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**Economic
consequences
and future
implications
of population
growth
in China**

Robert F. Dernberger



East-West Center
Honolulu, Hawaii

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PREFACE

A preliminary draft of this article was presented at a panel of the China Population Analysis Conference held at the East-West Population Institute, Honolulu, Hawaii, in June 1980. In revising that draft for publication I have benefited from the suggestions of the conference participants, especially the extensive comments provided by Yuan Fang and Tian Xueyuan of the People's Republic of China, and the suggestions of my anonymous reviewers. Their generous offers of advice, however, do not relieve me of my sole responsibility for arguments and empirical evidence presented in the current version of the article.

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ABSTRACT Based on the population and employment estimates of John Aird and Thomas Rawski, this paper analyzes the economic consequences of China's population growth over the past three decades. For the remainder of the century the author relies on Aird's population projections to make his own projections of population growth and new entrants to the labor force. These projections provide the framework for an assessment of the economic implications of China's future population growth. On the employment side the author concludes that the pressures of population growth will make it necessary for the Chinese to revert to labor intensive economic activities. Conversely, they will encounter serious unemployment problems by the end of the century. As for consumption, the growth of total output should provide a small but steady annual increase in the standard of living. Increases in the availability of food grains will not be as impressive, however. Finally, the many competing claims on economic resources must be constrained over the next decades in order to secure a significantly better standard of living for China's growing population.

The creation of job opportunities and the maintenance of full employment of the labor force is a major objective shared by governments in mature industrialized and developing countries alike. With relatively low rates of population growth and a sizable stock of fixed capital, governments in mature industrialized countries must cope with the need to restore the full-employment level of effective demand, and do so in a manner that will not make their current inflations more severe. The unemployment problem in developing countries, with their relatively high rates of population growth and much more limited accumulation of fixed capital in the modern sector, not only is different, but involves long-run problems of social and economic transformation as well. These problems necessitate a reduction in the rate of population growth and the accumulation of capital and technology for creating employment opportunities in the modern sector.

China, of course, is a developing country, having the largest labor force in the world. In the past year the Chinese have publicly acknowledged that urban unemployment, especially among secondary school graduates, has become a severe economic and social problem. Yet for most of the three decades since 1949 both the Chinese themselves and

Western analysts of China's economy claimed that full employment was a rather unique and notable achievement of China's strategy of economic development. Similar claims of success were made regarding their program for reducing the rate of population growth. These assertions of achievement, of course, contribute significantly to the appeal of the Chinese model of economic development among population and development analysts and policy-advisors working on these problems in other developing countries.

Despite the many difficulties encountered in attempting to uncover the actual results of economic and population control programs in the People's Republic of China, or the underlying cause and effect mechanisms that led to those results, the history of the past three decades warns us that official claims of success must be carefully evaluated before they are accepted. Recently released information indicates that urban unemployment in China now includes more than 20 million workers and that the average size of the peasant household has increased from 4.8 persons in 1955 to 5.66 persons in 1979.¹ Such statistics necessitate a reevaluation of past claims and, consequently, a reappraisal of optimistic projections concerning the future. This paper will attempt to provide both.

The discussion of the economic consequences and future implications of population growth in China is organized as follows. Beginning with a brief summary of my interpretation of the economic consequences of China's population growth over the past three decades, I will comment on the current position the Chinese find themselves in as a result of these past developments. This is followed by the presentation of various population projections by the Chinese and my own

1 In 1979 several Chinese sources put the number of unemployed at 20 million. An "informed Chinese source" in Hong Kong said the number of unemployed had increased to 26 million by February 1981, i.e., a figure greater than the total population of Canada (*FBS*, 13 February 1981:L5). The magnitude of urban unemployment would amount to 10 percent of the Chinese urban population, or 20 percent of currently employed wage and salary earners in China. We are also told that this unemployment explains poverty in the urban areas; that is, within urban families with a per capita "disposable" income of less than 15 yuan a month (US\$10 in 1979), those employed receive an average monthly wage of 62.5 yuan, but one worker in every 2.5 families in this class is presently unemployed (*NCNA*, 30 December 1980). Estimates of peasant household size are the averages from a sample of 16,000 peasant households in 25 provinces done in 1955 (State Statistical Bureau, 1957:31-33) and from a sample of 10,282 peasant households in 23 provinces, municipalities, and regions done in 1979 (*NCNA*, 2 January 1981).

assessment—really an opinion—of the rough probability that can be assigned to each of those projections. In the concluding section of the paper I examine the economic consequences of these various population projections and how future population growth can be expected to affect the Chinese program of economic modernization.

ECONOMIC CONSEQUENCES OF RECENT POPULATION GROWTH

In a recent study prepared for the World Bank, Thomas G. Rawski (1979) derives estimates for the growth of China's population, labor force, and employment between the mid-1950s (1957) and the mid-1970s. Although the research for this study was completed before the Chinese began to release some employment data in 1979, the officially released data differ only slightly from the more detailed estimates presented by Rawski. According to his estimates, between 1957 and 1975 population increased on the average by 2.2 percent per annum, the labor force by 2.4 percent, the urban labor force by 4.8 percent, and nonagricultural employment by 4.9 percent.² Thus the total increase in the population between these two years (approximately 300 million) resulted in 150 million new members of the labor force. Jobs were created in the nonagricultural sector for only one-third of these new entrants to the labor force (Rawski, 1979:24, 35–36, 123–24).³

With limited capital and a desire to achieve rapid development of the heavy industrial base, the Chinese chose maximization of industrial output per unit of capital, not employment per unit of capital, as the most rational strategy. Theory may indicate that a more optimal choice would have been the selection of a point in the more intermediate technology range of the continuous isoquant of production possibilities. The superiority of output per unit of capital of the capital-intensive, large-scale industries among the discontinuous technological choices available to decision-makers, however, is—I believe—quite obvious. The adoption of the Soviet model for the mobilization of a sizable share of national income for investment, i.e., capital accumulation, in urban, large-scale, capital-intensive industries resulted in an annual average rate of growth of industrial production of 9 percent

2 Rawski's estimate for population growth between 1957 and 1975 was adopted from John Aird's "intermediate" projection. See Aird (1978:465).

3 Unless otherwise noted, the statistics cited in this section of the paper are taken from this source.

between 1957 and 1975. During the same period industrial employment was increasing at an annual average rate of 6 percent, increasing its share of the total labor force from 5.3 percent in 1952 to 9.2 percent.

Were industrial employment restricted to the large-scale, urban sector, the growth of the industrial and nonagricultural labor force would have been even slower. The development of rural, small-scale industries--the search for a more intermediate technology--provided more employment per unit of capital. By 1975 these rural, small-scale industries accounted for half or more of China's production of building materials (cement), chemical fertilizers, and agricultural equipment and employed about one-third of the industrial labor force. Nonetheless, employment in the rural, small-scale industries in 1975 still represented less than 5 percent of the rural labor force. In other words, although the Chinese adopted a more labor-intensive technology, the major objective of the rural, small-scale industry program was to maximize the supply of agricultural producer goods made available per unit of nonlabor resources invested in the rural areas, for the purpose of developing China's agricultural production, not to maximize the creation of employment opportunities for China's rural labor force.

