AGRICULTURE AND GOVERNMENTS IN AN INTERDEPENDENT WORLD

PROCEEDINGS
OF THE
TWENTIETH
INTERNATIONAL CONFERENCE
OF AGRICULTURAL ECONOMISTS

Held at Buenos Aires, Argentina
24–31 August 1988

Edited by
Allen Maunder, Agricultural Economics Unit, Queen Elizabeth House
University of Oxford, England
and
Alberto Valdés, International Food Policy Research Institute
Washington DC, USA

JUSTIN YIFU LIN*

The Household Responsibility System in China's Rural Reform

INTRODUCTION

The agricultural growth rate in China in the first half of this decade has attracted much attention among economists. The average annual growth rate between 1980 and 1985 reached 9.4, which was the highest in the world in this period.[1] This remarkable achievement is the result of a series of reforms. Since 1978, the Chinese government has attempted a series of a new policies in rural areas, including diversification of the rural economy, production specialization, crop selection in accordance with regional comparative advantages, expansion of free markets, and a marked rise in state procurement prices. However, the most important change has been the introduction of the household responsibility system, which eventually replaces the production team system and restores the household as the unit of agricultural production and accounting. This institutional change is comparable in scope to the land reform and co-operative movements in the 1950s.

   After the collective movement in the late 1950s, the institutional organization in Chinese rural areas was basically kept intact for about 20 years. Chinese farm families were organized into communes. Each commune was then divided into brigades, and brigades into production teams. The production team, consisting of about 20–30 neighbouring households, was generally the basic production and accounting unit. All resources were collectively owned and allocated under the unified management of the team leader, with the exception of small plots reserved for the households' use. Output from the team in excess of basic needs was procured by the government for prices lower than local market prices. Output from private plots was consumed by the households themselves or sold either to the government or at rural fairs or markets. Household sideline production was sometimes encouraged, sometimes discouraged. Income from team production was, no doubt, the most important source of household income.[2]

   The team members, working under the supervision of a team leader, were accredited with work points for the jobs that they performed. At the end of a year the net team income was first distributed among members according to some basic needs, and then the rest was distributed according to the work points that each one accumulated during the year. Work points were supposed to reflect the quality and quantity of effort that each member performed.

The commune, brigade and production team system of production manage-
ment, with its work point system of compensation, has been challenged ever
since its establishment in the late fifties. After the disaster of the Great Leap
Forward, land was reallocated to individual families and households were
restored as the units of production in many parts of China, especially in Anhui
Province. Production soon recovered in these areas. Nevertheless, this practice
was prohibited and criticized as capitalistic and those people responsible were
oppressed. Although the reallocation of land to individual households, secretly
or sometimes openly, was never totally extinguished in some areas, the real
change was not made possible until 1978, when moderate leaders came into
power again after the chaos of the Cultural Revolution and the death of Chairman
Mao.[3]

In the Third Plenary Session of the Eleventh Central Committee of the
Communist Party of China, held in December 1978, the Chinese leaders
recommended sweeping changes in rural policies.[4] In place of a lopsided stress
on grain production, policy encouraged the development of a diversified
economy. Better prices were set for the state purchase of farm produce.
Production teams were granted more freedom in making decisions about their
own affairs. Private plots and the country fairs in which farm people sold their
surplus products were revived and expanded. Although it had been recognized
at that time that solving the managerial problems within the production team
system was the key to improving low incentive, the household responsibility
system was considered the reverse of the socialist principle of collective farming
and was prohibited in the document issued by the Fourth Plenary Session of the
Eleventh Central Committee of the CPC in September, 1979 (Editorial Board of
China Agriculture Yearbook 1980, p. 58). The official position at that time
maintained that the production team was to remain the basic unit of production,
income distribution, and accounting. Nevertheless, a small number of produc-
tion teams, first secretly and later with the blessing of local authorities, began to
try out the system of contracting land, other resources, and output quotas to
individual households toward the end of 1978 in Feixi County and also in
Chuxian Prefecture in Anhui Province, which were both areas frequently
victimized by flood and drought. A year later these teams brought in yields far
larger than those of other teams. The central authorities later conceded the
existence of the household responsibility system but required that this practice
be restricted to the poor agricultural regions, mainly the hilly, mountainous
areas, and poor teams in which people had lost confidence in the collective.
However, this restriction could not be put into effect at all. Rich regions
welcomed the household responsibility system as enthusiastically as the poor
regions. Full official recognition of the household responsibility system as
universally acceptable was eventually given in late 1981. By the end of 1983,
almost all the households in China's rural areas had adopted this new system.

