

## Development Traps in Traditional and Modern China

Daniel Little  
Association for Asian Studies  
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China's rural economy experienced a long slumber throughout the Ming and Qing dynasties: production techniques were essentially unchanged and outputs rose just sufficiently to keep pace with population growth. Moreover, what growth did occur resulted largely from more intensive cultivation rather than rising farm productivity.<sup>1</sup> Several important theories have been advanced to account for this pattern of longterm stagnation. Mark Elvin's high-level equilibrium trap, Kang Chao's demographic trap, and Victor Lippit's analysis of rural property relations each purport to identify major obstacles to development within the pre-twentieth century agricultural economy. Elvin emphasizes the exhaustion of traditional agricultural technologies; Chao stresses constant population pressure on rural surpluses; and Lippit focuses on the failure of rural elites to reinvest in agriculture.

These theories represent two poles of a common distinction drawn by economic historians of China between *technological* and *distributional* theories of economic change in China. The former hold that China's economic stagnation is best explained as the result of resource scarcity and population growth that led to widespread poverty, low economic surpluses, and a consequent inability to introduce modernized production technologies. The latter hold, by contrast, that the traditional Chinese economy generated substantial surpluses which could in principle have funded economic development; but that those surpluses were used by the elite classes in unproductive ways.<sup>2</sup> In this case it is facts about the institutions of power and authority through which economic surpluses are managed that are critical--not the absolute size of the surplus.

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<sup>1</sup> See Dwight Perkins (1969) for a careful reconstruction of this history of agricultural stagnation. Philip Huang provides an extended argument to this effect for the Yangzi delta (Huang 1990).

<sup>2</sup> For brief synopses of the distributional and technological schools, see Riskin (1975:56-64), Myers (1970), and Huang (1985:18-21). See also Joshua Fogel's survey of Japanese historiography on the Qing economy, which suggests that Japanese scholars have strongly emphasized the distributional model--production relations, surplus extraction, and class (Fogel, ed. 1984).

Since 1949, however, China's development profile has changed in a number of ways. Per capita incomes have risen; the investment rate has been high over a sustained period of time; industrialization has occurred; the food system has strengthened and stabilized; and substantial progress has been made in ensuring distributive equity.

My goal in this paper is to reevaluate the development traps named above in the light of post-revolution economic experience. Some factors identified by Elvin, Chao, and Lippit remain prominent: for example, Chinese agriculture is still characterized by high man-land ratios and low-level agricultural technologies. Other features have changed dramatically--for example, the restructuring of rural property relations through land reform, collectivization, and the rural reforms of the 1980s. How have new economic institutions either facilitated or impeded development? How has government policy attempted to handle the population pressures on economic development? How has the Chinese government handled problems of investment in rural development?

It will emerge that there are important continuities through the development experience of both traditional and modern China. And many of the changing agricultural policies witnessed in the past forty years in China may be seen as responses to the barriers to development contained in the traditional economy. On the other hand, a new set of barriers to development have emerged that have little counterpart in the traditional economy: shortcomings of centralized planning, incentive problems created collective production institutions, and counterproductive applications of centralized political power.

### **Development traps in traditional China**

Let us begin by reviewing several influential explanations of China's agricultural stagnation prior to 1949. These revolve around three factors: population size in relation to resource endowment, constraints on investment, and the character of the institutions through which economic activity took place.

#### High-level equilibrium trap

Mark Elvin (Elvin 1973) argues that traditional China was caught in a "high-level equilibrium trap." The economy was organized around very smallscale units of production in both agriculture and manufacture. Production took place using traditional production techniques. And these techniques had been adjusted over centuries-long practice to provide the greatest possible output for a given amount of scarce inputs (land, in the case of agriculture).

Finally, population had expanded to the point where optimal use of traditional techniques just managed to satisfy the subsistence needs of the population. Figure 1 illustrates this historical process. At any given time in the development of an agricultural system the process of cultivation may be characterized in terms of the techniques available (forms of fertilizer, techniques for processing the soil, implements for cultivating and harvesting, techniques of crop storage, etc.); the forms of organization and labor use in use; and the forms of labor skill available. The options available in each of these categories constitute the universe of possible forms of cultivation in those historical circumstances; and different cultivators can select different mixes of techniques, skills, and organizational forms through which to cultivate their crops. Figure 1 represents output as a function of labor inputs for a given set of techniques of production. Each curve  $P_i$  represents a different practice, or mix of inputs per acre (labor, capital, fertilizer; Elvin 1972:171), and the curve plots output for a given level of labor input. The shape of each curve represents the workings of diminishing marginal returns in agriculture: given that land is fixed, adding one worker to the production process increases the aggregate output, but less and less the more labor is already invested in the process. The significance of the movement from  $P_1$  to  $P_2$ , then, is that the latter curve represents a more efficient mix of traditional techniques (practice); for a given input of labor the output of grain is greater than for the same labor using practice  $P_1$ . We may thus look at the progression from  $P_1$  to  $P_2$ ,  $P_3$ , etc., as a historical progression through which cultivators “fine-tune” the resources and techniques available to them.<sup>3</sup> Each refinement produces a greater aggregate output for a given level of input, and is capable of supporting a larger population of cultivators. Curve OT represents the potential output feasible for the optimal mix of all factors; it is the ideal limit of the given technology.  $E_T$  is the point that Elvin describes as a “high-level equilibrium trap.” This state was a high-level state, in the sense that production technologies and practices had achieved high levels of output by international comparative standards. And it was a stable equilibrium: no further productivity enhancements were possible without major technological innovation, and there was little social surplus that could be deployed to finance the discovery and diffusion of new technologies.

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<sup>3</sup> “The constant managerial decisions needed for fine technical tuning were thus in the hands of those closest to the process of production and most directly motivated to take them effectively” (Elvin 1982:14).