The preceding quantitative estimates and arguments concerning the increase in population, total labor force, and employment in the nonagricultural sectors between 1957 and 1975 are widely accepted by Western observers. The real question involved in determining how successful the Chinese were in securing full employment, especially for the 150 million new entrants to the labor force, is reduced to the question of how they were able to find employment for the approximately 100 million additional workers in the agricultural sector. If finding employment is simply defined as finding something for them to do, the answer to this question is equally simple. Given the constraints placed on the employment opportunities being created in the urban and industrial sectors, the restriction of population mobility (made effective by the rationing system which involved site-specific rationing coupons) and of the recruitment of labor for employment in industry by the state's labor bureaus (not by the individual enterprises) was also a rational policy. Given the existing urban-rural differences, these steps were necessary to prevent mass migrations of people to the urban areas in hopes of finding industrial employment and to avoid the resulting urban unemployment and overburdening of

the already scarce urban housing, etc., so typical throughout the Third World.

Finding work for the surplus labor assigned or restricted to the rural sector was assured by the institutional organization of agricultural production adopted, in part, for that purpose. With the surplus labor being assigned to these collectivized units of agricultural production, it became the responsibility of the collective unit—not the state—to find employment for them. Also charged with the responsibility of maintaining at least a minimum standard of living for all the members, the collectives will assign work as long as their marginal product is greater than zero.⁴ In making these assignments the collective is not required to pay fixed claims on its resources and income, but prints its own money—called work points—for this purpose. These nontransferable work points are noninflationary claims on a share of the residual income of the collective unit, after deducting for expenses and investment. Thus the determination of the value of these work points depends, *ex post*, on the total output of the collective unit, its costs, and the total number of work points paid out during the year.⁵

In short, these policies placed the major burden of finding employment for the growing numbers in China's labor force squarely upon the agricultural sector. Between 1957 and 1975 this meant an increase in agricultural labor of almost 50 percent, while cultivated area was reduced slightly. Accomplishing this was truly a remarkable feat in the history of economic development. Yet it is not identical to achieving the goal of full employment, as it is commonly defined by economists. Obviously the objective of full employment has something to do with

4 The same argument is given for private, household farming. Members of the household (those who must be fed by the family) will be given work to do as long as their marginal product is greater than zero. In private, household farming, however, those family members have the option of selling their services to other farm households or to migrate to the city and look for jobs in the urban sector. One of the arguments presented to explain the increase in farm household income in Taiwan is this opportunity for family members to obtain non-agricultural employment in urban areas, while they still live on the farm. As mentioned in the text, in the People's Republic of China this option of workers from the collective to sell their labor in the nonagricultural sector or even to other collectives is virtually nonexistent, except during periods of relaxation of state control over the mobility of labor.

5 Some collective units in China, i.e., those that enjoy a higher than average level of gross income per member, introduced a fixed value for their work points and distribute the net surplus, *ex post*, as a sort of bonus on the basis of work points each member has earned.

the individual's sense of well-being and satisfaction. Yet any judgment of the net welfare costs of restricted population mobility and, of course, the forced movement of surplus labor from the urban to the rural areas would be nothing more than a reflection of my own prejudices and normative conclusions. For the purposes of the analysis presented here, therefore, I am willing to accept the objectives of the Chinese leaders.

Even if the Chinese peasants felt better off, the employment of this large increase in the agricultural labor force may have been only "disguised" unemployment; i.e., their work assignments were tasks that added little or nothing to output. Numerous illustrations can be found in the Chinese press of the irrational and even counter-productive use of the agricultural labor force during the reign of the Gang of Four. Undoubtedly this was a problem, but these forms of "disguised" unemployment really reflect the mistakes made by those who were responsible for assigning tasks to be done by the agricultural workers rather than the system created for finding them employment. Furthermore, generally speaking the collective unit's mobilization of the increase in the agricultural labor force was successful in obtaining an increase in agricultural production.

Not only did this approximately 50 percent increase in the agricultural labor force between 1957 and 1975 mean a significant increase in the number of agricultural workers per cultivated hectare, but also the number of work days per worker is estimated to have increased by more than 100 percent over the same period (Rawski, 1979:71).⁶ Thus the increase in work days per worker during this period was far more important to the total labor effort in agricultural production than the increase in total number of workers. Rather than being generally employed in wasteful or low-productivity tasks, this significant increase in available labor was required to carry out the many labor-intensive methods for achieving higher yields—changing cropping patterns in favor of higher-yield crops, higher levels of organic fertilizer application, increased multiple-cropping, expansion of the irrigation network, farmland reconstruction, etc. These labor efforts and the

6 This estimate of the increase in the agricultural labor force is based on the assumption of a constant labor force participation rate for the agricultural population and may be an overestimate. The increase in work days per worker is based on Rawski's estimate of 275 days for 1975 (Rawski, 1979:14) and Peter Schran's estimate of 121 days for 1955 (Schran, 1969:75).

increased use of purchased inputs such as chemical fertilizers, agricultural machinery and equipment, and pesticides meant the achievement of an annual rate of growth in agricultural production of 2.4 percent between 1957 and 1975.⁷

It would be somewhat unfair to cite evidence reflecting the inevitable results of the law of diminishing returns to conclude that the Chinese have failed to cope with the economic consequences of China's past population growth. Between 1957 and 1975, on a relatively fixed amount of cultivated land, labor inputs increased at an average annual rate of 6.7 percent (laborers by 2 percent, work days per laborer by 4.7 percent) and output by 2.4 percent. Thus output per worker increased by 0.4 percent a year, while output per work day declined by 4.3 percent a year.⁸ Fortunately there is no need to rely on the law of diminishing returns or on crude Malthusian population theories to support the analysis of the economic consequences of China's population growth presented in this paper. My analysis and conclusions can easily accommodate an increase in the annual output per peasant in the future.

Quite simply, agricultural output per worker or per work day is not identical with income per worker or per work day. I believe it is the latter statistics that are most relevant in making judgments about China's past success in providing full employment for the labor force, especially as full employment is traditionally defined as being the major objective of most societies. In other words, any attempt to ascertain the economic consequences and implications of population growth vis-à-vis full employment must define success in that area as finding workers not simply work to do where their productivity is more than zero, but employment that leads to their enjoyment of a higher standard of living. In the case of China's finding jobs for her growing labor force during these decades, it should be obvious that the resulting growth in agricultural production (even though that growth reflects an increase in the average product per peasant), was

7 This growth rate is based on Thomas Wiens's estimate of 2.4 percent annual rate of growth for the gross value of agricultural production during 1957-74 (Wiens, 1980:101).