It is worth emphasizing that the household responsibility system was worked
out among farmers, initially without the knowledge and approval of the central
government. It was generated through the efforts of peasants themselves and
spread to other areas because of its merits. It was not imposed by the central
authority. In short, the shift in the institution of Chinese agriculture was not

carried out by any individual's will but evolved spontaneously in response to underlying economic forces.

THE ECONOMICS OF TEAM PRODUCTION

In two previous papers (Lin, 1987b, 1988), it was argued that the main reason for the shift from the production team system to the household responsibility system was the difficulty of supervising labour effort in agricultural production in a team with the work point system as its compensation scheme and that the diffusion of the household responsibility system could be explained by the induced institutional innovation hypothesis.

Under the production team system, a peasant was awarded work points for each day's work. At the end of each year, the net team income, after deducting for tax, the public welfare fund, and distribution for basic needs, was distributed according to the work points that each peasant accumulated during the year. Work points were supposed to reflect the quantity and quality of effort that each member performed. Theoretically, the work point system is not inherently an inefficient incentive scheme. If the monitoring of each peasant's work is perfect, the incentives to work will be excessive instead of suboptimal. This is due to the fact that the return to a peasant's additional effort has two components. First, he will get a share of the increase in team output. Second, he will get a larger share of the total net team income, as now he contributes a larger share of total effort and thus has a larger share of work points. The former is itself insufficient to make him offer the optimal amount of effort, but the latter overcompensates as long as the average product per unit of effort is greater than the marginal product of effort. Since the relevant region of production, in general, is located where the average product is greater than the marginal product, a peasant has incentives to over-work. On the other hand, if there is no monitoring of effort, a peasant will not get more work points for his additional contribution of effort. In this case, the return to his increase in effort has only one component, namely, a share of the increase in team output. The incentives to work are thus suboptimal. How much the increase in the work point share is for an additional unit of effort depends on the degree of monitoring. Therefore, the incentives to work in a production team are positively correlated with the degree of monitoring in the production process. The higher the degree of monitoring, the higher the incentives to work, and thus the more effort contributed.

However, monitoring is not costless. The management of the production team needs to balance the gain in productivity due to the increase in incentives and the rise in the costs of monitoring. The monitoring of agricultural operations is particularly difficult because of agricultural production's sequential nature and spatial dimension. In agricultural production, the process typically spans several months over several acres of land. Farming also requires peasants to shift from one job to another throughout the production season. In general, the quality of work provided by a peasant does not become apparent until harvest time. Furthermore, it is impossible to determine each individual's contribution by simply observing the outputs because of the random impacts of nature on production. It is thus very costly to provide close monitoring of each peasant's

effort contribution in agricultural production. Consequently, the optimum degree of monitoring in a team mainly engaging in agricultural production must be very low. The incremental income for an additional unit of effort will be only a small fraction of the marginal product of effort. Therefore, the incentives to work for peasants in a production team must also be low.[5]

In the HRS, the difficulty of monitoring does not exist. By definition, a peasant becomes the residual claimant. He does not need to divert resources to measure his own effort. The marginal return to his effort is the marginal product of effort. Although the economies of scale are sacrificed in the HRS, it has been proved, assuming there is no monitoring in the team system and given some other simplified assumptions, that the incentive structure in the HRS dominates that of the team system unless the coefficient of returns to scale is outrageously large, namely, higher than two (Lin, 1988). Therefore, the incentives to work are improved by shifting from the production team system to the HRS. Peasants feel happier and contribute more effort to production in the HRS. Agricultural productivity thus jumps. The improvement in the incentive structure represents the major source of gain in this institutional change.

AN EFFORT-AUGMENTATION INSTITUTIONAL CHANGE

The discussion in the preceding section provides us with a testable hypothesis. Peasants will equalize their shadow price of leisure with the marginal return to their efforts in both the production team system and the household responsibility system. Since the marginal return was only a small fraction of return to production, the peasants' supply of effort was thus low. Consequently, when the marginal return of effort increases in the household responsibility system, the effort supply of each peasant increases in response. The institutional change from the production team system to the household responsibility system, therefore, results in an increase in the supplies of effort by each peasant.