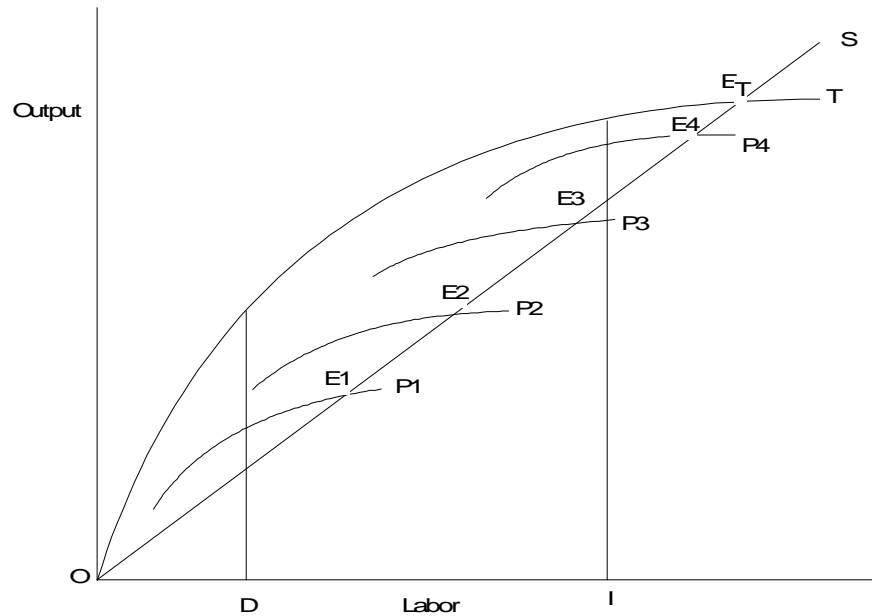


Figure 1  
The high-level equilibrium trap  
Source: Elvin 1973:313

### Population trap

Kang Chao (Chao 1986) offers an analysis of Chinese agricultural stagnation that has much in common with Elvin's account, but places greater emphasis on population dynamics. In *Man and Land in Chinese History* he argues that the main elements of China's economic history, including the dominance of small producers, labor-intensive techniques of production, and technological stagnation since the twelfth century, are the effects of a steady population increase over a period of two thousand years and a consequent decline in the land-man ratio. As labor became abundant and resources--particularly land--became relatively scarce, Chinese farmers and handicrafters were under increasing incentives to adopt labor-intensive production techniques and were presented with corresponding disincentives towards introducing efficient labor-saving innovations.

Chao's argument may be summarized in the following terms. First, there was an endogenous and culturally-determined tendency for population to increase--leading to a declining man-land ratio. The bulk of traditional Chinese agriculture and handicraft production was organized around family units rather than managerial units. Managerial units are organized to produce

the greatest profits, making use of factors at their market-determined price (including wage labor). This implies, using standard marginalist tools, that managerial units will make use of labor power up to the point at which the marginal product of labor is equal to the subsistence wage. However, family units (farms and workshops) treat labor as a fixed factor, and therefore continue to expend labor time beyond the point at which the marginal product of labor equals the subsistence wage. Family farms and workshops are “self-exploitative”: they continue to expend family labor whenever the marginal product, though extremely low, is greater than zero. “As the man-land ratio rises, farmers tend to adopt more labor-intensive cropping systems and farming techniques” (Chao 1986:12). Family farms will spend more labor time on weeding, interplanting, etc., to get small increments in output. In many circumstances this entails that family farms are more land-efficient than managerial units: they produce a greater crop for a given quantity of land. The rate of return on a managerial farm is lower, under these circumstances, than the rate of return on a lease contract in which a family unit leases land from a landowner. “The predictable result of such a situation would be a gradual shift from owner cultivation of land to tenant farming (Chao 1986:12). This dynamic led to technological stagnation (since peasant farmers were induced to select labor-intensive innovations over labor-saving technologies). And it led to a system that strongly favored tenurial ownership rather than managerial farming--reinforcing the tendency to stagnation by severely limiting the flow of investment into agriculture.

#### No-surplus trap

Elvin and Chao share the technological view that Chinese economic stagnation derives from the combination of large population and low labor productivity. This combination produces the result that there is no substantial surplus available for investment in agricultural modernization. They present a picture of rural society in which subsistence-level incomes are virtually universal and the population as a whole is consuming virtually the whole of the social product. In this condition modernization of agriculture is impossible; the investment funds needed for seeking out and adopting innovations are absent.

The no-surplus trap presupposes a very low level of stratification in the rural economy: the vast majority population is involved in small-scale cultivation or handicrafts, and income on each unit of production is driven to the level of bare subsistence. This is an unreasonable assumption, however; there persisted significant stratification of land and wealth throughout Chinese rural history. These inequalities rested upon a system of surplus extraction through rent, usury, and taxation; the surplus-extraction system permitted

landlords, moneylenders, and the state to confiscate most of the rural surplus for their own use. Victor Lippit shows (Lippit 1978; Lippit 1987) that it is plausible to conclude that roughly 30% of the rural product was available as potential surplus within the traditional economy; and surplus-extraction institutions successfully made this surplus available to the state and a small class of relatively affluent landowners, merchants, and officials.

“Unproductive elites” trap

The previous point suggests that the obstacle to technical innovation is *not* the absolute absence of investment funds; so we need to ask what prevented persons who controlled the available surplus from investing it in rural development. And this question, in turn, suggests that we analyze the institutional arrangements through which the farm economy was organized, in order to determine what groups controlled the social surplus. Victor Lippit makes use of a surplus-extraction framework to analyze the traditional Chinese rural economy. The main elements of Lippit’s theory of underdevelopment may be put in these terms. First--contrary to Chao, Elvin, and Myers--Lippit maintains that there was a sizeable surplus within the traditional agrarian economy, and that this surplus was effectively extracted from peasants and artisans by an elite class. The mechanisms of extraction differed--rent, interest, taxation and corrupt tax practices--but the effect was the same: to transfer from the immediate producer to a small elite class some 25-30% of the total rural product. This concentration of income into the hands of a relatively small class could have provided the investment funds needed for agricultural modernization if the elite had used its wealth in this way; but the elite did not do so.<sup>4</sup> For when we examine the class system of traditional China Lippit argues that the elite constituted a rentier class, deriving income from office and ownership of property, and that this class was by and large wholly separated from the production process. Absentee landlords lived in towns and cities and had neither the knowledge nor the inclination to concern themselves with technical change; they already controlled a large surplus, and because of Confucian disdain for farming and manufacture lacked an incentive to modernize production. “Thus in China there were no distinct elements within the elite to champion development. Rather, there was a strong consensus in favor of preserving the status quo” (Lippit 1987:97).