8 Additional evidence of this decline in the product per work day is the falling value of work points in many communes. In a sample of over 2,000 production teams in "various provinces," the value of a day's labor declined from 0.70 to 0.56 yuan between 1965 and 1976. (*Guangming Ribao*, 7 December 1978).

not as rapid as the growth of state demands for agricultural products in the nonagricultural sectors. These included inputs for light industry, consumption needs of the nonagricultural labor force, and export and stock requirements. Demands in each of these three categories increased at a rate higher than 5 percent between 1957 and 1975. (For documentation of this argument, see Dernberger, forthcoming.) Over the past three decades some of the increased demand for agricultural outputs was met by increases in imports of agricultural products. This has led to the steady erosion of China's net export surplus of raw and processed agricultural products. In short, as a result of the increase in the agricultural "surplus" extracted from the agricultural sector for use in other sectors, the supply of agricultural products per capita in the agricultural sector has undoubtedly declined.

One obvious counter-argument to the conclusion implied in the above argument is that although the agricultural "surplus" extracted by means of quota purchases by the state has increased faster than output, changes in the terms of trade have served to increase the peasant's income. In other words, by being paid higher procurement prices for agricultural products in 1975 than in 1955 and paying significantly lower prices for industrial products sold in the agricultural sector in 1975 than in 1955, the peasant has ended up with a higher real income. Unfortunately, however, these lower prices apply mainly to agricultural producers' goods (chemical fertilizer, agricultural machinery and equipment, pesticides, etc.) and are part of the peasant's costs of production. Thus although the cost *per unit* of industrially produced input in agriculture has been reduced, the Chinese press and Western estimates are unanimous in asserting that during these same years the amount of these inputs in agricultural production per unit of output has increased significantly. (See, for example, the detailed statistical analysis of inputs and outputs by Anthony Tang, 1980.) This has occurred to such an extent that despite these lower input prices, costs per unit of output have increased; that is, the net value of agricultural production has not grown as fast as the gross value of output. Thus although on an annual per capita average the peasants were producing more in the 1970s than they were in the 1950s, it is questionable whether this remains true after the cost of purchased inputs is taken into account. In fact, a statistical survey published in *Guangming Ribao* (7 December 1978) of over 2,000 production teams throughout various provinces showed that by the mid-1970s the

Chinese peasants were producing the major grains and industrial crops (cotton) "at a loss," i.e., presumably if labor inputs were valued at the average value of a work point for each team.

The previous arguments are presented for three reasons: (1) to qualify Rawski's conclusion that the Chinese have successfully found employment for the large increase in China's labor force (population) in the past; (2) to provide a focus for the major economic problems they face at the present time; and (3) to serve as a necessary introduction to my analysis of the economic consequences and future implications of China's future population growth. Largely because this approach places emphasis on the dynamic aspects of the problems of China's population and economic growth, my assessment is rather negative. In no way do I mean to detract from the positive aspects of the way in which the Chinese have coped with the economic consequences of their population growth, including their attempt to carry out a meaningful program to limit population growth. A more equitable and above-subsistence (starvation) standard of living (bare necessities) has eliminated two of the more serious economic problems of traditional rural China. Moreover, the average Chinese peasant enjoys a higher level of consumption of food grains than does the average peasant throughout the Third World. Finally, it is necessary to recognize the success of large-scale programs in public health, education, etc., which contribute much to the Chinese peasant's well-being.

Nonetheless, as I have emphasized above, the post-Mao leadership has explicitly recognized the dynamics of its population and economic problems. The large majority of that population is rural and an even greater portion of the labor force is engaged in agricultural production. Yet in the mid-1970s, after three decades of economic development efforts, the average availability of grain per capita was no greater than in the mid-1950s, the annual average income of the peasants from their work in the collective sector was about 50 dollars U.S., and one-third of the communes had an annual per capita grain consumption of less than 360 *jin* (180 kg.).⁹

Recognizing these problems and the failure of their economic policies to solve them in the past (although much of the blame for these failures was placed on the Gang of Four), the post-Mao leadership has introduced sweeping new reforms. These involve decentralized

⁹ The last information was given me during my January 1980 visit to China. The average for all peasants in 1955 was 377 *jin* a year.

decision-making, individual or very small group material incentives more closely related to output, higher procurement prices, encouragement of private plots and sideline activities for market sales, etc. Increases in agricultural production and peasant per capita incomes accompanied these reforms in 1978 and 1979.¹⁰ Despite these encouraging signs, future population growth will continue to have serious economic consequences and implications for China's economic growth. These consequences and implications, however, obviously depend on what we accept as a meaningful forecast for China's future population growth.

PROJECTIONS OF FUTURE POPULATION GROWTH

It is not possible to cite a "consensus" forecast of China's future population growth, but one set of estimates—those of John Aird—is based on an explicit and somewhat sophisticated model of demographic dynamics that includes sex and age structure estimates.¹¹ Unfortunately, Aird presents his estimates as projections, not forecasts. He makes three projections (of high, intermediate, and low growth) and steadfastly avoids the choice of a most likely forecast. For the population as a whole the projections indicate an average annual growth rate of 1.6 percent (high), 1.4 percent (intermediate), and 1.2 percent (low) between 1980 and 2000. Projections for the annual average rate of increase in the labor force over the same period are 2.4 percent (high), 2.1 percent (intermediate), and 1.8 percent (low). The rates of increase are significantly higher (about one-third) for the labor force, compared with those for total population, owing to dramatic changes in the age structure that are projected to occur during this period (Aird, 1978:465, 472).

It is also regrettable that the Chinese have not presented us with a forecast, but we are still waiting for their census next year (1982) to

10 In 1979, according to a survey of over 10,000 commune households (*NCNA*, 2 January 1981), the average peasant had an annual income from work in the collective sector equivalent to 68 U.S. dollars and an annual consumption of 223.5 kg. of food grains.

11 Aird periodically updates his estimates on the basis of new information. This paper uses his population projections published in the 1978 Joint Economic Committee volume on China's economy rather than his latest set of estimates. The adjustments made in the latest set of estimates would have little, if any, effect on my arguments or conclusions about the economic consequences of China's future population growth.

obtain a better estimate of the size of their present population.¹² Following Aird's approach, the Chinese have, however, presented us with five projections¹³ of the future growth of China's population based on different assumptions of age-specific birth rates (no death rate is mentioned):

1. Every woman has, on the average, three children during her childbearing years (the reported average number of children women had during their childbearing years in 1975). The annual rate of population growth between 1980 and the year 2000 will be 1.8 percent.

2. Every woman has an average of 2.3 children during her childbearing years; the annual rate of growth will be 1.4 percent. (This assumption represents the average number of children per woman during childbearing years in 1979, a year in which, according to Chinese I have talked with, there was abnormally low fertility because of the priority given the birth control program by some political leaders. These same Chinese—some of them demographers—expected the birth rate to increase in the near future as a result of these postponed births.)

3. Every woman has an average of two children during her childbearing years; the annual rate of growth will be 1.1 percent.

