200 and 300 households, usually from one large village or several small villages. Ownership of the land was transferred from the peasants to the collectives without compensation. Groups of trees, draft animals, and large implements were collectivized and owners were compensated according to "local value." The peasants retained ownership of domestic livestock (pigs and poultry), small implements, and scattered trees. Private plots were still allowed. In essence, the collectives were an addition of another layer to the organizational structure; mutual-aid teams were retained, and the former structure of the cooperatives became the small production brigades. The method of disposing of the output under collective leadership remained basically the same as under cooperatives except that there was no compensation to the peasants for ownership of inputs. The activities of the collectives were limited to agricultural production and related projects.

One of the advantages of the collectives cited by Gurley was that due to their larger size, the collectives were able to withhold larger percentages of the total output for collective purposes. (Gurley, 1974, p. 390.) But on the negative side, Walker argues the collectives were not successful in accomplishing the production goals set by the leadership. Walker attributes part of this failure to a crucial lack of animal and labor inputs. The agricultural policies that were proposed during that

time period, close planting, deep plowing, and multiple cropping, were labor-intensive. The Twelve Year Plan for agricultural development which was formulated in 1956 stressed the more intensive use of traditional agricultural inputs with labor being one of the most important. New techniques raised the necessary level of labor input from the peasant in the fields at the same time that large-scale public works projects were attempted for the first time. Walker concluded that these heavy labor demands on frequently counter-productive projects led to increased absenteeism from collective work with more effort devoted to private plots. (Eckstein, et al., 1968, p. 405-417.)

The use of labor-intensive techniques, declining morale, and a wave of urban migration during 1957 resulted in a severe labor shortage during the 1958 harvest. This was one of the main factors in the decision to organize the countryside into communes in August 1958.

People's Communes, August 1958-Spring 1959

The establishment of the communes was a much more ambitious project than the other reforms had been. This policy was part of the nation-wide "Great Leap Forward" (GLF) aimed at the rapid industrialization and modernization of China. The communes were to coordinate every type of activity including agricultural planning and production, industry, education, banks, health care, defense, and trade. The objective of this type of organization was to provide a larger base for planning and more economically viable units for undertaking large-scale water control projects and the construction of small factories and workshops to utilize seasonally unemployed rural labor. The commune became the basic local governmental unit and provided schools and other social services.

The basic organizational layers below the communes were the large production brigades, roughly equivalent to the collectives, and the production teams, which were roughly equivalent to the old cooperatives. The average commune contained from 5,000 to 8,000 households with a range of from 1,500 to 10,000.

The commune reforms marked the first major attempt to provide services and food to the populace "according to need." Communal dining halls were established and a set percentage of the harvest was distributed equally among all commune members regardless of labor contributed. Surplus food was still distributed on the basis of "labor-days" worked. The private plots and most domestic animals were collectivized.

During the GLF the leadership tried to modernize Chinese agriculture by intensification of production. Stavis stated that the leadership believed that labor inputs were the main constraint on production and the communes were the result of attempts to increase the available labor inputs. Therefore the most important innovation in the commune system was the change in employment policy. Mass-mobilization campaigns were used to engage the peasants in public works and industrialization as well as more intensive field labor. Day-care centers and communal dining halls were provided to facilitate the participation of women in the labor force. Other formerly non-participating members, such as students and bureaucrats, were also included in the manual labor force.

Labor participation was increased but there is substantial evidence that labor efficiency dropped markedly. This was due to long hours, low morale, and poorly planned, often counter-productive projects. For example, Karcher reported that "Many communes in the autumn of 1958

switched 30-50 percent of their labor to mining and the making of coke, charcoal, and the smelting of iron and steel in small primitive furnaces." (Karcher, 1975, p. 40.) Much of the output of these "backyard furnaces" later proved to be unusable. Both manpower and materials were misused. Many of the agricultural and industrial projects started were never completed. The "opportunity cost" of shifting labor from one project to another, with some left unfinished, was ignored. In the countryside public works and industrial projects were frequently given priority over agricultural work and the result was a disastrous decline in agricultural output.

The failure of the Great Leap Forward provided several important lessons for the leadership: (1) industrial activities in a basically agrarian nation were largely dependent on agricultural production; (2) simply "throwing" labor at a problem was not productive without increasing other inputs and/or careful planning; (3) the commune system which had attempted to offer necessities "according to need" had substantially reduced the incentives for the labor force; and (4) there had been a shortage of trained labor to manage the communes. This made the need for a better rural education system more obvious.

1960-1976

The early 1960's saw a major shift away from the economic policies of the Great Leap Forward. The Chinese slowed the pace of industrialization and reordered priorities to put the development of agriculture first. This policy has been the major theme of Chinese development for the last fifteen years.

The retreat from the commune system was in favor of smaller units of organization. By 1961 the management and ownership of the land were given

to the large production brigades and in 1962 the process of decentralization continued with the ownership passing down to large production teams. The decentralization trend has continued in the 1970's with the subdividing of large communes. Now there are approximately 50,000 communes compared to 27,000 at the time of the Great Leap Forward.

The present scheme of rural organization has three main tiers of authority: the commune, the production brigade, and the production team. The average commune includes approximately 13,000 people, 2,900 households, 100 teams, and 15 brigades. The communes have retained responsibility for providing some social services such as education, health care, police protection, militia training, and relief during natural disasters. These services are partly financed by the rental of commune-owned implements of production, e.g. tractors, to the production brigades and teams. Another source of financing is a management fee paid to the commune by the teams. This fee usually amounts to about 1 percent of the team income.

The communes are still responsible for industrial projects, investment programs, and external relations. Rural industrialization may become the main activity of the rural communes. Although most of the control for industrialization is now vested in the production brigades and teams, the central government has gradually been trying to restore more power to the communes through the rural industrialization program.

The level of organization between the team and the commune is the production brigade. There are between 10 and 15 brigades in an average commune and an estimated 750,000 brigades in all of China. The average brigade contains seven production teams, 200 households, and 980 persons. Although most brigades are engaged in agricultural production, some have

specialized to provide services for the whole commune--services such as swine production, farm implement repair, fertilizer production, etc. The brigades, like the communes, have retained ownership of some implements, which are rented to the teams. Leadership of the brigades is provided by local peasants, who are paid from local funds. The brigade is the lowest level of direct party and government control.