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<sup>4</sup> “Indeed, the central question we must ask is why, given the substantial investment potential indicated by the size of the surplus, so little investment, modernization, and technical progress actually took place” (Lippit 1987:72).

The surplus-extraction model has three chief premises. First, it asserts that there was in fact a sizeable economic surplus created by the traditional economy, over and above the subsistence needs of the cultivators and producers. Second, it holds that rural society was substantially stratified, containing a small elite class and a large class of poor peasants and workers, and that the elite managed to appropriate the surplus for its own purposes. And finally, this model maintains that the cultural and economic values that governed the consumption behavior of the elite were such as to discourage the elite from investing the surplus in productive economic ways--infrastructure, capital improvements, irrigation, etc. If these assumptions are substantiated, then a pattern of economic stagnation follows fairly directly. Producers (peasant farmers) lack the funds necessary to invest in more efficient technologies; while the elite group lacks the incentive to do so. As a result, the spectrum of innovations that would lead to economic development are blocked. On this account the central obstacle to economic development in traditional agrarian China was posed by the institutions governing the production process, and in particular the social-property system determining the pattern of investment in agriculture.

On this account, the central obstacle to development in traditional rural China was the structure of property ownership, and the resulting incentives and powers imposed on the various class actors within the rural economy. This property system established a form of surplus extraction that permitted landlords and the state to capture the bulk of the rural surplus. Small peasant producers were therefore unable to invest in agricultural innovation, and the elites controlling the surplus lacked the incentive to do so, preferring instead to invest in urban property, office, and luxury consumption.

#### Problems with the state

Finally, E. L. Jones argues that economic stagnation in traditional China derived from features of the state's behavior (Jones 1987 [1981]). He holds that the effective rate of taxation was sufficient to depress productive investment in more efficient forms of agriculture; he holds that the state was increasingly unable to support infrastructure (water works, granaries) through which higher farm productivity might have resulted; and he holds that the state's interference with property rights (particularly in industry and commerce) impaired incentives towards profitable investment. In common with North and Thomas (North & Thomas 1973), Jones's premise is that the state's function in economic development is limited but critical; it should secure property rights and it should fund public goods vital for economic progress. And, in Jones's estimation, the Chinese state failed in providing these functions, and economic stagnation was the consequence.

In short, three families of obstacles have been thought to have impaired Chinese economic development prior to 1949: factors having to do with the population-resource ratio, factors having to do with the institutions governing the production process and the surplus-extraction system, and factors having to do with the economic policies and administrative capacity of the state. Let us turn now to an overview of economic development in China since 1949, with particular attention to these parameters.

### **What does development require?**

Let us consider briefly the main tasks of rural development in any developing society. Central among these are raising farm output, enhancing food security, and increasing rural incomes. A second set of goals that were taken particularly seriously by the Chinese state after 1949 involved improving equity in the distribution of wealth and income. Finally, developing economies are concerned with various aspects of economic modernization, including particularly the introduction of more efficient production technologies and the facilitation of structural transformation from traditional production sectors to modern production sectors.

There is another aspect of development policy formation that is often overlooked by development economists; this is the role of political goals within the development process. Regime stability, security interests, and the domestic political interests of the ruling party all play an important role in development policy formation in the developing world. In China we may add to this list the set of ideological goals that have driven policy at various points: creation of a new man, reducing the social importance of material incentives, and enhancing the prestige and leadership role of the CCP.

What is required in order for these development goals to be achieved? First, it is evident that most of these goals require the introduction of innovations increasing productivity in agriculture, particularly of land and labor. This is the kernel of truth in Elvin's argument: through long adaptation, Chinese agriculture had adjusted in such a way as to extract the highest possible yields from traditional technologies and inputs. In order to enhance China's food security it was necessary that grain outputs should increase at faster than the rate of population increase, and this required the introduction of modern technologies and inputs into cultivation. These include particularly adoption of modern seed varieties, chemical fertilizers and pesticides, power machinery, electrification, and the extension of irrigation. These innovations were available to Chinese planners from the 1950s forward (and in fact Chinese agronomists themselves discovered some of the new rice varieties of the green revolution), so the critical factor is diffusion of these innovations into

widespread use. And this in turn depends in large part on the quantity of investment in agriculture. (It also depends on the creation of effective agricultural extension services that succeed in bringing innovations to primary cultivators.)<sup>5</sup>

A second means of development has to do with the organization of the institutions of production: the size of the unit of production, the investment funds available to the unit, the incentives defining the environment of choice of the participants, and the role of market processes in directing production decisions. Here the Chinese experience is highly distinctive among developing countries: household farms giving way to cooperatives, then collectives, then communes, and finally households again. Chinese development policy has shown perhaps an excessive readiness to introduce massive changes in the organization of production; thus the rapid collectivization during the Great Leap Forward precipitated horrendous disruption in the rural economy, leading to collapse in the grain supply and largescale famine.

A third means of development focuses on the infrastructure of the rural economy: the efficiency and cost of transportation, the marketing system, and the system of grain storage. Here the role of the state is generally reckoned to be large in any developing country, since these features of the economy have many of the properties of public goods. But in an economy in which a fifth of the harvest may spoil during storage or in which the cost of transport from rural market to urban consumer is equal to the cost of growing the grain, development in these areas can have a major effect on output.