Due to the restriction on migration in China, the number of peasants in an area will not decrease dramatically in a short period. If the supply of effort increases substantially after changing to the household responsibility system, as argued above, the demand for labour-substitution factors of production should have dropped. A tractor is a labour substitution factor in farming, therefore, the demand for tractors is expected to have decreased. Nevertheless, not only has the number of tractors not reduced but it has risen rapidly since the household responsibility system was introduced in 1979. The number of large and medium sized tractors increased from 666,823 in 1979 to 840,776 in 1983. Furthermore, the number of small and walking tractors increased even faster, from 1,671,000 to 2,750,000 during the same period.[6] Yet most of the tractors are used primarily for transportation and not for farm work. The best index of tractor usage in farming is the tractor-ploughed area. Although the number of tractors increased, the usage of tractors in farming did decrease as the household responsibility system spread. From column (2) of Table 1 we see that the household responsibility system started to emerge in 1979. By the end of 1983, almost all the production teams in China had been converted to the new system of farming. Column (3) of Table 1 shows that the extent of the tractor-ploughed area declined

constantly from 1980 and did not pick up again until 1984. The changes in the trend of the tractor-ploughed area occurred simultaneously with the introduction and the completion of the household responsibility system in China. This is consistent with the hypothesis that the household responsibility system change has a labour-augmentation implication.

What we can observe are labour-days, not effort. If the hypothesis that the household responsibility system change increases each worker's effort supply is true, then the labour-days required for a given amount of work should decrease. Columns (5), (6), and (7) of Table 1 show, respectively, the average labour-days used for the cultivation of one acre of wheat, rice and corn. These data were obtained directly from household surveys carried by the Ministry of Agriculture. From these data, we see that there were dramatic reductions in the labour-days for the cultivation of these three crops. Although labour-days continued to drop, the reductions are much larger both in absolute and relative terms in 1980–3 than in 1983–6. For wheat the comparison is a 54.6 labour-day (-35.3%) reduction in 1980–3 with a reduction of 20.4 labour-days (-20.3%) in 1983–6. The magnitude and differences of reductions for rice and corn in these two periods are similar to those of wheat. Since the use of tractors for grain production in the period 1980-3 also decreased while grain production grew rapidly, the dramatic reduction of labour-days in grain production in the period of 1980 to 1983 demonstrates convincingly that the shift from the production team system to the household responsibility system is a labour-augmentation institutional change.

THE PRODUCTION IMPACT OF THE HOUSEHOLD RESPONSIBILITY SYSTEM

For the nation as a whole, the household responsibility system did not emerge at any significant level until 1980. By the end of 1983, almost all the production teams in China had been converted to the new system of farming (see column (2), Table 1). At the same time, Chinese agriculture grew at a remarkable rate. The gross value of agricultural output increased by 26 per cent between 1980 and 1983 at the constant prices of 1980. Nevertheless, the purchased inputs of agricultural production also increased tremendously. The total horsepower of farm machinery grew by 22 per cent and the consumption of chemical fertilizer increased by 31 per cent. Meanwhile, as mentioned before, a sequence of other new policies has been introduced since 1978. Although all other policies were put into effect between 1978 and 1979, their impacts might not have been exhausted by the end of 1980 and thus had some spill-over effects in the period in which we are interested. Therefore, without a careful statistical analysis of empirical data, it is hard to determine how much of the growth in agricultural output between 1980 and 1983 should be credited to the shift from the production team system to the household responsibility system. This paper attempts to use the data at the provincial aggregated level to answer this question.

Although the effect of shifting from the production team system to the household responsibility system comes mainly from the increase in effort supply, in studying its impact on agricultural production, a total productivity measure is preferable to a partial measure, such as labour productivity. This is due to the fact

TABLE 1 *Progress of the household responsibility system and changes in tractor and labour usage*

Year	Progress in HRS (%)	Tractor-Ploughed Area (10,000 ha.)	Labour-Day/acre		
			Wheat	Rice	Corn
(1)	(2)	(3)	(4)	(5)	(6)
1979	1.02	4241.9	n.a.	n.a.	n.a.
1980	14.4	4099.0	154.8	201.0	162.6
1981	45.1	3647.7	147.0	198.0	143.4
1982	80.4	3511.5	124.2	179.4	126.6
1983	97.9	3357.2	100.2	142.8	108.6
1984	98.9	3492.2	88.0	127.2	100.2
1985	n.a.	3444.2	84.0	120.0	89.4
1986	n.a.	3642.8	79.8	116.4	87.0