The lowest but most important level of rural organization is the production team, which is now larger than the original mutual-aid team. There are approximately five million teams in all of China and the average team includes 33 households or 145 persons. The average area cultivated by the teams is 20 hectares or 49 acres. The team is responsible for making specific plans for production, managing labor, accounting, and meeting the output quota assigned by the government.

Households are still the basic unit of social organization in the rural areas. There are an estimated 167 million households in China containing on the average 4.4 persons with 1.9 labor force units. Income for the households is computed primarily on the work points earned by individuals in collective labor with supplements earned from the small private plots. The sale of fruits and vegetables from private plots, domestically raised pigs and poultry, and household handicrafts are all sources of private income. The program of distributing food and services "according to need" has been abandoned in all but a few places.

The previously discussed changes in rural organization, the increased emphasis on agricultural investment and research, and emphasis on technical transformation of the agricultural sector, plus a return to more favorable weather conditions, resulted in production increases after

1964. Stavis estimates that from 1964 to 1967 China's grain production rose at an average annual rate of 6.0 percent per year. (Stavis, 1974, p. 20.) However, this growth rate has not been sustained into the 1970's. "Since 1968, China's grain production has grown at an average annual rate of only 1.4 percent" (Stavis, 1974, p. 20).

Evaluation of Collectivization

The collective form of rural organization has offered several advantages for agricultural development in China. In particular, this system has facilitated a greater utilization of the rural labor force and the collection of agricultural surplus. Other advantages are:

1. Production teams, the basic labor accounting units, are required to provide food, income, and work for all members. Because these members must be supplied with an income, it is in the best interest of the team to utilize the labor as fully as possible even when the marginal product of labor is below the wage rate.

2. This system allows a higher labor utilization rate in long-term construction projects, since labor must be paid on a year-round basis.

3. Another reason that large-scale construction projects are favored under a collective system is that all members are able to benefit from the increased productivity. This is a definite incentive for labor since the benefits from the project will not cease when the construction wages do.

4. Because of their size, communes are able to provide diversified employment possibilities and attain some level of economic self-sufficiency.

5. Because collectivization has enlarged the working size of farm plots, draft animals and mechanization can be utilized more efficiently. Also, less of the farmer's time is spent traveling from field to field and

less land is wasted on field boundaries. Both factors had been common in traditional China.

6. Larger planning units allow more flexibility in planting time in order to stagger harvesting and thereby alleviate the labor shortages at those times.

7. While income distribution has not been completely equalized, the extremes have been eliminated. Most of the leveling has taken place within villages or communes--not between regions.

But the disadvantages of the collective system cannot be overlooked:

1. Because the teams do not have the right to dismiss members, labor is not mobile in the rural areas to seek out the jobs with the highest marginal productivity.

2. In some cases the push to utilize all available labor can lead to the adoption of counter-productive projects or ones with very low productivity. This was often the situation during the GLF and resulted in widespread peasant discontent and a virtual work stoppage.

3. Although planning has been largely decentralized since 1962, central directives and quotas are still used. This may lead to the misallocation of resources or the use of inefficient production techniques.

4. The collective system, to be efficient, requires careful planning and competent management; neither was available when the system was introduced and it is questionable whether they are now. Although the transfer of large numbers of school-leavers and the creation of a rural education system ameliorated the situation in the late 1960's and early 1970's, there is still a shortage of skilled managerial talent in many areas.

5. Another fairly obvious problem with a collectivized system may be

the lack of economic incentives usually associated with private ownership of land, equipment and capital.

6. The Chinese development efforts may have been harmed by relying too long and too much on the labor collectivization and utilization strategies for increasing output. Stavis reached the conclusion that agricultural production could not be substantially increased without modern inputs--a factor neglected by the Chinese from 1949 to 1961. (Stavis, 1974, p. 7.)

The next four sections are devoted to a more detailed explanation of the four main thrusts of Chinese employment policies: labor force participation, utilization, productivity, and incentives.

Labor Force Participation

Traditional Chinese society was characterized by a social and political system in which the peasants supported a largely unproductive bureaucracy and ruling class. The social system was also regimented so that women rarely achieved their productive potential. The Communists have worked to minimize class and social distinctions for both political and economic reasons. The end result has been to increase the size of the labor force available and "willing" to participate in manual agricultural labor.

The institutional changes described in the last section were instrumental in increasing labor force participation rates, especially for formerly landless peasants, women, older workers, and the former ruling classes. All must now earn work points in collective work projects.

In addition there are two other policies which have been used to increase participation in the agricultural labor force. The first is to regulate urban migration thereby keeping people in the rural areas where

they are available for agricultural labor. The second policy is "hsia fang" or "sending down," which transfers people from the urban to the rural areas thus making them available for agricultural labor.

Migration

The Chinese government has unequivocally rejected increasing the urban industrial work force as a potential solution for the rural unemployment problem. The government has pursued an active policy of discouraging urban migration for four reasons. First, it is reasoned that the urban unemployed must be supported by the government thus creating a drain on existing welfare funds. If these people must be subsidized, it is more desirable to retain labor in the rural areas where it is easier to find labor-intensive work and where it is assumed that the marginal product of labor is always greater than zero. Second, the Chinese plan to move the industries away from the crowded eastern coastal areas and into the countryside will cut transportation costs for agriculturally-based industries, keep the labor force near the farms so their labor can be utilized in the fields during peak demand periods, and facilitate the distribution of manufactured goods in the rural areas. Third, the Chinese are most interested in fully utilizing the existing urban labor force before allowing new immigrants. For example, if both a husband and wife are encouraged to seek employment, the labor force has been increased without increasing the need for more housing or food in the urban areas. Also, the government would be able to cut political tension if urban school-leavers could be employed in their home areas rather than dispatched to rural areas to engage in agricultural labor. Fourth is the Chinese belief that citizens are more easily controlled and less politically volatile if they remain in their

home villages with strong familial and cultural controls.

The Chinese seem to have achieved a fair degree of success in limiting urban growth by using the following techniques: limited recruitment for urban industries or even recruitment bans for certain areas, rationing cards for essential commodities, forcible deportation of illegal immigrants, and a systematic program to resettle the urban unemployed in rural areas. But as the following brief history will show, urban migration rose rapidly during periods of waning governmental control.