Through what policy tools might a state within a developing society attempt to reform technology, organization, and infrastructure? There are various dichotomies available: for example, plan versus market, compulsion versus voluntary adoption, or national policy versus regional variation. Throughout much of the post-1949 decades China's state has adopted central planning, state-set prices, and compulsory organizational forms. Because of an ideological mistrust of market mechanisms, the Chinese state has often attempted to manage the economy without the use of markets, prices, and profits. Relying on centralized ministries instead, the state has attempted to implement its economic policies through bureaucratic administration from center to periphery.

The post-Mao reforms are significant for many reasons; in this context it is particularly noteworthy that they represent the Chinese state's effort to

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<sup>5</sup> See Mellor (1976) and Hayami and Ruttan (1985) for discussion of the problems of implementing new technologies in agriculture in the developing world.

reintroduce elements of market organization into the rural economy, and they represent yet another organizational reform (selecting the household as the basic unit of production).

#### China's modern development profile

China's development profile since 1949 has been dramatically different from the first half of the twentieth century.<sup>6</sup> It is not possible to review the whole complicated story here, but several central themes emerge, and the overall record is mixed. On the one hand, the economy has shown respectable rates of growth, poverty alleviation, reduction of inequalities, suppressed population growth, and high rates of savings. Seen from this perspective, China represents a strong model for other developing countries. On the other hand, China's economy during this period shows some crucial flaws as well. Growth has not been based on rising productivity but rather extensive expenditure of capital and labor. Much of this expenditure has been of low efficiency, producing products of poor quality and diversity. The central planning process has produced some of the same problems of allocative inefficiency to be found in the Soviet system. Rural incomes witnessed little improvement until the post-Mao reforms. Urban-rural inequalities have remained significant (though they have declined since 1978). And tumultuous political events (the Great Leap Forward, the Cultural Revolution, and the democracy movement of the last few years) have disrupted the economy and the process of economic planning. Let us look briefly at some of the most salient characteristics of this development experience.

#### *Institutional reform*

As the CCP pursued and consolidated power in the late 1940s and early 1950s, a program of land reform redistributed land and farm capital from landlords and rich peasants to poor peasants. The lands of landlords, and to a lesser extent rich peasants, were confiscated and redistributed to poor peasants. According to Robert Dernberger, "By the end of 1952 all rented land (about 40 percent of China's cultivated area) had been redistributed to poor and landless

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<sup>6</sup> For a valuable survey of this historical experience of development see Carl Riskin, *China's Political Economy: The Quest for Development since 1949* (1987). It should be noted that Tom Rawski argues to the opposite conclusion. He holds that growth and investment were occurring in Republican China in the 1930s as a result of normal market-driven economic processes (Rawski 1989).

peasants” (Dernberger 1982). However, the “land to the tillers” program was only the beginning of the agrarian reform. The next step was the creation of “Mutual Aid Teams” (MATs)--small groups of households which were encouraged to exchange draught animals, labor, and tools (Shue 1980:145). MATs were designed to build upon traditional modes of cooperation in Chinese village life; but they were also intended to begin to establish a basis for more extensive cooperation and collective ownership in the future. MATs were confronted with several administrative tasks almost immediately: assigning work points and compensation for contributions of draft animals and tools, and coordinating the expenditure of labor and other resources efficiently. This package of rural reforms had the potential for dramatically improving the performance of agriculture, particularly when supplemented by rural credit, marketing coops, and the like. For under these circumstances small farmers have both the incentive and the capacity to increase output and productivity.

The next major step in the process of Chinese agrarian reform was the creation of cooperatives for marketing (Supply and Marketing Co-op) and credit (Credit Co-op) (Shue 1980:196 ff.). The chief function of marketing and credit cooperatives, however, was not so much to coordinate production as it was to alter the economic environment within which farming took place and to discourage the reemergence of capitalism in the countryside. By controlling markets and access to credit, the state was in a stronger position to prevent the concentration of wealth that might otherwise have occurred.

The next stage in this process was the creation of Agricultural Production Co-ops, which *were* designed to directly organize the production process at the local level. Up to this point cultivation took place within the altered circumstances of private ownership and rent that were established by the land reform laws; the evolution of production cooperatives, by contrast, was designed to lead to full collective ownership and management of land and capital equipment. One goal of the Agricultural Production Cooperative was to encourage rich peasants to invest their surplus in capital available to the Cooperative, thus increasing the productivity of local farming.

Elementary cooperatives involved a larger scale of cooperation than MATs, but they continued to work through private ownership and compensation. Each member made his labor, capital, and land available to the cooperative, to be used jointly; but the owners of these resources were to receive compensation in proportion to their contributions. Thus each member potentially received both work points and “rent” on the land and capital he provided to the cooperative. According to Shue, the average size of an elementary cooperative was between 27 and 32 households (Shue 1980:291). Advanced co-ops went one step further, in that all capital goods were to be turned over to the cooperative, with some small compensation to the owner. Income was based solely on labor contribution (Dernberger 1982:72).

The transition to production cooperatives was initially propelled through gradual and voluntary means; in 1955, however, the government took the decision to collectivize agriculture immediately by law. The most immediate goal of collectivization was to rationalize the production process through economies of scale. Land was to be pooled and farmed on a larger basis; labor was to be allocated more efficiently; collective goods (dams, reservoirs, ditches, roads, etc.) could be provided using surplus co-op labor; and so on. This led in a short time to the formation of very large brigades, collectives, and communes. It led also, during the Great Leap Forward, to a massive crisis in agriculture over several harvests culminating in a famine in which perhaps 30 million deaths occurred (Ashton, Piazza & Zeitz 1984; Kane 1988; Peng 1987).