4. Every woman has an average of 1.5 children during her childbearing years; the annual rate of growth will be 0.8 percent.

12 The census was originally scheduled to be taken in 1981, but recent reports indicate it will probably be postponed until 1982.

13 The distinction being made here between forecasts and projections is an important one. The latter incorporate information on what has happened in the past and, assuming past trends remain the same, project the past into the future. It is known, however, that what is projected is unlikely to occur, given unexpected developments in the future. Forecasts, on the other hand, are predictions inasmuch as they include in the projection our best guess as to how past trends will be affected by those developments in the future. Quite simply, anyone predicting the future merely on the basis of past trends (especially in China) is likely to be wrong. That is probably why Aird avoids selecting one of his alternative projections as a forecast.

The Chinese projections cited in the text are erroneously called predictions in a *Hsinhua* article (*FBS*, 15 February 1980, L 11–13). They were made by an economist (Tian Xueyuan, a participant at the China Population Analysis Conference, Hawaii, May 1980) and two engineers. According to the article, this team was obviously "utilizing modern cybernetic methodology" to build a mathematical model for making the iterations (projections). (They are cited in this *Hsinhua* article by a reporter from the paper.) Like Aird, the Chinese continue to update their projections. My purpose, however, is not to present a comparative analysis of the various Chinese projections of China's future population. Any of these projections, including the ones cited here, would be consistent with the arguments and conclusions presented in this paper.

In all of the above projections, the assumed number of children for each woman during her childbearing years is assumed to begin in 1980. One child per woman during her childbearing years is too implausible for even these model-builders to accept. But projection 5 makes that assumption.

5. "If the average birth rate *begins* to drop markedly in 1980 and it is reduced to only one child per couple by 1985 *and this continues*" (emphasis added) "the average annual rate of growth between 1980 and 2005 will be 0.4 percent." (The year 2005, rather than 2000, was given in the *Hsinhua* report because that is the year the population is projected to peak and the rate of growth to become zero. Beyond that date China's population falls, totaling 370 million 100 years from now.)

Although I am not a demographer, my common sense and experience doing research on China's economy strongly lead me to conclude that I can ignore the last projection in my analysis. During the last three decades we have seen countless campaigns—a principal means of policy implementation in China—with specific targets. These goals play an important role in mobilizing the masses to move *in the direction* of those targets, but I doubt they are intended to be operational in and of themselves. In other words, I doubt that anyone ever sat down and estimated all the necessary requirements for achieving those targets or their consequences. Yet I do not deny that these targets are important and play a meaningful role in regard to motivations.

I am also skeptical that an average annual rate of growth of 0.8 percent can be achieved between 1980 and the year 2000, as stated in projection 4. According to that projection the annual rate would be below 0.8 percent by the year 2000 and would reach zero by the year 2027, and thereafter be negative. Although my hesitancy in accepting such a low estimate has to do with motivations and human behavior, the *Hsinhua* report itself presents the arithmetic "restricting the general trend of slowing China's population growth":

1. The proportion of young people is high. Calculations based on a sample survey show that of the total population in 1978, about 38.6 percent were under 15 years old, while in developed countries the percentage is only 25 percent or so. The average life expectancy of our people has reached 68 years, but people under 29 years old constitute about 63.4 percent of the total population. This shows that though the natural growth rate of China's population has dropped by large margins over the past several years and has started to shift from rising population growth to stabilized growth, yet our population is still basically increasing (*FBIS*, 15 February 1980, L12).

2. Several population birth peaks have appeared over the past 30 years since the founding of new China. As a result, the birth rate for the years 1954 through 1957 and 1962 through 1971 is several million to 10 million more than that of other years. These people will get married and bear children in 1979 through 1982 and 1987 through 1996 respectively. As a result, we will very likely face new birth peaks during most of the last 20 years of this century. This is particularly true because our natural population growth rate in 1963 reached the peak of 33.5 per 1,000 which will have an important impact on the development of China's population (FBIS, 15 February 1980, L12).

Shifting to a normative approach, the *Hsinhua* report (FBIS, 15 February 1980, L12) goes on to use these projections to point out why the fifth projection must be the target of the Chinese birth control program. That discussion is relevant to the topic of this paper. Because China's population growth has "slowed our socialist construction, the first three [of the projections] are obviously inadvisable." That is, each results in an increase in China's population over the next 100 years. The fourth projection is better, but even according to that projection, "our population would still increase steadily for 47 years. Therefore, at present that plan is not desirable." Only in the fifth projection does the rate of increase fall to zero in the near future (2005). "It will be very difficult to carry out this plan, but *only in doing so* can we achieve zero population growth by the end of this century" (emphasis added). In other words, the basis upon which this target is selected is the desirability of its results, not on its feasibility—which is the nature of most targets.

The demographic projections I have chosen for the purpose of analyzing the economic consequences of China's future population growth are the second and third projections. These are almost identical (in results) to the intermediate and low projections of Aird, and the Aird projections are the ones actually used in this paper because they are available in considerable detail. Aird's intermediate and low projections are presented in Table 1.

Having adopted these projections, I should note that for my purposes the absolute levels are not of concern. I can now proceed to analyze the economic consequences of an increase in China's total population over the next two decades of between 26 and 33 percent (or between 261 and 337 million people), with a concomitant increase in the labor force of 42 to 52 percent (or of 233 to 288 million workers).

TABLE 1 Aird's low and intermediate projections for China's population growth: 1980–2000

Population (millions) and projection	Annual average rate of growth (in percent)	Annual average rate of growth		Absolute increase	Percentage increase
		1980	2000		
Total					
Low	1.2	987	1,248	261	26
Intermediate	1.4	1,033	1,370	337	33
Labor force					
Low	1.8	554	787	233	42
Intermediate	2.1	552	840	288	52

CHINA'S ECONOMIC POLICIES AND PROGRAMS

The economic consequences of these increases involve both the provision of employment for the new entrants to the labor force (the employment side) and the provision of the needs of the total population (the consumption side) within the context of the program for the modernization of China's economy over the next two decades. China's policies and programs for economic development have been characterized by considerable instability and radical change during the last 30 years. Despite the current leadership's assurances that the present set of economic policies is to remain in force in the future, not only are these policies still in the midst of being determined, but also it is highly unlikely that the policies—once formulated in "final" form—will remain unchanged over two decades.¹⁴ Nonetheless, on the basis of

14 Over the past few years extensive discussions have been held and a host of experiments concerning economic reforms have been carried out in China. More than a hundred "fact-finding" teams have been preparing reports for the Economic Commission, which is directly responsible to the State Council. At one time it was believed that the economy could be put back on the track of sustained economic growth by 1981. It was expected that by that time the Economic Commission would have submitted a final set of proposals and plans for the reorganization and modernization of China's economic system. Owing both to political problems encountered in their implementation and economic problems that the implementation has created, this time table has been set forward another two years, i.e., to 1983. Chen Yun, former chairperson of the Economic Commission, has already declared that central control and planning (to meet the needs of the State) should continue for the time being and planning should be done on a short-run basis (five years or less), rather than a long-run basis. The Chinese authorities will therefore focus on solving their immediate economic problems as they go along, rather than look too far into the

Chinese statements in the past year, i.e., since the third session of the Fifth National People's Congress, I believe the following summary is a reasonable approximation of what will be the major course of China's modernization program between now and the end of the century.