During the First Five Year Plan (1953-1957) the government tried to formulate a policy for limiting urban employment recruitment, but after the collectivization drive of 1956-57 the urban influx increased, especially in the industrial centers of the West and Northwest. Because productivity in the agricultural sector was largely dependent on traditional inputs, especially labor, production dropped. This led to a stricter migration policy formulated by the State Council and the Central Committee. Industries were to limit recruitment to the urban unemployed, rural authorities were to limit the number of peasants given identification papers for migration, and unauthorized migrants were halted en route and sent back to the countryside. The public security forces were mobilized to seek out illegal migrants and dispatch them to the countryside. The ration card system for necessary commodities was also used after 1956 as a tool with the cards valid for only one area. When recruitment of rural laborers was necessary for urban industries, the permission of the agricultural cooperative was required. But even these stringent measures proved somewhat ineffective. The estimated increase in urban population was 15.6 million in 1958. Of agricultural labor. Fourth is the Chinese belief that citizens are more easily controlled and less politically volatile if they remain in their

The drop in agricultural production during the Great Leap Forward resulted partially from an outflux of agricultural labor and convinced the leadership that the transfer of agricultural labor to other sectors would lead to a decline in production. But by 1961 the rural outflux was still so great that the government placed a three-year ban on recruiting rural labor for industry.

During the 1960's, industries that needed rural labor had to arrange contracts with specific agricultural communes. Frequently the families remained in the countryside while only the industrial laborer lived in the city and part of the labor wage was returned to the commune.

Now urban industries are required to work through a municipal employment bureau to hire new employees. The bureau tries to use the existing urban labor force if possible. The bureaus will employ rural recruits only as a last resort.

Other obstacles facing the would-be urban migrants are the food and clothing ration system and the housing allocation system. The process of changing the "location" for food and clothing rations is difficult and time-consuming. Also, securing an apartment in the city without a job is virtually impossible.

These measures, while certainly incapable of stopping the flow of migrants to the cities, have slowed the flow and encouraged the labor force to remain in rural areas where they are available for agricultural production.

Hsia Fang

In addition to limiting urban migration the Chinese have used the "sending down" (Hsia Fang) movement since 1957 to increase the size of the

rural labor force and decrease urban population. The main thrust of the "Hsia Fang" movement has been to remove permanently and potentially unemployed (e.g. primary and secondary school-leavers) from urban areas. Other, more limited aspects of this program have been to temporarily send cadres, students, and factory workers to the countryside for work shifts during peak labor demand periods.

The ten-point economic readjustment program adopted by the National People's Congress in April 1962 attempted to reduce excess urban population to the countryside. Usually a person was allowed to return to his or her native village. The goal was to reduce urban population from 130 to 110 million. The push to control migration and reduce urban population continued during the Cultural Revolution. It has been estimated that approximately ten million youngsters were transferred to the countryside during the Cultural Revolution and spectacular results were quoted for some cities during the same time period. "From 1966 to 1970, one million inhabitants out of ten seem to have left Shanghai, especially young graduates, officials, and party cadres." (Deleyne, 1973, p. 59.)

Opinions differ widely on how successful the Chinese have been at limiting urban migration. The general consensus of China-watchers seems to be that the "sending down" movement has offset some of the unauthorized migration to urban areas. It is clear from the accounts of foreign visitors that China has been spared the phenomena of squatter slums around cities and large pools of openly unemployed labor in most cities.

Since 1969 a new dimension has been added to the urban-rural migration pattern. Large numbers of underemployed and unemployed have been pulled from both rural and urban areas and sent to the frontier regions. These settlers serve a dual function: to develop agriculture in the desert

regions and to provide military reserves along the Soviet border. Their total numbers are about 600,000 in Sinkiang, 300,000 in the Autonomous Region of Mongolia, 200,000 in Heilungkiang, and over 100,000 in Chinghai and Tibet. (Deleyne, 1973, p. 60.)

Labor Force Utilization

The Chinese have worked to increase utilization of the labor force to contribute the greatest possible gain for economic development. Given China's resource endowments--rich in labor, poor in capital and land per capita--labor must be substituted whenever possible for scarce resources. Much of the work done in the rural areas such as irrigation, reforestation and land reclamation was accomplished with a very high labor-capital ratio.

Collectivization has been an important component in the plan to increase utilization rates. Ideally, the labor input contributed by any individual is no longer constrained by the private ownership of complementary capital or land. Also the move to larger planning and financing units, e.g. the brigades and communes, has made large-scale public works projects possible. The development of brigades and communes has increased the demand for labor in non-agricultural activities as well. The most important example of this is the rural industrialization program. The collective strategy was conducive to mass-mobilization of the labor force for projects that could use either temporarily or permanently unemployed labor.

Mass-Mobilization

Mass-mobilization as an employment strategy was developed by the Chinese Communists during the Yen'an Period (1937 to the end of World War II) to meet

the tremendous labor demands of simultaneously fighting the Japanese and Kuomintang, organizing a new government, and achieving self-sufficiency in food production. Robert C. Hsu has defined mass-mobilization in economic development as "the organizational efforts undertaken by the government to increase the masses' enthusiasm for, and participation in production and/or capital formation by ideological, remunerative or coercive means. Its objective is to increase the quantity and/or productivity of labor available for production and economic development." (Hsu, 1975, p. 165.) In practice mass-mobilization campaigns have been organized for both political and economic objectives, covering the gamut from studying the Red Book of Mao to hauling dirt on human backs to build a dam.

Hsu argues that "near-optimum conditions existed during the Yen'an Period which helped to carry the Chinese Communist Party (CCP) to its success; that the experience of that success influenced the CCP's proclivity for mobilization in the post-1949 period and that because of less favorable circumstances after 1949, post-1949 mobilizations were not as successful." (Hsu, 1975, p. 165.) One of the major factors listed by Hsu as a change to more unfavorable circumstances was that advanced agricultural cooperatives and communes removed the immediate benefits of increased productivity from the peasants. Also the mass-mobilization campaigns fluctuated in a cyclical pattern often reaching excesses during the peaks. This was especially true during the Great Leap Forward when literally hundreds of thousands of peasants were marched off to build factories, level or terrace new farm lands, construct irrigation systems, or engage in a variety of other developmental activities. Critics of this period can find ready evidence for criticizing this policy. Much of the harvest of

1958 was left in the fields because of an agricultural labor shortage. The government on all levels had overestimated the amount of labor that could be pulled from the fields without reducing output--a problem that was compounded by the large urban migration which accompanied social upheaval in the countryside.