#### *The post-Mao reforms*

The post-Mao reforms in agriculture involved several major changes in policy. First, the household replaced the production team and other collectivized units as the basic production unit. Through the family responsibility system farmers were given longterm contracts for parcels of land and were given wide authority to make production decisions. This increased authority permitted farmers to specialize in high-value crops and crops well-suited to their factor endowments. And second, market institutions and price reform were reintroduced into the rural economy. Real prices of agricultural products rose sharply for the first time in several decades--producing corresponding incentives to increase production and cut costs. The net result was a sharp increase in output and productivity in the rural economy; and these gains flowed to rising rural incomes to an extent unprecedented in China's development experience.<sup>7</sup> Grain output increased almost 5% a year between 1978-1984. And non-grain output rose even more rapidly. And these increases have been reflected in rising rural incomes as well, with rural incomes rising from 134 yuan in 1978 to 355 yuan in 1984 (Lardy 1985:17).

Let us return now to the obstacles to development discussed above. Has China managed to escape the development traps that enmired the rural economy in earlier years? Is China's economy doomed to a perpetual no-growth state, in which population increases eat up the results of slow productivity growth, as is suggested by the analysis of Mark Elvin and Kang Chao? The experience of the past several decades provides a fairly clear answer to this question; it is not. Barry Naughton estimates that China's net

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<sup>7</sup> This summary reflects Lardy 1985:1-10.

material product increased at an average rate of 6% between 1953 and 1978, whereas its population increased at an average rate of 2% during the same period. This represents an annual growth rate of 4% per capita--a respectable (though not spectacular) rate of growth by LDC standards (Naughton 1989:5). (Since 1978 the growth of GDP has increased, producing an even greater per capita increase.) Thus China has succeeded in achieving sustained per capita growth in national product--the central criterion of modern economic growth. This outcome depends on two factors: a respectable record in increasing output in industry and agriculture, and a dramatic success in keeping population growth rates to a manageable level.

*No surplus? Investment after 1949*

Consider first the “no-surplus” trap thesis about Chinese economic stagnation. Here the argument is that the Chinese economy does not (or did not) produce enough of a surplus over and above the subsistence needs of the population to fund economic development and growth. How has the experience of post-revolution China dealt with this hypothesis? Not kindly. Carl Riskin and Victor Lippit show that by the early 1950s China had increased its savings rate from virtually zero to 25-30%. This increase is impossible on the assumption that the pre-1949 economy was producing at zero surplus; instead, it is reasonable to infer that the pre-1949 economy was producing roughly the same magnitude of surplus, and that what changed was the effective capacity of the state to channel the surplus into savings and investment.

If we assume that the pre-1949 economy was in fact producing a surplus of approximately 25%, then we must ask where it was going. Lippit’s answer is that it was largely going into elite consumption. The revolution fundamentally altered the class structure of traditional China, however, greatly diminishing the capacity of rural (or urban) elites to capture surpluses for their own consumption. The bulk of the surplus thus found its way into investment. What changed in 1949 was the political capacity of the state in penetrating the economy, aggregating surpluses, and returning those surpluses to investment. Its control over prices and wages permitted it to set the real wage and to place the surplus directly into government accounts. And the state created a series of development plans that directed economic efforts toward a small number of goals (industrial development, agricultural selfsufficiency) that, conjoined with vast expenditures of human labor pulled China’s industrial capacity into the twentieth century.

*Property-relations and institutional reform*

Turn now to the question of the property relations defining the context of economic activity. Lippit holds that the traditional rural economy was constrained by the fact that landlords had no incentive to invest in agricultural production, whereas small farmers had little or no surplus over and above taxes, interest, and rent to invest. The consequence, he argues, was technical stagnation in agriculture.

The Communist revolution fundamentally altered the institutions through which economic activity took place in agriculture (and elsewhere as well, of course). Land reform redistributed land from landlords and rich peasants to poor peasants and the landless, and work teams and production cooperatives were established to secure available economies of scale. Did these innovations free up the rural economy for economic growth?

There were two aspects of stagnation imposed by traditional property relations: the small scale of peasant agriculture (combined with highly fragmented patterns of land use) and the scarcity of agricultural investment. In principle land reform can affect each feature. Consider first the investment problem. By reducing the share of the product extracted from the farm economy by the landlord class, land reform makes the surplus available for investment. If it is retained by the peasant farmer, and if the peasant's income is generated by the productive efficiency of the farm, then we should expect that farmers will make productive investments. (This depends on farmers having confidence in the future economic environment.)

The other topic to be considered is the scale and organization of production. Land reform should provide an efficiency bonus by permitting the consolidation of plots; prior to land reform small farmers had a number of small plots scattered around the village. This forced expenditure of labor time transporting tools and workers from one plot to another. After land reform a more rational allocation of land to farmers can reduce the amount of time wasted in this way. But given the high man-land ratio in rural China, land reform cannot lead to larger-scale farming. Does this imply that post-land-reform farming is doomed to inefficiency? A number of rural development specialists have shown that small farms are equal or superior to larger farms in efficiency; there are few economies of scale in farming. So small farmers with adequate access to credit and appropriate production and marketing cooperatives ought to be able to incorporate modern farming technologies.

An intriguing question is this: could the system of small farming in the context of MATs and appropriate producer and marketing cooperatives have provided a development pathway to high-yield agriculture? The experience of the post-Mao reforms in agriculture suggest an affirmative answer, since this is essentially the system that has been adopted since 1978. It is interesting to speculate on China's alternative development course if collectivization, and the attendant disruptions of the GLF, had not occurred.