The State (i.e., the central government) will continue to mobilize savings for investment by means of the fiscal system; however, the rate of accumulation achieved by this means will be reduced. In current discussions officials cite the rates achieved (over 30 percent) in the two decades following the First Five-Year Plan period as being excessive and refer to the more favorable results obtained during the First Five-Year Plan (when the rate of investment was about 25 percent) as being more appropriate. Furthermore, the structure of the state's investment program will change. The priority given to heavy industry during the past three decades will be reduced, though investment in these industries will still account for the largest share of the State's investment (about 40 percent). Within the heavy industrial sector the industries producing building materials, agricultural producer goods, energy, and producer goods for the consumer-goods industries will receive a higher priority than previously. In the future the sectors that will receive a larger share of the State's investment, at the expense of heavy industry, will be agriculture (about 20 percent), light or consumer-goods industries, transportation, and urban social overhead capital. State investment will decline as a share of total investment in the economy as a result of the increase in the share of profits retained and left to the discretion of local enterprise, the increase in the share of budget revenue retained and left to the discretion of the local level of government, and the central government's decision to allow the local enterprises and units of government to finance investment with bank loans.

As a result of these changes I *project* that the rate of growth of agricultural output will be higher, while the growth rates in both light and heavy industries will be lower (the ratio of the latter to the former being lower) than in the past.¹⁵ Without going through the detailed

future. The present situation is thus one of considerable uncertainty about the future course of the economic system and economic policies over the next two decades.

¹⁵ According to one set of estimates, between 1952 and 1975 agricultural production increased by 2 percent (annual average), producer-goods industry by 11 percent, and consumer-goods industry by 8 percent (National Foreign Assessment Center, 1978:3, 17).

mechanics involved in making these projections on the basis of an econometric model, I will merely project—for my present purposes—agricultural output to grow at an annual rate of 3.5 percent, light industry at 7 percent, and producer-goods industry at 9 percent.¹⁶ Although I have no sound basis for estimating the rate of growth in the services sector, I do know that this sector's development was neglected in the past and is now recognized as one of the bottlenecks to future growth. As a result the rate of growth in this sector will undoubtedly need to be increased in the future, not only to facilitate growth in other sectors, but to provide for the needs of the population and to create employment opportunities as well. My projection in the services sector assumes a rate of growth of 7 percent. Using 1975 values for the output in these sectors, the weighted rates of growth implied by these projections are as follows: agriculture, 3.5 percent; industry, 8.2 percent; services, 7.0 percent; and gross national product, 6.8 percent (Demberger and Fasenfest, 1978:33).¹⁷

It is these projections of China's economic growth over the next two decades that are implied in the current discussions of economic policy and institutional change in the Chinese press. In addition to these crude projections there are four important changes in economic policy that must be considered in an assessment of the economic consequences of China's population growth. First, individuals, collectives, and State enterprises will be encouraged to devote the time and resources available to them beyond that required for fulfilling the State's economic plan to produce goods and services for the market sector. While this market sector will remain "subject" to control by the State

16 The rates of growth for heavy industry have been higher than those for light industry in the past; but rates for heavy industry will fall and rates for light industry will rise, so much so that the latter will become even higher than the former. The reason for this is the existence of serious bottlenecks in the heavy industrial sector. Once these bottlenecks have been eliminated I expect the traditional gap between rates of growth in the heavy and light industries to be reestablished, although the gap in the future will be much less than it was over the past three decades.

17 In a recent paper analyzing the international consequences of China's economic development, Dwight Perkins (1981) answers the question: How fast is China's economy likely to grow in the 1980s and beyond? He states: "In my opinion, if the current emphasis on economic growth is retained by future leaderships, it is reasonable to expect that Chinese GNP growth rates will accelerate to at least 6 and perhaps as high as 8 percent a year over the next decade and even beyond" (Perkins, 1981:6).

authorities, it will provide a significant opportunity for earning income outside the State sector and for providing goods and services for the consumption of the population. Second, although self-sufficiency remains a long-run goal, the attempt to elevate the level of technology in China and close the gap between China and the industrialized countries will mean that, within limits, imports of modern technology and equipment from abroad will be given a higher priority in the future. Over the next two decades these imports are expected to play a role in eliminating the existing bottlenecks in the Chinese economy and in achieving the modernization of the economy. So important is the goal of modernization that the Chinese have accepted the need to rely, at least to some extent, on foreign loans for this purpose. Third, while accepting the necessity of reducing somewhat the rate of investment and more rapidly increasing the production of consumer goods, state authorities believe the modernization of China's military should also be given greater priority. Fourth, in the future the major incentive mechanism for achieving greater efficiency and productivity will be material incentives. In other words, a greater share of the value of goods and services will be retained by the individuals producing them than in the past. Unless it is taxed away by means of direct and indirect taxes, or allocated to voluntary savings, this increase in worker earnings could lead to greater consumer demand. Whether or not this increase in consumer demand rises faster than the output of goods and services depends on the rate of increase in efficiency and productivity generated by the increased use of material incentives.

Several factors are necessary to determine what the effect of the projected economic growth of output will have on consumption. These include: specification of the expected growth of the private versus the State sector, the growth and structure of foreign trade and the volume of foreign borrowing and repayment schedules, the increase in procurements and expenditures for defense, and the increase in consumer income due to the greater reliance on material incentives. Each of these factors is the subject of considerable debate in China and no purpose would be served by trying to provide a more detailed projection on the basis of these discussions. Furthermore, which policies are adopted will be determined, in part, by the economic consequences of China's population growth, discussed below.

Although the projections of output in various sectors presented above provide a sufficient framework for analyzing the economic

consequences of China's future population growth on employment, they do not serve that purpose with regard to consumption. Estimates of gross national product based on Chinese data involve considerable double counting, i.e. of output of one industry that is used as input for the product of another industry. To make consumption estimates one needs to know the available supply of end products that can be used directly to satisfy demand as consumption, government expenditures, net investment, and net exports.

Recent information released by the Chinese clearly indicates the extent to which Western estimates of China's gross national product overestimate national income—that is, the supply of goods and services available for end use. For example, whereas in 1979 China's total gross value of industrial and agricultural production amounted to 617.5 billion yuan, the net value of national production (called national income by the Chinese) in industry, agriculture, building construction, communications, transport, and commerce, was only 337 billion yuan (State Statistical Bureau, 1980:12). Similarly, whereas Western estimates show China's per capita GNP in 1978 to have been US\$443 (1978 dollars), the Chinese reported a per capita national income of only US\$188 in that same year. (For the source of these estimates and an attempt to explain the apparent difference between them, see CIA, 1979.)