The importance of mass-mobilization as a tool in China's development should not be underestimated. This strategy was responsible for a great deal of the infrastructure development in the past. Present trends seem to indicate that the strategy will continue to be used but will be tempered by the leadership's knowledge that excesses lead to both unacceptable and unanticipated economic costs.

Rural Industrialization

Rural industrialization will be important in employment policies as a potential employer of seasonally underemployed agricultural labor and unemployed persons in rural areas. The push for rural industrialization has several rationales: to halt urban migration and congestion, to locate factories closer to the sources of inputs and rural markets, to disperse industries in case of war, and to more fully utilize the rural labor force.

The Great Leap Forward was the first major, albeit unsuccessful, attempt to spread industries in the rural areas with numerous small-scale fertilizer plants and "backyard furnaces" for pig iron built with limited capital investment. Many of these endeavors were planned to provide inputs for the heavy industries located in the cities. The "failure" of the GLF marked a major change in the investment priorities of the Chinese government. The emphasis switched from heavy industries concentrated in urban centers as prescribed by the Soviet development model to investment

in agriculture and agriculture-related or light industries in the rural areas (see N. R. Chen, 1969, p. 48). This official change in priorities was not a rejection of the importance of heavy industry but rather an attempt to develop diversified industry centered in the agricultural sector, either producing inputs for agriculture or processing the agricultural output as a first step in the development process.

The call for small, indigenous, locally controlled industries was reiterated in 1964 but with more realistic plans than during the Great Leap Forward. The industries were to include producing and repairing farm implements and machinery; producing fertilizers, insecticides, pesticides, consumer goods, handicrafts, building materials, rural transportation equipment; processing agricultural output; and developing power sources. The rural areas were also expected to develop other basic industries such as iron and steel production, cement making, and coal mining. Chen reported in 1969 that:

About 20% of the commune labor force has been organized into teams devoted to subsidiary production. In areas where the potential for subsidiary activities is great, over half the peasants may be diverted into these activities.

Subsidiary production has become a major source of cash income for the peasants, and in many communes contributed more than half of their gross income. For the country as a whole, subsidiaries are said to have constituted one-third of the gross value of agricultural and subsidiary production and 40 percent of the state procurement of these products. (N. R. Chen, 1969, p. 103.)

The theme of rural industrialization was again presented at the Tachai Conference. The state has given a great deal of freedom to the rural areas to initiate projects which best utilize local resources. The responsibility for generating capital to finance these projects is also left with the

local areas, except in the case of large-scale projects when the government will provide some funds. Peking hopes that as industrialization continues, the communes will regain economic importance and take back the power of economic planning which is now vested in the production teams.

Rural industrialization could have a profound effect on the employment situation in the Chinese countryside. In a 1972 visit to Tsunhua county, Jon Sigurdson found 10 to 15 percent of the labor force employed in industrially related pursuits. Sigurdson argues that increasing rural employment may be the long-run outcome of industrialization although it is not immediately evident that this is a goal in the short run. Many of the industries are capital-intensive now but are producing equipment which will later be used to employ more labor. (Sigurdson, 1972, p. 321.) Sigurdson pointed out in a later article that industrialization will cause a change in the quality of labor used and the quality of rural life.

Labor Incentives

Since 1949 the Chinese have fluctuated between relying on ideological and economic incentives. During some periods the government moved towards making income more responsive to work effort, allowing the private sector to coexist with the socialist sector, and manipulating policy to leave more of the agricultural surplus in rural areas for reinvestment. But these policies have not been consistently applied. During other periods, most notably the Great Leap Forward, the government relied more on ideological rewards with calls for collective responsibility and selflessness, the economic reward system was no longer closely tied to work effort, political goals were given priority over economic ones, and the private sector was suppressed. But the two types of incentives, economic and ideological,

should not be seen as mutually exclusive. At all times both types of incentives have been present, but in varying degrees. Although this paper is more directly concerned with economic incentives, the Maoist development strategy has put great emphasis on ideological incentives.

Work motivation in China has also risen, according to the Maoists, because of an increase in socialist consciousness among the masses of workers and peasants, which means that collective incentives--the willingness to work hard for increasingly larger groups of people without expectation of personal gain--have gained over individual ones. Maoists believe that people are inspired and can see real meaning in their lives only if they are working for goals worthy of human beings and not merely for their own selfish, material welfare. (Gurley, 1974, p. 403.)

The most important tools used by the government to regulate economic incentives are the private sector, income and accounting procedures, and policies such as agricultural-industrial terms of trade, taxes, and imports.

Collective Income

Collective income is now based on earned work points. The work points are determined and computed by the production teams for labor devoted to collective farming and construction projects. The government has limited the former practice of granting work points for political study or administrative duties. The work point scales are geared to encourage part-time work by formerly underutilized segments of the population, such as women, youth and older workers. This trend was reinforced last year with more generous work point scales for these groups.

Chinese planners argue that changing the accounting unit from the large communes to the small production teams has more directly linked individual rewards to productivity. Also the production teams are roughly

the size of small villages and the philosophy behind using these as the labor accounting units is that there will be a strong network of social ties, obligations, and loyalties which will increase the peer and family pressure to work efficiently.

Stavis estimates that from the early 1950's to the late 1960's, rural income roughly doubled, from an average of 70 Yuan to 150 Yuan per capita. (Stavis, 1974, p. 54.) Incomes have been rising very slowly since 1971.

It is difficult, if not impossible, to compare the standard of living by converting the Yuan to U.S. dollars because the Yuan is grossly undervalued and because many public services are available free of charge in China. But Reynolds offers these comparisons: the conversion of Yuan to U.S. dollars shows that the Chinese GNP per capita is in the neighborhood of \$150 but on closer examination, if the standard of living available in China were priced in the U.S., the dollar value would be a great deal higher. (For a more detailed explanation see Reynolds, 1975, p. 426.)

The Private Sector

In addition to the earnings from collective labor, the peasants have regained the right to cultivate private plots. In the past the position of the central government on the private plots reflected the general policies being encouraged in rural areas.