### Population growth

Let us look briefly at China's demographic performance over the past 40 years. Overall China's population has increased from 559 million in 1949 to one billion in 1984, an annual rate of increase of 1.8% per year. This is a modest rate of increase by LDC standards. Moreover, this performance aggregates over several sharply different periods of population policy. Mao had great mistrust of demography as a science, and believed that a robustly increasing population was a strength for China. As a result of this pro-natalist bias, China's rate of population increase rose from 1.6% per year in 1949 to 2.8% in 1965. Then the magnitude of China's population size, and the rate of increase, became apparent to central policy makers; strenuous population control policies were put in place, leading to a drop by 1976 to 1.2% per year increase (Harding 1987:32). And the period 1978-1983 witnesses an escalation of earlier policies aimed at controlling family size, including delay in the age of marriage and the single-child policy. Government established family planning centers in the countryside, promoting the use of birth control, sterilization, and abortion to control family size (Banister 1984:720; Banister 1987), and strong efforts were made through exhortation and propaganda to elicit appropriate individual and family behavior. Legislation had been adopted in 1950 establishing 18 and 20 as the legal minimum age of marriage for women and men respectively, and the government made strenuous efforts to induce the young to postpone marriage until the late twenties. Particularly important was the effectiveness of enforcement of the one-child rule; increasing amounts of coercion were employed to secure compliance (Banister 1984:721). And an extensive set of incentives were established to encourage compliance, including cash payments, preferential housing and job assignments, free medical care and schooling for the child, and equal size plot assignments (723). Finally, fines and other material penalties were imposed on families that violated family-size regulations.

Thus China appears to have managed to escape the population trap. What factors permitted it to do so? Once again the strength of the central state in implementing economic and demographic policies appears to be the critical variable. The role of the state in aggregating savings for investment was discussed above. Critically important for sustained economic development, however, was the state's capacity to create a strongly administered population policy that depressed fertility rates during a period in which mortality rates were falling--thus avoiding the worst of the characteristic bulge of population increase associated with the demographic transition.

Obstacles to development in contemporary China

These arguments suggest that the post-1949 Chinese state was able to surmount the central obstacles to development found in the traditional economy--population growth, low savings and investment, and slack technological innovation. However, China's modern economy confronts its own distinctive obstacles to development. Turn now to the obstacles to development that have emerged since the revolution. Central among these are problems associated with centralized planning; incentive problems in collectivized agriculture; and depressed rural incomes as a consequence of state interference in the marketing system.

*Defects in centralized planning (allocative inefficiency)*

Throughout much of the post-1949 period the Chinese state has relied on central planning as its primary tool of economic organization. Detailed multi-year plans are drawn up by centralized ministries; then, using various analytical tools (e.g. material balance planning) estimates are formed of the quantities of various goods needed at each stage of the plan; and finally resource allocations and output quotas are assigned to sectors, industries, and firms.

It is now clear that detailed central planning is *not* an efficient way of organizing a complex national economy. China, the Soviet Union, and Eastern Europe provide extensive evidence of the inefficiencies of central planning: misallocation of resources across industries due to miscalculation, insufficient production of consumer goods, production of goods of inferior quality and variety, allocation according to bureaucratic demand rather than consumer demand, waste of resources, and so on. Moreover, given that enterprises are motivated and evaluated by plan directives rather than by efficiency, there is little incentive for managers to raise productivity; as a result, enterprise efficiency remains low. (For a valuable comparative discussion of the processes of market reform in the socialist world see Nee and Stark, eds., *Remaking the Economic Institutions of Socialism* (Nee & Stark 1989).)

The economic problems associated with central planning are not difficult to explain. The information costs in this system are extremely high and the problems of bureaucratic friction in implementation of policies all but guarantees that economic adjustments will be too slow to effectively finetune the economy. If prices are arbitrarily set by the planning authorities, there is no correspondence between social cost and the price of a good; so it is impossible to make efficient use of resources. And central planning creates a set of manager incentives geared to quantity of output rather than quality of output.

These points show that some degree of market institutions is mandatory within a socialist state.<sup>8</sup> This implies that several types of economic reform are needed in China (reforms that have been underway with varying degrees of success throughout the post-Mao period): enterprises need to be regulated by profitability, enterprises need to be relieved of the “soft-budget” constraint, and price reform needs to be carried out so that prices correspond to social costs. Price reform is critical; profit-oriented enterprises in a universe of distorted prices will not lead to efficient outcomes. For example, the two- or three-tiered system of prices in effect in agriculture in the post-Mao period led to a number of problems. Higher prices for above-quota crops encouraged quota-evasion; the procurement system was ill suited to dealing with surpluses; and the pricing system led to widening income inequalities across regions (Sicular 1988; Sicular 1989:265-66).

What are the obstacles to carrying out these reforms? There are several. First, the commitment of a socialist regime to full employment is at odds with a hard budget constraint; waves of bankruptcies among inefficient enterprises are likely to produce large numbers of unemployed workers. Second, price reform is likely to significantly alter the pattern of income distribution across sectors and regions. If agricultural prices rise relative to industrial prices (improving the terms of rural-urban trade), this means that urban real wages will fall--a consequence that may be politically unacceptable in China today. Third, substantial price reform may lead to high rates of inflation, again leading to unpredictable political consequences.

It should be noted that market reforms along these lines do not negate the state's ability to influence the direction and character of economic development. Market reforms do not represent suicide for the program of socialism, or abdication in favor of capitalism. The state still has control over a number of macro-variables that define the context of choice within which enterprises operate--thus giving the state the ability to influence the direction of development that emerges out of enterprise decision-making. First, the socialist state retains its fiscal authority--its ability to tax profits heavily. This power allows the state to encourage some kinds of innovations and discourage others. Further, the state can continue to function as a primary source of investment funds--through its fiscal powers--with the result that the state can influence the direction and volume of future investment. This can permit the state to make inter-sectoral adjustments, speed up development of productive

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<sup>8</sup> Janos Kornai has outlined many of the problems associated with the need for market reforms within socialist systems. His discussion of the Hungarian reform process is included in Nee and Stark, eds. (1989).

capacity of critical inputs, expand employment in poor regions, etc. Third, the state can continue to provide for the welfare of the poor, through provision of health care, unemployment insurance, education, etc. This too depends on the state's ability to seize control of a substantial portion of the economy's surplus through taxation.