Sources: Columns (2) is the progress in the household responsibility system. The data for 1979–81 are from *Jingjixue zhoubao* (Economic weekly) (11 January 1982). Figures for 1982 and 1983 are from Editorial Board of China Agriculture Yearbook, *China Agriculture Yearbook* (1983) and (1984). Column (3), the tractor-ploughed area, is from State Statistics Bureau, *China Statistical Yearbook, 1987*. Columns (4) to (6) are from General Management Station of Collective Economy, Ministry of Agriculture, *Nongye Shengcan Zhiliao Huibian, 1980–81, 1982, 1983, 1984, 1985, 1986* (Compilation of Agricultural Production Costs, 1980-1, 1982, 1983, 1984, 1985, 1986).

that effort has two components: the quantity of effort and the quality of effort. The quantity of effort, the brute force provided by a worker, is what enters into the traditional production function, which is no different from the other factors of production, such as machinery, livestock, and fertilizer. The quality of effort is the allocative service provided by a worker, in the production process. The efficient service flow provided by a given unit of land, machinery, fertilizer or livestock depends on, among other things, how it is allocated. When allocative service provided by a worker increases, the efficient service flow derived from a given unit of input also increases. Consequently, the efficient service flow from given physical units of labour, land, tractor, and fertilizer, which are the inputs in a traditional production function, will all change when the incentive to work is improved by an institutional change.

The approach to estimate the impact of the household responsibility system involves estimations of an aggregate agricultural production function of the unrestricted Cobb-Douglas type, using cross-sectional data covering 1980, 1981, 1982, and 1983 from 29 provinces. Agricultural production in this study refers to crop farming. Husbandry, forestry, fishery, and sideline production are not included because there are no appropriate data for their inputs. The output of agriculture is measured in the constant prices of 1980. The values of farm output consisted of 63.7 and 62.0 per cent of the total value of agricultural output in 1980 and 1983 respectively. To be specific, the production function that will be estimated is:

$$Log\ Q = a_0 + a_1\ LogL + a_2\ LogS + a_3\ LogT + a_4\ LogF + a_5\ PG +$$
$$a_6\ Y1 + a_7\ Y2 + a_8\ Y3 + u.$$

Where Q is agricultural output, a_0 to a_8 are coefficients, L is labour, S is sown area, T is tractor, F is fertilizer, PG is the rate of progress in the adoption of the household responsibility system, Y1 to Y3 are year dummies, and u is a residual term. Q, L, S, T, F are all normalized by the number of agricultural households in each province.

Labour in agricultural production includes those workers in farming, husbandry, fishery, forestry, and household handicraft production. Workers in village-run industry are excluded. No deduction is made for the number of husbandry, forestry, and fishery workers, as these numbers are not available. As a consequence, the number of workers may be overestimated for those areas with larger fishery and forestry industries. Sown area consists of areas for grain and cash crops. Tractor refers to the total horsepower of large, medium and walking tractors. Fertilizer is measured in terms of the weights of efficient ingredients of N, P_2O_5, K_2O contained in the gross weight of chemical fertilizer consumed. The rate of progress in the household responsibility system indicates the percentage of production teams in each province that had converted to the new system. Because no data about each individual province's progress in 1980 is available and also because only 14.4 per cent of production teams in China had adopted this new system by the end of 1980, it assumed that the rate of progress was zero for each province in 1980. The rate of progress in 1981 refers to the percentage of teams converted to the household responsibility system in each province by August 1981. Those of 1982, and 1983, however, indicate the progress by the end of each respective year. The data for 1981, 1982 and 1983 are provided by the Research Center for Rural Development of the State Council at Beijing. Those for 1983 can also be found in the *China Agriculture Yearbook. 1984* (p. 69). All data, except for the rates of progress in adopting the household responsibility system, are available in the 1981 to 1984 volumes of the *China Agriculture Yearbook.*

It is worth mention that PG itself is an endogenous variable. The adoption of the household responsibility system in each province can be interpreted as an induced institutional innovation process (Lin, 1987b). Among other things, if an area is more suitable for group farming due to its topology or other reasons, the adoption of the household responsibility system will be slower. Regional characteristics are not observable but are included in the residual term of the regression function. Consequently, PG is correlated with the error term. Furthermore, the size of a co-operative farm and the adopted technology (namely the tractor and fertilizer that are used in farming) should also reflect its regional characteristics; they are, thus, also correlated with the residual. Therefore, the OLS will not be able to produce an unbiased estimate of the coefficients. To avoid the time-persistent regional specific effect and obtain a consistent estimate of the coefficients, the fixed-effects model will be used in the fitting of the production function.