It is no exaggeration to state that Chinese policy towards the private sector of agriculture proved to be probably the most important single barometer of political and economic stability in the countryside during the period 1956-62. (Walker, 1965, p. xvii.)

The peasants lost the right to cultivate private plots during the Great Leap Forward but it was returned in the early 1960's. The 1975 constitution

reaffirmed the right of the peasants to cultivate private plots. The total land allocated for private plots is not to surpass 7 percent of the cultivated area.

In 1974 the central government issued a call to the peasants not to neglect their duty to collective labor in favor of working on the private plots and specified that peasants were to pursue private activities only after collective responsibility was fulfilled. This seems to indicate that a disproportionate amount of work time was being spent on the plots and that the private return to labor is higher on the private plots. The produce of the private plots is not included in national output data so it is impossible to determine exactly how significant the private sector is, but it is generally assumed that the private sector is the major source of fruits and vegetables.

In addition to the private plots, the peasants are allowed to earn private income in sideline activities such as pottery making and woodcrafts and by raising poultry and pigs. The government stance on the private sector in the countryside has become more permissive in the last year. Stavis estimates that the private sector (private plots and family handicrafts and animals) now contributes around 20 percent of the total rural income and this percentage is higher in wealthier areas. (Stavis, 1974, pp. 56-57.)

The growing importance of the private sector has contributed to the already existing income differentials among rural communes and regions.

Income Differentials

One of the most difficult problems now confronting Chinese economic planners is balancing the terms of trade and income differentials between

rural and urban areas. This is because the Maoists are extremely concerned with the content and distribution of income as well as the goal of increasing per capita income.

The average income of a peasant throughout China is probably less than 150 Yuan per working person, whereas that of the workers in the town factories, who are admittedly only a small proportion of the population, is about 700 Yuan a year. On the other hand, life in the country is easier since provisions cost 30% less than in town, being distributed directly by the team to its members without any charge for transport, storage, processing, and marketing. Lodging is generally free. So are fuel and water. Lastly, the peasant can supplement his income by ancillary activities on his family plot or at home. (Deleyne, 1973, p. 76.)

There are also growing income differentials among rural communes reflecting the increased importance of sideline activities as a source of income, the intensive use of modern agricultural inputs in specified "high-yield" areas, and the present emphasis on "self-sufficiency" and "self-reliance" which rules out large-scale government intervention to try and equalize incomes. "Perkins reports a 1965 survey of thirteen communes which revealed that income per worker in the richest commune was 3.4 as high as in the poorest." (Reynolds, 1975, p. 426.)

Stavis offers further insight into the causes of the income differentials in rural communes:

The agricultural planning system in China strongly encourages the communes to emphasize food production until self-sufficiency is reached. Once a locality produces enough of surplus grain it can divert resources (land and labor) to higher-priced subsidiary crops such as fruits, vegetables, oil and fiber crops, animal husbandry, sericulture, bee-keeping or local handicrafts and industry. As a result, once a locality succeeds in raising grain production, it has the opportunity to raise fairly rapidly the cash income of the farmers. (Stavis, 1974, pp. 54-55.)

This has become a problem not only as it comments on a Communist

society but also as a potential source of rural discontentment which has already been fueled by the mass influx of former Red Guards and students to rural areas in the late 1960's and early 1970's.

Governmental Policy

In addition to the private incentives discussed above there are three general economic policies that the Chinese government has used to motivate the farming sector: a slowly rising agricultural tax, terms of trade which favor the agricultural sector, and the grain import program.

The agricultural tax has not been used to extract all the benefits of agricultural development from the countryside. The land tax is set according to the quality of the land and the expected value of output. Since the tax is based on expected output rather than a percentage of actual output and is revised infrequently (not more than once every three years), the incremental increases in output due to development remain with the peasants. Also as new land is brought under cultivation, the taxes are not levied for several years. Stavis estimated that the tax system just described has made the agricultural tax a declining percentage of the production unit's operating costs, often about 5 percent. (Stavis, 1974, p. 141, and Maxwell, 1975, p. 476.) Also Stavis argues that the rate of government extraction of the benefits of agricultural development has been low enough to assure peasant work incentives. Stavis argues that the peasants retain about 65 percent of the increments in production resulting from the use of modern techniques (Stavis, 1974, p. 74).

In addition to the agricultural tax there is also a tax on industrial products sold to agriculture.

The largest tax charged to the agricultural sector by the state is the tax that represents the difference between the sales price of goods sold to agriculture and the cost of producing and marketing those goods. This tax, of course, has risen as retail sales have risen and has fallen whenever prices of producer or other goods sold to agriculture have been cut. As a percentage of farm income, this tax (actually taxes) has probably fallen. (Perkins, 1975, p. 363.)

Both of these taxes are combined into a single bill charged to the production team (or whatever level of organization serves as the accounting unit). In an attempt to estimate the net effect of these taxes, Perkins suggests that the net drain on agriculture has declined when expressed as a percentage of farm income measured in current prices and may have even been reduced in real terms. (Perkins, 1975, p. 364.)

The second form of indirect incentives offered to rural peasants is the favorable terms of trade to the agricultural sector. Since 1950, terms of trade have been maintained favoring the agricultural sector. The general policy is to gradually increase the price paid to the teams for farm products but to allow input prices to fall in response to increasingly efficient production techniques. For example, in the fall of 1971 the price of most industrial crops was increased while the price of some industrially produced farm inputs was reduced. ("The price paid for sugar was increased by 15.3 percent and for oilseeds by an average of 16.7 percent. The prices of chemical fertilizers and insecticides were reduced by 9.7 percent, and various types of agricultural machinery and tools by an average of 15.7 percent." (Erisman, 1975, p. 332.)

Although this policy did increase labor incentives through greater potential earnings, it also made production of industrial crops more attractive. Production teams started shifting cultivation from grains to

industrial crops. Also individuals started devoting more time to reclaiming noncultivated land for industrial crops, which led to a labor shortage in the collective sector.

To date the government has maintained the price shift, but in 1974 the government tried to temper the shift to industrial crops by ordering that specified areas plant more grain and by specifying that the first obligation of the peasants was to collective labor, not private cultivation. There is no evidence that this or similar incidences have changed the basic governmental policy of subsidizing rural investment and income by cutting the price of inputs and increasing the price of outputs.