*Inefficient high rates of investment*

It has been persuasively argued that China's savings rate has generally been too high, not too low, and has led to a pattern of investment that led to a buildup of relatively unproductive fixed capital. Investment rates rose between the 1950s and 1970s from about 25% to about 33%; during the same time the growth rate fell from 11% to 8% (Harding 1987:31). Throughout much of the post-1949 the investment rate has exceeded 30% (Lardy 1989:280); even following the post-Mao reforms Lardy argues that the policy consensus that the investment rate should be lowered in favor of more rapid increase in consumer welfare was not implemented. This was true, Lardy argues, because investment decision-making was pushed downward to the enterprises, which had strong incentives to continue to invest at high levels. Thus much investment was inefficient, leading to large stocks of under-used capital goods. And as a result of high investment rates, rural incomes were stagnant for much of the time through 1978, with the result that demand for consumer goods was stagnant and material welfare in the countryside improved only glacially.

*Incentive problems*

Turn now to problems posed by organizational forms at the level of the unit of production and cultivation. In the first three decades at least Chinese policy makers preferred larger rather than smaller units of production. There were several reasons for this preference: economically, it was believed that larger units would be able to capture economies of scale unavailable to smaller units, and larger units would be able to mobilize resources and labor for the provision of public goods that would be impossible for smaller units to realize. Moreover, larger production units would be capable of implementing public works projects (e.g. water control) that would be infeasible for smaller production units, even in cooperation (because of public goods problems). Bureaucratically, small units are more difficult to manage within a system of central planning. It is one thing to work out resource allocations and quotas for 50,000 communes; it is quite another to do so for 100 million small farms. And politically, the goal of distributing income on a more egalitarian basis was thought to be more easily achieved through larger units of production.

Larger units of production--collectives and communes--presented a number of problems, however. Central among these is that of motivating workers within such units. If incomes are assigned to workers on the basis of work points representing shares of end-of-year collective income, each worker realizes that the quality and intensity of his work has almost no relation to his eventual income. Each worker thus has an incentive to become an "easy rider", providing the minimum intensity and quality of labor to qualify for work points. This implies that labor productivity and quality in communal and collective enterprises should be low. The Maoist reply to this problem was to attempt to motivate workers with non-material incentives; but over the long run, this approach was not conspicuously successful. This line of reasoning implies that units of production should be small enough that each worker's labor makes an appreciable contribution to the unit's income; or in other words, production arrangements need to secure a close relationship between quality and intensity of work and income.

Another difficulty posed by large units of production that has been less discussed is the power that such arrangements confer on unit managers to command profits and labor for communal purposes--purposes that may not correspond closely to the interests of members. This may lower productivity by permitting collectives to make large wasteful expenditures of labor and capital on ill-conceived projects--thus diverting these resources from primary agriculture. (By the same token, pushing the unit of production down the scale makes it more difficult to fund public works that *do* enhance productivity and collective welfare--e.g. waterworks maintenance and public elementary schools.)

These problems lead to a conclusion: units of production need to be reduced in size. After the GLF the decision-making level was lowered to the production team (about 30 families), and subsequent reforms have pushed the level down to that of the household. Once again, the post-Mao reforms represent the culmination of this direction of policy reform. Significantly, however, these reforms have not been successfully implemented in industry, and there is some concern that the rural reforms themselves may be rolled back as the state's political need for cheap grain begins to call once again for higher grain procurement quotas.<sup>9</sup>

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<sup>9</sup> William Hinton also argues persuasively that there is a lower bound to efficient farm size; he criticizes rural reform policies for creating a system of "noodle farming"--the creation of minuscule strips of land that are barely capable of supporting a farming family, and that make the introduction of

*Problems of transition in institutional reform*

As is well known, China has undergone a series of major institutional reforms in only forty years. Each such transition created its own transitional disruption as economic agents were suddenly given incentives that were economically counterproductive. This emerges for a variety of reasons. First, agents in control of assets may conclude that they will no longer be able to control these assets, giving them an incentive to use them up before they can be confiscated. (This occurred during the land reform, when owners of oxen had no incentive to keep the animals alive.) Second, agents may be thrown into a state of uncertainty about their future relation to productive assets, leading them to sharply discount future benefits in favor of current benefits. In this case it is lack of confidence in the assurances of government that is at fault; peasants may not believe that they will be permitted to retain control of land. This leads to excessive exploitation of assets and very low rates of investment. (Hinton describes this process in the exploitation of grasslands in the Northwest (Hinton 1990:84-94).)

*Bias against agriculture in development planning*

The CCP found its base of support almost entirely in the countryside: middle, poor, and landless peasants were its primary social base. This circumstance would suggest that state development policies should be expected to favor agricultural development, since this is the most rapid way of improving rural welfare. However, in an extensive series of articles Nick Lardy argues that the opposite was true: state development policy tended to favor industrial development over agricultural development, with correspondingly low levels of investment in agriculture (Lardy 1980; Lardy 1984; Lardy 1989). A central reason for this bias derives from the example of Soviet economic development, in which the primary focus of economic policy was the rapid enhancement of heavy industrial capacity. Lardy argues that this investment bias continued at least up to the post-Mao reform period: "Fixed assets per agricultural worker in 1978 were only a tenth the level prevailing in state industry, a gap that had widened substantially since the 1950s" (Lardy 1989:282). And in fact Lardy shows that agriculture's share of state investment fell from 10.6% in 1978 to 5% in 1984.

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modernized agricultural techniques virtually impossible (Hinton 1990:14-16,110 ff.).

A second form of bias against agriculture is embodied in the agricultural pricing system. “Undervaluation of agricultural products has been used as a mode of taxation to mobilize resources for industrial investment” (Sicular 1989:284). But highly unfavorable rural-urban terms of trade tend to depress agricultural growth. The rural economy faces a “price-scissors” which makes it increasingly difficult to incorporate industrial inputs into the cultivation process (e.g. chemical pesticides and fertilizers), and reduces the farmer’s incentive to increase output.