I assume that China's national income will grow *at the same rate* as the projected growth of gross national product. Taking the official figure for national income in 1978 and projecting it forward to the year 2000 at the rate of 6.8 percent a year yields a projected national income per capita in the year 2000 of between US\$560 and US\$614 (in 1978 dollars) per capita. (These estimates reflect the intermediate and low population growth projections, respectively.)¹⁸ It is from

¹⁸ Perkins's projection of China's national income (cited in footnote 17), which is based on an annual rate of growth almost identical to that used in my projections, yields a per capita GNP in the year 2000 of US\$1,300 (in 1979 dollars). The difference between Perkins's projection and my own is explained by (1) his assumption of an annual population growth rate of 1 percent throughout the remainder of the century, (2) his use of 1979 rather than 1978 per capita income for the base year of the projection, (3) his increasing the base year per capita income figure by 20 percent to include services, (4) and his assumption of a purchasing power parity exchange rate that makes the value of the yuan approximately double the official exchange rate. This is not the place for a debate over methodology, and it is not necessary. Differences in our estimates due to reasons (1) and (2) are not important in any event. As I am mainly con-

this estimate of national income per capita, not the estimate of gross national product per capita, that the per capita allocations for net investment, government expenditures (e.g., defense), and net exports must be deducted before the goods available for consumption per capita can be determined.

The preceding discussion presents my crude projections of China's modernization implied by the current state of the economy and the current economic policy discussions in the Chinese press. It is this level of economic growth that the present leaders hope to realize as a result of their current policy choices. Having considered the likely course of China's population growth over the next two decades, I now turn to the probable economic consequences of that population growth upon the hoped for program of economic development.

CONSEQUENCES OF PROJECTED POPULATION GROWTH ON THE ECONOMY: EMPLOYMENT

Will the economic growth I have projected for the next two decades accommodate employment for the projected 233 to 288 million new entrants to the labor force during that period? To try to answer this question, I rely on Rawski's (1979) estimates and divide employment into agricultural and nonagricultural employment. Specifically, Rawski estimates that the nonagricultural labor force accounted for 23 to 24 percent of the total labor force in 1975 (Rawski, 1979:39); in my projections I have assumed the proportion outside agriculture to be 25 percent in 1980. Rawski also estimates that between 1957 and 1975 the nonagricultural labor force grew at an average annual rate of 5 percent (Rawski, 1979:37).

Several considerations lead one to expect a reduction in the future rate of growth; others indicate an increase. Those that indicate a reduced level of growth on the demand side include the lower rate of investment and slower rate of growth of industry than in the past; the attempt to modernize (that is, the increased emphasis on the productivity of capital and labor in industry); the attempt to increase efficiency

cerned with the availability of consumption goods, not services, in my analysis, differences due to reason (3) are not really important either. Most of the difference in our projections is due to reason (4), which is important mainly if one is making international comparisons. It affects the assessment of how well off the Chinese are *now* relative to people in other countries; it does not affect my projection of how well off the Chinese will be in the year 2000 compared with how well off they are now.

and apply tests of profitability in industry (calling for the breaking of the "iron rice bowl" and allowing unproductive workers to be laid off, as well as allowing enterprises to hire their own workers); and the increase in specialization as opposed to the creation of all-round, comprehensive units of production. On the supply side, factors arguing for a reduced rate of growth include the greater emphasis upon and the success of birth control programs in the urban sector. The factors conducive to a faster rate of growth of the nonagricultural labor force on the demand side include the more rapid growth of the service (labor-intensive) sector; the fostering of urban collectives for producing goods and services to meet market demands; and the promotion of sideline (nonagricultural) production in the rural areas for sale in urban markets and for export. Factors arguing for a faster rate of growth on the supply side include a more rapid pace of urbanization due to reduced controls over migration to the urban areas and the creation of urban centers in the rural areas. Finally, in regard to the balance between supply of and demand for the nonagricultural labor force, although a program for assigning urban highschool graduates to the countryside (for example, to state farms in the northeast) has been reintroduced, unemployment in the urban areas should also increase as a share of the nonagricultural labor force over the next two decades.

On balance I believe the annual rate of growth of the nonagricultural labor force will decrease to 4 percent. Rawski (1979:113-14), in contrast, argues that it will remain at 5 percent. A possible explanation for our differing projections is that Rawski made his projections in 1978, before many of the recent readjustments in China's economic development were announced.

Using my more "pessimistic" projection of a 4 percent growth rate in the nonagricultural labor force, I estimate that nonagricultural workers would number approximately 300 million by the year 2000. Given the growth of population projected over the next two decades, this means the Chinese must find productive employment for 72 to 125 million new peasants (according to the low and intermediate population projections, respectively).¹⁹ These same population

19 A 1981 Chinese discussion of the need to develop small towns and provide nonagricultural employment opportunities in the rural areas cites an unidentified projection that shows the need to find employment for more than 100 million peasants by the end of the century. "According to preliminary estimates,

projections indicate an average annual growth rate for the agricultural labor force of 0.8 percent and 1.3 percent, respectively. Combining these various output and labor force projections, the implied average productivity per worker would increase at a rate of 3.9 percent a year in the nonagricultural sector and between 2.7 and 2.2 percent (low and intermediate population projections) a year in the agricultural sector—assuming full employment of the labor force is to be maintained.

Although a 4 percent annual increase in the average productivity of the nonagricultural work force would not be an easy accomplishment, it would at least be consistent with the new emphasis on specialization, modernization, and efficiency in the nonagricultural sector. The achievement of an average annual increase of 2.5 percent in agricultural labor productivity (while the size of the agricultural labor force is growing at a rate of 1 percent a year) is feasible but not very probable. First of all, little new land is available to be brought into cultivation, and even that will be more than offset by land lost to irrigation projects, industry, and urbanization. Thus any increase in output must be obtained largely by means of increased yields. From 1957 to 1975 increased yields were achieved mostly through labor-intensive innovations, which gave employment to the 100 million new peasants added to the agricultural labor force during that period. Rawski estimates that, as a result, there was little or no increase in the average annual product per agricultural laborer between 1957 and 1975 (Rawski, 1979:119).

Agriculture experts interpret the history of agricultural development as a series of yield thresholds and view China as having already surpassed, in many areas, the yield threshold of labor-intensive agriculture. Most countries have found it difficult to increase yields beyond that threshold without the adoption of modern scientific agricultural technology—hybrid seeds, mechanized farm equipment, mechanized irrigation and steady supplies of water, chemical fertilizers, etc. Many China specialists (including Dwight Perkins and myself) are somewhat pessimistic about the ease with which this transformation from China's

there will be more than 100 million surplus laborers in the countryside by the end of the present century" (*FBS*, 11 February 1981, L21). I would refer to this source to support the accuracy of my own projections here, but inasmuch as an original draft of my paper was discussed with Chinese participants at the China Population Analysis Conference in May 1980, the unidentified projection may possibly be my own.

traditional labor-intensive agriculture to modern scientific agriculture can be made. To the extent that the Chinese are successful in achieving the scientific transformation of their agriculture, they can expect a 3.5 percent annual increase in yields over the next two decades. However, that success cannot be expected to increase the demand for agricultural workers by another 100 million workers as it did in the past.