Since 1961 China has annually imported between four and six million tons of wheat and barley from Canada, Australia, and Argentina, costing approximately \$300-500 million per year. One possible and plausible explanation of the grain imports is that they are being agricultural production incentives. Using foreign grain imports to help feed urban areas makes it possible for the government to allow production teams to keep a larger portion of any increases in grain output. "Grain imports, in effect, are what backstops government guarantees that grain tax and purchase quotas will not be raised frequently or by large amounts." (Perkins, 1975, p. 365.)

Labor Productivity

There are several reasons why the Chinese must strive to increase labor productivity. The first is that in most areas of the country modernization is still a distant goal and in the foreseeable future traditional inputs will continue to dominate the agricultural sector. This situation cannot be changed significantly in the near future so a basic development strategy must be to rely on a controllable input, labor, to increase productivity

from scarce resources such as land and capital. A second reason is the growth of rural industry, which is usually labor-intensive and will be competing with agriculture for the local labor supply. Also the enactment of large-scale public works projects, land reclamation, and irrigation projects, etc. can tax the supply of labor in many localities. The Chinese policy makers realized after the disastrous 1958 agrarian labor shortage, that the marginal productivity of labor to farming is not zero and that withdrawing large segments of the farm population for other pursuits would precipitate a decline in output. An extension of this leads to another consideration for Chinese policy makers--the threat of a war with the Soviet Union. The planners must certainly be cognizant that the recruitment of a large percentage of the rural population for military duty would cripple the agricultural sector.

Underlying this discussion of increased labor force efficiency is again the philosophy of the Chinese leadership that China is not a "labor surplus" economy. Therefore technical change in the agricultural sector is seen as necessary to allow labor to move to pursuits with higher marginal productivity.

The emphasis on technical change started in the 1960's after having been neglected during the 1950's. Chinese planners realized early in 1960 that they were approaching the limit to increased output that could be achieved by relying solely on traditional inputs. Since that time technical change has been considered the key to increasing agricultural output.

The current policy stated at the National Conference on Learning from Tachai in Agriculture in November 1975 has not changed from the farm policies developed under the National Agricultural Development Program and

approved at the National People's Congress in April 1960. The plan, which was originally scheduled for completion in 1967, was expected to be fulfilled in 1976. The main goal of the plan was to increase agricultural yields by utilizing technical change within the framework of local conditions.

There are two slogans that have been devised to state the main technical and agricultural changes stressed in Chinese policy. The first is the "Eight Character Charter" formulated by Mao Tse-tung. The eight points are: (1) increase production by improving soil through land construction, (2) fertilizer, (3) water control and irrigation, (4) improved varieties of seeds, (5) suitable spacing of plants or close planting, (6) better farm tools, (7) pest control and plant protection, and (8) improved field management and double cropping. The second slogan calls for "Four Changes": mechanization, chemicalization, electrification, and irrigation.

Most of these changes have been concentrated in twelve "high and stable yield" areas covering roughly 20 percent of the cultivated area in China. (Stavis, 1974, p. 22.) The changes are being introduced in other areas but in a slower and less systematic fashion.

In the following sections the major tools used by the Chinese to increase labor productivity in the rural areas will be discussed.

Agricultural Investment

At present the government has continued to stress the policy of "self-sufficiency." Local units are expected to generate internally the capital for rural investment. This includes investment for rural industrialization as well as agricultural inputs.

Much investment, indeed, is carried out at the lowest level of rural commune. Each production team contributes 3 to 5 percent

of its gross income to an "accumulation fund," which finances equipment purchases and other agricultural improvements by the team. The production brigade and the commune draw revenue from machinery leases and other services to the production teams, and also from the profits of their industrial activities. The profits of rural industrial enterprises, unlike the profits of urban industries, are not remitted to the state. The funds remain in the commune and are available for expansion of industrial activities or for agricultural investment. Commune officials report that their present scale of industrial production has been built up largely from reinvested earnings rather than through investment allocations from the state. (Reynolds, 1975, p. 421.)

There is some government capital available to communes in the form of subsidies or loans to pool with local resources. State investment has begun to play a larger role in the rural areas in the last 15 years because large-scale water conservation projects, electrical generation projects, soil improvement projects and forest shelter belts all require large capital investments and advanced technology.

Evidently, large-scale capital investment is still being opposed by some segments of the Chinese populace. Leo Goodstadt's report on the Tachai conference stated: "Parts of the industrial and financial sectors balk at diverting resources to the peasants. . . . The conference heard of many districts where agriculture does not enjoy the top priority which Peking has directed. It was told, according to an official report: 'in a number of places, the facade of economic construction is quite splendid, but manpower, funds and material are not reasonably channelled to agriculture.' In some cases agriculture is even neglected. Industries have not geared their work towards taking agriculture as the foundation." (Leo Goodstadt, 1975, p. 45.)

Agricultural investment will be a powerful tool in controlling the changes in technology, i.e. capital- or labor-intensive, which will in

turn directly bear on employment policies. It is impossible to determine from the literature how these investment decisions are made.

Mechanization

Mechanization is immediately relevant to employment policy in rural China. Mechanization in China does not mean the introduction of Western-style machinery, but rather the use of simple semi-mechanical devices to help with ploughing and weeding and to replace human labor in the pumping of water, etc. There are data available to indicate that mechanization is proceeding slowly but steadily in the "high and stable yield" target regions (see Stavis, 1974).

Mechanization was recently stressed at the Tachai Conference as part of Peking's program to modernize the agricultural sector. At first cut, it seems paradoxical that a country as densely populated as China would seek to replace labor with capital in the form of machinery. Several explanations are possible:

1. . . . the Chinese argue that the use of mechanized equipment will save land which has become increasingly scarce in relation to labor, since traditional methods of irrigation require much more land than methods involving the use of mechanical power. Moreover, irrigation by human and animal power may be too inefficient and slow to resist the sudden advent of heavy rains and floods. (N.R. Chen, 1969, p. 122.)
2. G. F. Sprague reported after a 1974 tour of China that "In some areas mechanical planting and harvesting are being introduced. The primary objective is a saving of time rather than labor. A few days saved in either the planting or harvesting season permits a greater degree of flexibility in the multiple cropping scheme." (Sprague, 1975, p. 553.) Mechanization of both cultivation and grain processing are being encouraged in the densely populated central and southern rice-growing regions of China to permit multiple-cropping.