*Social disruptions following from political turmoil (GLF, CR, Democracy Movement)*

A factor that has recurrently depressed economic development in China is not endogenous to the economic system, but rather flows from the disarray of government as a result of high-level political struggles between contending factions. The Great Leap Forward, the Cultural Revolution, the internal disagreements over the character and pace of market reform, and the Democracy Movement have subjected the economy to a series of deep shocks, each of which has had longlasting effects on economic development. The GLF was provoked by economic problems, while the Cultural Revolution was primarily a program of social and political reform; but each had devastating consequences for the rural economy. The Cultural Revolution, as a result of Mao’s heavy emphasis on regional self-sufficiency and local self-reliance, lowered productivity through dramatically reducing inter-regional trade and specialization and the benefits of comparative advantage.

Mao’s distinctive ideas about economic development produced much of this turmoil. His insistence on egalitarianism led to incentive problems in collectivized agriculture; his mistrust of central planning ministries and technical expertise led to a bureaucratic decentralization that amplified crises rather than narrowed them; his preference for political exhortation over material incentives led to major problems in motivating labor; his insistence on self-reliance led to highly inefficient replication of agricultural and industrial production in all regions, rather than permitting regional specialization; and his preference for great leaps rather than gradual progress led to catastrophe.

A number of the obstacles described in this section fall within the category of institutional defects: features of the organization of the rural economy that restrict the growth of rural incomes and capital base. This finding converges with Lippit’s “surplus extraction” trap in an unexpected way: it is reasonable to judge that many of the institutional forms that China has adopted in its process of economic development have constrained economic growth. This in turn suggests that organizational and institutional reform can

provide an “efficiency dividend” for the Chinese economy--for example, that witnessed in agriculture in the years 1978-84.

At the same time it is important to avoid the temptation of judging that institutional obstacles are the central problem; for, as Lardy has argued extensively, a major constraint on agricultural development is the small share of investment that flows to agricultural modernization.

## **Conclusion**

### Evaluation of development-trap theories

What can we say, in retrospect, about the validity of the theories of agricultural stagnation in traditional China considered above? Each theory identifies some of the relevant variables in China’s rural economy. Kang Chao is right in holding that the low resource to population ratio in China made development difficult. The pace of population growth continues to be a critical variable in Chinese economic development. Likewise, Elvin is probably right in focusing on the limits to further economic growth posed by a highly refined ensemble of traditional technologies. This suggests that further economic adjustments by small producers are unlikely to lead to a pattern of self-sustaining economic growth; instead, growth requires a substantial shock, either from an effective state pursuing well-designed development policies or the availability of technological innovation from outside the system. China--unlike the Soviet Union in the 1930s--is a labor surplus economy, and this imposes critical constraints on the forms of technological innovation that can be absorbed, the process of structural transformation, and the pace of urbanization and industrialization.

On the other hand, Elvin, Chao, and other technologists are probably wrong in maintaining that the traditional rural economy contained no sizable surplus for investment. Lippit, Riskin, and others make a strong case--using the investment capacity of the post-1949 state as powerful evidence--to the effect that such surpluses did exist in the traditional economy, but were unproductively consumed. As Robert Brenner (Brenner 1976) has argued in the case of English agriculture, the character of economic development depends very much on the incentives confronting the landholding class and the circumstances of action of the cultivating class; in traditional China, landholders were not under a strong incentive to invest in agriculture, and the result was agricultural stagnation. Thus in at least this respect the distributionists were right in their diagnosis of the slow pace of technological change in traditional China.

Do these theories shed light on the social and economic processes driving modern Chinese economic development?

Both families of views have something to contribute in analysis of China's modern economic development. The technologists are certainly right in holding that China's economic welfare in the future depends very much on its population policies. Distributionists, however, have perhaps more to tell us about China's economy--though the lesson they provide is perhaps not the one they expected to. For the central point of the distributionist camp is that the institutions of production matter; some institutional arrangements work substantially better than others in accomplishing the tasks of economic development. It matters whether economic decisions are being made by households, work teams, or collectives; it matters whether state economic planning occurs at the center or the region, and what the scope of the planning process is; and it matters which players are in a position to make investment decisions. Each of these alternatives gives rise to a different pattern of economic development, and some of these pathways are distinctly counter-productive. (Recall, for example, Lardy's explanation of the persistence of excessively high rates of investment in the post-Mao period: unit managers confront an environment in which investment in more fixed capital is preferable to higher consumption, and so, even contrary to the state's own avowed policy, enterprise savings continue to remain at about 30%.) I would conclude, then, that these theories provide an instructive analytical framework in terms of which to analyze China's economy.

Are these theories a western imposition on Chinese development?

It is sometimes held that western economic models are inappropriate in application to Asian societies. Is this a valid complaint in regard to the development traps described here? It is plain, to start with, that Chinese economic development has been inappropriately influenced by models of development borrowed from other contexts. The signal illustration of this is the Stalinist character of the First Five Year Plan, with its primary emphasis on heavy industry and capital goods. The economic circumstances of the USSR and China were very different at comparable stages of development; the USSR's land-rich, labor-scarce environment may have made the industry-first strategy appropriate there, but it certainly was not in China. But this is a problem deriving from inappropriate analogies drawn between development processes--not from the use of economic models of development *per se*.

In general I hold that the tools of economic and political analysis that underlie the "development traps" above are broadly applicable across all social

systems. This conclusion rests upon several points. First, it is a highly generalizable proposition that individuals are concerned with their material welfare and security; as a result, they act in a more or less economically rational way within the circumstances in which they find themselves. Second, certain parameters are critically important across all societies; for example, the fact that every human being needs about 2400 calories a day has rigid implications for the size of population that can be supported by a given expanse of land and a given level of agricultural technology. Third, the relations between subsistence and surplus, the property relations through which surpluses are concentrated, and the relation between surplus, investment, and future production capacity, are critically important to economic activity and individual welfare in any society. Fourth, there are many appropriate generalizations about state organization, bureaucratic systems, and government policy processes that can illuminate political processes across national contexts.

At the same time, this conclusion does not imply that these tools cannot be used better or worse; as indicated above, I hold that Elvin and Chao have ultimately misdiagnosed the causes of China's agricultural stagnation. The factors they emphasize are real causal factors in China's traditional economy; but their analysis leaves out another set of factors that are at least as important.

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