It is partly in response to this problem that the Chinese encourage the collectives to expand employment and production possibilities in animal husbandry, fishing, industry, commerce, and sideline activities. These noncultivation activities can, of course, expand employment opportunities for the agricultural labor force. Yet such expansion has its limitations. For example, the expansion of animal husbandry will place a drain on grain supplies, and the Chinese admit they have already been depleting the available stock of fish through overfishing. (This is their explanation for why fish output declined in the 1970s.) Furthermore, once the policy was introduced of allowing the peasants greater freedom to choose how to allocate their resources in production, they quickly reacted by pursuing the more profitable activities. As a result the cultivated area devoted to food grains decreased and food grain output declined. Thus in early 1981 the Chinese were again citing the need to concentrate on grain production, and to restrict specialization in the development of animal husbandry, fishing, and industrial and commercial sideline activities to traditionally nongrain areas, or to grain areas only after their grain production targets had been met.

Even if one allows for a greater degree of diversification and specialization in the agricultural sector than has been the case in the past, I do not believe that the problem of open or disguised unemployment can be avoided. Furthermore, whatever judgment is made about the extent to which the Chinese were successful in creating employment for the large increase in China's labor force in the past, that problem will become much more severe—even if their modernization program is successful. In short, one serious economic consequence of the population projections covering the next 20 years is the problem of open or disguised unemployment in both the urban and agricultural sectors, especially the latter.

This consequence will in turn, I believe, exert pressure to revert to the labor-intensive, and certainly less efficient or less productive,

growth policies of the past. This assessment does not go so far as to argue a recurrence of another “great leap,” that is, to mobilize China’s labor force to achieve a labor-intensive assault on the obstacles to economic development. Nonetheless, the inability of the Chinese “to have their cake and eat it too”—that is, to achieve both full employment and modernization—will create serious problems and could easily result in a trade-off of less rapid and sustained economic growth for more employment.

CONSEQUENCES OF PROJECTED POPULATION GROWTH ON THE ECONOMY: CONSUMPTION

In aggregate terms, to the extent that the projections presented here for China’s economic growth over the next two decades are realized, the arithmetic for the interaction of population and economic growth looks much more favorable. According to estimates presented in the section on projections of future population growth, national income per capita would increase at an average annual rate of 5 to 5.5 percent (intermediate and low population projection, respectively). In order to determine consumption per capita, it is necessary to reduce these estimates by investment, government expenditures (excluding public consumption), and net exports. Yet the prospects for improvements in the average standard of living are quite favorable.

The share of investment in national income is expected to be lower in the future than in the past and the structure of government expenditures to shift in favor of public consumption (housing) and investment in the consumer-goods industries. Inasmuch as defense is one of the four modernizations,²⁰ one could also argue that there will be a higher rate of expenditures on national defense. Whether these higher expenditures will involve a greater *share* of national income, however, is open to question. I agree with those who argue that the size of China’s armed forces is unlikely to expand very much; and as for the modernization of military equipment, this will be done selectively. Thus I believe China’s defense expenditures over the next two decades will increase but that their share of national income will not increase significantly. More important will be a change in the structure of those expenditures.

20 “The four modernizations” is the slogan given for China’s economic development program over the remainder of this century, which calls for the modernization of China’s agriculture, industry, defense, and science and technology by the year 2000.

As for net exports, at the present time Chinese purchases of foreign technology and equipment have run up a sizable import surplus. Over 20 billion U.S. dollars in available foreign loans have been negotiated. Yet the Chinese have indicated they are well aware that large-scale borrowing from abroad soon leads to sizable repayment requirements. Therefore they have slowed the pace at which contracts for complete plant projects are being signed and limited their drawings upon the loan facilities available to them. At the same time they are creating various schemes that will allow foreign investment in China, as well as payment for foreign projects by means of compensating trade. Thus although the creation of a large foreign debt over the near future possibly could lead to the need to maintain a sizable export surplus, I do not believe this will be the case. Rather, I believe the Chinese will avoid the extreme foreign financial dependency that has plagued several other developing countries and will—in the long run at least—continue the policy of basic self-sufficiency, i.e., balanced trade.

Finally, the arguments in favor of an increase in the average standard of living are further supported by the emphasis now given to State enterprises and collective units to make profits by producing goods for the market (once the State plan has been met). In addition the unemployed are urged to form collectives for the production of goods and services to meet consumer needs. Individuals and agricultural collectives are encouraged to engage in sideline production for this same purpose. The new ideological and policy justification given to markets and income-earning activities, mostly directed at mobilizing underemployed resources to meet underfulfilled consumer demand, should do much to promote both higher individual income levels and, simultaneously, higher standards of living.

According to the preceding arguments, projections of China's population and economic growth over the next two decades would indicate considerable improvements in the average standard of living. Below the surface of these aggregate statistics, however, are several crucial problems that reflect the true economic consequences of China's population growth. For example, while per capita incomes and consumption are expected to increase over this period, the per capita availability of basic necessities, especially food grains, may not grow nearly as fast. In fact, despite the favorable aggregate projections presented in this paper, these could readily be consistent with a constant level of food grains per capita.

Since 1949 the growth of food grain production has been considerably less than the growth for the total value of agricultural production. Owing to the leadership's desire to keep the price of necessities low, while production costs per unit of output have increased, the production of food grains has a relatively low profitability. In the past growth in food grain production has been obtained, in part, by the use of cropping plans. These plans involve about 80 percent of the land and state procurement quotas assigned to the communes. In principle at least, these plans are supposed to be the result of consultations with the peasants, adapted to fit the needs of the local unit. Nevertheless, I believe there can be little disagreement that in the past grain acreage and output have expanded because of a considerable amount of pressure applied by local cadres and local authorities.

Now all this is supposed to be changed. The masses are to be consulted, plans are to be for their reference, quota sales are not to be arbitrarily raised, prices for these quota sales have been increased, specialization in output is being encouraged, etc. Nonetheless, my own reading of the Chinese press, as well as discussions with Chinese administrators, leads me to conclude that the nature of the problem has not changed. In order to meet "the needs of the State," plans for cropping and quota sales will continue; and, having been seriously shaken by their experience in raising prices for quota sales of grain, the policy-makers will maintain "relatively" low prices for necessities.