3. In his account of the Tachai Conference, Leo Goodstadt offered the following comments on mechanization:

Hua (Hua Kuo-feng) demanded the mechanization of agriculture by 1980. He urged that every level of the administration should "make very great efforts to speed up the progress of this work." China decided to mechanize in 1974, and provincial reaction to Hua's address has focused heavily on this task. If the main cultivation and farming operations achieved "70% mechanization," Hua claimed, then "the mechanization of tilling, drainage, and irrigation and transport alone would be equivalent to more than a 100% increase in the labour force of the countryside as a whole."

Since many key crops grown in China depend on intensive cultivation (rice and tea, for instance), such a dramatic increase in the productive capacity of the labour force would amount to a revolution in itself. Hua estimated that about 100 million people take part in farmland capital construction each year during the slack winter period. The maximum labour force which can be put onto the fields is probably, therefore, around 150 million. At the moment, China has only 20 million tractor drivers, technicians and electricians. This ratio indicates the comparatively backward state of Chinese cultivation.

Apart from a shortage of personnel, mechanization must put strains on the rest of the economy in terms of machine tools, steel, fuel, repair facilities and a substantial expansion of heavy industry. (Leo Goodstadt, 1975, p. 45.)

4. Some areas of China, particularly in the northeast and northwest regions, are sparsely populated and the use of mechanization can supplement the labor force to increase productivity. This helps to explain the greater use of tractors in the North. (Another contributing factor may be that it is easier to mechanize the cultivation of wheat than rice, which is the principal crop in the South.)
5. Politically, it is hoped that the use of machinery will expand the scale of profitable operations and return more power to the communes as a unit of planning and management and in essence, provide justification for the collective system.
6. Another possible factor in the decision to push mechanization is the threat of a military confrontation with the Soviet Union. Because

China's agriculture is extremely labor-intensive, the prospect of withdrawing a significant segment of the farm population from the fields would result in a disastrous decline in output.

The pace of mechanization will be a key issue for planning employment policy. It is possible that mechanization may proceed too rapidly in certain areas without the accompanying growth of industries or other activities to absorb the manpower released. To date the Chinese have been mechanizing slowly, covering one stage of production at a time, e.g. threshing, plowing, or irrigation. It is assumed that the local decision-makers will be able to make incremental changes in mechanization and closely monitor the rate of trade-off between capital and labor. The rate of growth in mechanization is now limited because the investment must be made by the production team, but it is conceivable that in the near future the income differentials among areas will be sufficient to allow rapid mechanization in some areas. Also the growth of rural industries which specialize in agricultural equipment will increase the availability and lower the price of these inputs. It is possible that those industries would be able to absorb part of the labor supply released through mechanization.

Water Control and Irrigation

Water control has always been a central theme in the Chinese agricultural development program and is taking on even more importance with the present attempts to modernize the agricultural sector. It appears that China is going to have to move away from small-scale irrigation projects into larger, more ambitious projects for several reasons. First, the South already has a fairly well-developed traditional water control

program, but the control problems in the North are so severe that small-scale projects have consistently been unable to cope with the problem. Second, while the use of small-scale irrigation projects may be adequate for traditional farming techniques, the timely application of water assumes a much greater importance in modernized agriculture. This is particularly true in North China where large-scale projects with a capacity to store large amounts of water are needed. This would seem to dictate a move away from strictly labor-intensive projects.

The differences between the progress of irrigation in the north as contrasted to that in the south cannot be accounted for by any lack of effort in the northern regions. During the Great Leap Forward years, 1958-1959, tens of millions of rural people moved vast quantities of earth and rock in an attempt to solve the northern water problem. But when the work was finished, exaggerated claims discounted, and poorly designed projects abandoned, there had been little if any expansion in irrigated acreage. In the years 1959-61, in fact, the north suffered through one of the worst droughts in decades. The problem in brief, was that the land of the north could not be irrigated by methods that relied solely on the mobilization of rural labor however great the number of people involved. (Perkins, 1975, p. 359.)

The severity of the water control problems in the North and the absolute necessity of adequate water supplies for modern agriculture seem to indicate that the government may have to intervene to plan and finance larger-scale and more sophisticated projects. This shift is already under way. The Chinese press has recently suggested that the responsibility for the construction of water control facilities may have to be shifted upward from the production teams to the brigades so that larger, more complex projects can be initiated.

The implementation of irrigation programs will have several effects on labor allocation:

1. The use of pumps for mechanized irrigation will displace labor that may be absorbed by the more intensive cultivation and field management requirements in modernized agriculture.
2. The labor requirement for maintaining the system will increase dramatically.

The labor required to maintain China's water control facilities is staggering in amount . . . These requirements reduce the amount of labor available for new construction. Maintenance consists of periodic land leveling; dike repair; removal of silt, weeds and debris from canals and ditches; and the repair of erosion to canal walls. The amount of earthwork required each year to maintain a system varies, but probably averages out to about 10 percent of the earthwork required during construction. (Erisman, 1975, p. 337.)

3. In the short run, labor will need to be diverted from field work to work on the construction of the projects. This may be a problem on large-scale projects in the more sparsely populated areas of the North. It is possible that the government may have to import construction crews for temporary work from more densely populated areas in the South.

Chemical Fertilizers

An increase in the amount of chemical fertilizers will presumably change employment needs in two respects. First, in order to effectively utilize the fertilizer, it must be integrated into a system of modern agriculture. This requires effective water control, disease and pest control, and sophisticated cultivation techniques, and competent management. The requirement for better-trained management must be met by employment policies. There are several policy alternatives available to the Chinese to improve the quality of rural leadership. The rural education system should be improved on all levels with special emphasis on advanced

agricultural training for managers. Allowing greater labor mobility between communes might lead to a more efficient allocation of skilled labor resources. Finally, it seems that the requirement that managers and scientists spend a significant percentage of their time engaged in physical labor could be curtailed until a more adequate supply of agricultural specialists was built up.