In addition, to the extent that grain supplies per capita do increase, the demand for these supplies in the nonagricultural sector will, I expect, rise even faster. Not only will urbanization and industrialization continue to increase more rapidly than agricultural production, but also the new emphasis on wage and bonus incentives provided to workers in state enterprises has actually favored the urban-industrial sectors.²¹ In the private market sector the peasant should do much better than those in the urban sector. Yet, owing to these developments, the Chinese press is already beginning to emphasize the need for price controls in these markets. Finally, the increased dependence on foreign trade and resulting growth of imports has led to a faster growth of

21 In 1977-79 the percentage increase in the per capita income of peasant *households* (13 percent a year) was somewhat larger than that for industrial workers' *households* (9 percent a year). Inasmuch as the absolute level of peasant household per capita income was less than half that for industrial workers' households, the absolute increase in the former was only slightly more than half that in the latter.

exports than in the past. China's exports, of course, still rely heavily on raw and processed agricultural products.

Developments in the foreign trade sector will also constrain the growth in the supply of necessities to the rural labor force. In the past the steady increase in imports of foodstuffs and the reduction in China's *net* exports of agricultural products have relieved pressure on the extraction of a net agricultural surplus for use in the nonagricultural sectors. At present the Chinese claim that 40 percent of the food grain needs of some cities is met by imports. In the future, however, the need to increase exports to pay for much higher levels of imports will increase the demand for the export of agricultural products. In addition the priority for allocating scarce foreign exchange for imports of foreign industrial technology, industrial producer goods, and repayment of foreign loans will compete with demands for imports of food grains. Thus, to the extent that the supply of food grains per capita does increase, there will be considerable pressure to use this increase to replace imports currently required to maintain the standard of living in the urban areas.

Therefore, although the aggregate trends in population growth and production over the next two decades may indicate a 5 percent increase in the per capita standard of living, the growth of food grain supplies per capita will continue to be a problem, even if those economic projections are realized. There is, moreover, an additional consideration that will make slow growth in the availability of food grain per capita an especially serious problem for significant portions of both the urban and the rural populations. The system of price control and rationing will continue to assure that food grain supplies will be somewhat equitably distributed. Yet the distribution of food grains and basic necessities is still related to individual income and, in the rural areas, to the level of output in the production team. The net effect of changes in economic policies over the past year should be to worsen the distribution of income among individuals, between urban and rural areas, and among production teams in the rural areas. To some extent these new economic policies will also generate inflationary pressures. In other words, some individuals and units of production can take better advantage of the new system of material incentives than others to increase output and income. Although those at the lower levels of the income distribution may not suffer an absolute decline in their standard of living, the differences in the rate at which their

incomes increase relative to others' may be quite substantial. In addition, as I argued earlier, the phenomenon of open unemployment may become more widespread than in the past.

To summarize these arguments, my projections on the consumption side do not indicate that things will get worse. Over the next two decades Chinese economic growth should be sufficient to provide a higher per capita standard of living, for a population growing at a rate below 2 percent a year. Nonetheless, improvement in the food grain component of the standard of living will be much more limited, especially for a sizable proportion of that growing population. These problems would be considerably reduced if China's leaders were to undertake a major price reform that gave preference to food grain output and peasant income from agricultural production in the collective sector. They would be made worse, however, if once the bottlenecks within industrial production were removed, those leaders restored the traditional communist preference for rapid industrialization. My own judgment is that these current economic policies reflect the harsh dictates of both economic and political necessity more than a change in priorities.

On the consumption side one could argue, as I did with regard to employment, that the reliance on material incentives, the slow growth in per capita availability of food grains, and a worsening of the inequality of income distribution could lead to a sizable portion of the population giving support to the Maoist policies of the past. Although Maoist economic policies did not really feed anyone better, they did make a virtue out of poverty and, more important, did emphasize the transfer of existing resources from richer areas to poorer ones, and the more equitable allocation of new resources between them. Yet despite the reported obstacles to the implementation of current policy by Maoist cadres in certain areas, in the absence of Mao himself I do not place a high probability on a return to either the ideology or the economic policies of the Cultural Revolution.

The ascendancy of economic modernization as the primary objective and the considerable popular support for the new economic policies aimed at achieving that objective will undoubtedly prevail. A more serious implication of the probable difficulty in achieving a more rapid increase in the food grain supplies per capita is the possible need to readjust the economic modernization program to relieve unfulfilled demands or expectations. Making this adjustment would involve the reduction of agricultural surplus extracted for use in other sectors and

an increase in the share of imports of food grains in total imports, at the expense of imports of producer goods.

CONCLUSION AND DISCUSSION

Much of the analysis and argument in this paper relies on the projections of China's population and economic growth I have chosen. My arguments about the economic consequences of China's population growth would be more pessimistic (optimistic) if I had chosen a higher (lower) estimate of the rate of growth of China's population and a lower (higher) estimate of the rate of growth of China's economy. My purpose, however, has been not to forecast those rates of growth, but to point to the nature of the economic consequences and implications of China's future population growth. To do this I believed it necessary to specify projections of those rates of growth, based on the current state of the economy and current economic policies. It is important to note that the results turn out to be very sensitive to the assumptions I have made; small changes in the rates of growth I have chosen for my projections could quickly eliminate the economic consequences I have suggested. In all honesty I feel much more confident about the economic consequences I have presented than the specific projections, and I believe that China will encounter much more severe problems of unemployment or disguised unemployment in the future than in the past. China will find it difficult to achieve relatively rapid increases in food grain consumption per capita and the problem of income inequality will become more serious. I am much less confident in my projections that national income per capita in China will be US\$614 (1978 dollars) by the year 2000.

These arguments about the economic consequences of China's future population growth provide, I believe, an ample explanation of the desirability, if not the need, for reducing birth rates in the near future to an average of one child per family. Desires and needs, however, are not the same as the means for achieving that result. Furthermore, the benefits of that objective are desired and needed in the near future; they are less relevant in the long run. The Chinese need a lower birth rate now. I see no economic, social, or political desire or need for China to have an objective of a population totaling only 370 million people a hundred years from now.

Finally, my analysis of the economic consequences and implications of China's future population growth has been made totally within the

context of China's own historical development and evolution. My emphasis has been on problems that can be expected to arise in the future, not on listing past accomplishments or future gains. A record of population growth below 2 percent and economic growth greater than 5 percent over several decades is impressive, especially when compared with the record of other developing countries with large populations. Although per capita food grain consumption has not increased significantly in the past and is predicted to rise slowly in the future, its distribution has been more equitable than in other developing countries. In this manner the Chinese have avoided the widespread famines that occurred frequently in the pre-1949 period. And although I predict that unemployment will be more of a problem in the future, its relatively low magnitude should remain impressive compared with the situation in many countries of the Third World. In addition, public health and education programs, especially those in the rural areas, must be considered a meaningful improvement in the relatively low standard of living of China's peasants. The process of learning-by-doing, in addition to the educational and public health programs, has led to a considerable improvement in the quality of the labor force - an important factor in determining the probable success of China's modernization program.

I believe most observers would agree that China's program of birth control is one of the most unusual and successful among those of developing countries. How rapidly and how far China's birth rate will fall is the subject of much debate. What I have tried to do is to indicate—in terms of economic consequences—why and how the answer to that question is of considerable importance to China's modernization program over the next two decades.

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