This leads to the second area where employment policies do not complement the increased use of chemical fertilizers. In order to increase productivity by raising the fertilizer input beyond a certain point, it is necessary to develop fertilizer responsive seeds. Although fertilizer responsive rice seeds are available, research on other crops has not been as successful. The "evidence appears to indicate that the marginal yield response to fertilizer did decline markedly between the mid-1960's and the early 1970's." (Perkins, 1975, p. 358.) Perkins attributes this to the lack of more responsive seeds and suggests that the discovery of new seed varieties is essential if China is to raise output with fertilizers. The report of the American Plant Studies Delegation in 1974 suggested that such discoveries were possible but they were contingent on a reorganization of the research sector in China. The next section points out that the research component of the agricultural sector is currently neglecting the type of long-term coordinated experimentation needed to develop new seed varieties. This is a critical shortcoming of the present employment policies because scientific manpower is underutilized.

Agricultural Research

Part of the plan for developing the agricultural sector proposed by the Tenth Plenum in 1962 included strengthening agricultural and research

support services. From 1962 to 1965 the thrust of this policy was to use fully the existing agricultural scientists, draw upon research being done in other countries, provide centralized research facilities for Chinese scientists, and expand educational facilities for new scientists. But after 1965, i.e. after the Cultural Revolution, the organization of the agricultural research support system was questioned on political grounds. The scientists were seen as the "new elite"; the benefits of the research had gone mostly to the "high and stable yield areas" thus increasing income inequalities within the rural sector and the government, especially Mao, felt that the existence of a separate research system lessened the role and incentives of the peasants in the development process. It was also feared that the separation of research and field work would result in largely irrelevant academic style research divorced from the needs of the peasants.

After the Cultural Revolution, agricultural research organizations were largely decentralized. Supervision of many of the research institutes was transferred from the Chinese Academy of Agricultural Sciences in Peking to the provincial level scientific organizations and the provincial level departments of agriculture. Research efforts were to be directed at the immediate solution of practical crop and animal production problems at the local level.

The report of the American Plant Studies Delegation which toured China in 1974 indicates that the trends toward decentralized and immediately applicable research has continued and agricultural research societies have been disbanded. It seems that there is little or no long-range coordinated research and that the emphasis is on small-scale localized problems with work conducted in close consultation with the peasants.

The decentralization process has more closely linked the research and extension efforts in the provinces.

There are two primary institutional units for agricultural research within a province: provincial level academies, institutes or colleges of agriculture; and small agricultural experiment stations that are generally administered at the production brigade level though in some cases are administered at the commune or even county level. The provincial level units perform applied research on the range of crops and animal species most common in the province. To assure focus of these units on practical farm problems, staff of the provincial level institutes, academies, and colleges are stationed on a rotational basis at the "basic points" at selected brigades. At any one time about one-third of the staff would be so stationed. They also assist in the training of technicians, farm managers and farmers.

The typical local agricultural experiment station focuses on the major problems of the brigade and commune in which it is located. Personnel from the following groups provide a cooperative effort to solve the local problems: scientists from institutes, academies, and colleges from both provincial and national levels who are stationed at the brigades; peasant technicians with special training in applied research and extension activities; and crop production managers at the brigade level. This provides the "three in one" approach which assures not only the scientific and technical quality of the work but also its direct applicability to problems at the commune (farm) level. (American Plant Studies Delegation, 1975, p. 5.)

The "three-in-one" approach mentioned above refers to the policy of combining scientists, technicians or administrators, and farmers in agricultural research, decision-making, and policy formation.

The attempt to link the work of the scientific community with the practical problems of the farmers was described by Ben Stavits. He reported that in some areas, agricultural scientists spent one-third of their time in specialized research institutes, one-third of their time doing field research at communes, and one-third of their time touring and investigating techniques and problems in the communes. (Stavits, 1974, pp. 171-172.)

The organization of agricultural research and the methods of utilizing

trained agricultural scientists and researchers must be questioned in China. The motivation for the present policy is to a large extent political with the Chinese attempting to prevent the growth of a scientific elite. Although the policy has been successful in linking research efforts with day-to-day practical problems, long-term advanced agricultural research has been neglected. The present system does not encourage rapid scientific development or major innovations.

Future Prospects

The evidence clearly indicates that China has succeeded in increasing both labor force utilization and participation rates. The Chinese contend that these labor inputs have been effectively substituted for capital in the early stages of development by using either labor-intensive or intermediate technology. But, the evidence also indicates that China may have come close to exhausting the benefits available under past policies--increasing labor inputs, reorganizing the rural sector, bringing marginal land under cultivation, and incrementally improving traditional farming techniques.

The growth rate of Chinese agricultural output declined from 6 percent annually from 1964 to 1968 to around 1.4 percent per year for the period since 1968 (Stavis, 1974, p. 8). This stagnation raises several crucial policy questions for the Chinese leadership.

One of the major obstacles to expanding agricultural output is the lack of agricultural investment. The policy makers are now faced with the dilemma that further modernization cannot be accomplished by simply manipulating employment policies to increase labor inputs. Capital investment is needed, and in many areas it is needed in amounts greater

than can be internally generated in the region. The present government policy of promoting local "self-sufficiency" and "self-reliance" is not adequate to deal with existing problems, e.g. water control and reconstruction after the 1976 earthquake in the North and machinery for multiple cropping in the South. Given the limited capital resources of the Chinese government, a program for increased agricultural investment must confront the trade-off between political philosophy and economic expediency. The government must either give priority to expanding total output by investing in the "high and stable yield" areas or give priority to more equitable income distribution by investing in the poorer areas which are being "left behind" in the development process.

The central government still deals with income redistribution, but to a much smaller extent than in the late 1950's. Most redistribution takes place within regions rather than between regions. Income differentials have been increasing and will continue to do so if the present investment trends continue. This is one of the issues that must be decided in the current power struggle in China.

There has been considerable dissension within the Chinese government for several years over the future course of agricultural development. Stavis attributes this to the growing awareness among policy makers that there are numerous options open to China (Stavis, 1973). The conflict has intensified in the post-Mao transitional period. Hwa Kuo-feng stands opposed to the more radical elements who are pushing for rapid socialization of the rural sector. To date, Hwa has supported the policies set forth at the Tachai Conference, i.e. a program for the gradual modernization of the agricultural sector within the present "cellular" political and

economic context. But because of the present state of political flux, it is impossible to predict what course agricultural development will take in China.

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