The result of fitting the Cobb-Douglas type production function to the data is reported in Q1 to Q3, Table 2. Just as expected, the differences in the rate of shifting from the production team system to the household responsibility system

across provinces has a positive significant effect on the changes in the level of productivity, as reported in Q2 and Q3. The estimated value of 0.12 for PG in Q2 is significant at the 5 per cent level of confidence. Each of the estimated values of year dummies in Q2 is not significantly different from zero. The null hypothesis that year dummies are jointly equal to zero has a computed F-statistic of 1.27. The critical value of this statistic, with 3 and 79 degrees of freedom, is about 2.72 at the 5 per cent and 4.04 at the 1 per cent level of significance. Therefore, the null hypothesis cannot be rejected. Q3 suppressed the year dummies in the regression, the estimates for the coefficients of conventional variables are almost identical to those of Q1, however, the coefficient of the rates of progress in the household responsibility system increases to 0.15. From Table 1, we see that 30.7 per cent of the production teams in China switched to the household responsibility system during 1981, another 35.3 per cent converted during 1982 and 17.5 per cent of production teams changed in 1983. If 0.15 is accepted as the coefficient of the rates of progress in the household responsibility system, as estimated in Q3, the agricultural productivity should have had a 5 per cent growth for 1981, a 5.6 per cent growth for 1982, and a 2.8 per cent growth for 1983. These calculated growth rates are close to the estimated growth rates which are implied by the coefficients of year dummies in Q1. This evidence indicates that almost all of the productivity that occurred between 1980 and 1983 was the result of the institutional change in farming. Other policy changes before 1980 do not seem to have had significant carryover impacts on the productivity growth in this period.

CONCLUDING REMARKS

A sequence of new policies has been introduced into China's rural areas since 1978. Diversification of the rural economy, product specialization and crop selection in accordance with regional comparative advantages, expansion of free markets and a marked rise in government procurement prices should all have contributed positively to the sustained growth in China's agriculture since 1978. Nevertheless, among all the changes the most profound one is probably the introduction of the household responsibility system.[7] This study has attempted to show that this institutional change has a labour-augmentation implications and to measure directly the impacts of this change in the institution of farming on agricultural productivity.

From the household survey data, we find that the labour input required for a given amount of work has declined dramatically since the household responsibility system was adopted. This evidence is consistent with the hypothesis that the change from the production team system to the household responsibility system increases farmers' incentives to work and, as a result, the labour input required for a given amount of work decreases. By introducing the proportion of each province's production teams that had converted to the household responsibility system by the end of each year into the production function, we are able to identify directly its effect on agricultural productivity. It is found that the major portion of the productivity growth between 1980 and 1983 was the result of adopting the household responsibility system. This institutional change on the

average increased by about 15 per cent the productivity of a household farm . As 83.5 per cent of teams in China switched to the new system between 1980 and 1983, it thus increased agricultural productivity by about 13 per cent. The value of farm output increased by 26 per cent in this period. Therefore, about half of this output growth is attributable to the change in the farming institution.

NOTES

[1] See Table 2, *World Development Report 1987*.

[2] Fifty-nine per cent of net income per caput was from the collective in 1957; it rose to 66.3 per cent in 1978 (State Statistical Bureau 1984, p. 471).

[3] It was found recently that a village in Guizhou Province had adopted this practice secretly for more than 10 years before the recent reform. The villagers did not dare to admit it until the new policy was announced (Du, 1985, p. 15).

[4] The session adopted the 'Decisions of the Central Comminee of the Communist Party of China on Some Questions Concerning the Acceleration of Agricultural Development (Draft).' The draft was promulgated nine months later by the Fourth Plenary Session of the CPC Central Committee in September 1979. For the text of the decision, see the Committee on the Agricultural Yearbook of China (1980, pp. 56–62).

TABLE 2   *Estimates of the interprovince cross-sectional production functions for agriculture, 1980–3*

	Q1	Q2	Q3
Labour	.99(3.33)	.78(2.55)	.69(2.26)
Sown Area	.68(1.44)	.55(1.19)	.49(1.34)
Tractor	.42(2.06)	.47(2.34)	.47(3.04)
Fertilizer	−.03(1.02)	−.04(1.17)	−.03(0.94)
Y1	.05(1.56)	−.01(0.15)	
Y2	.14(3.28)	04(0.68)	
Y3	.15(2.45)	02(0.21)	
PG		.12(2.07)	.15(3.75)
$\bar{R}^2$	.543	.561	.557

Notes: All variables are logarithms of original values except for year dummies and PG (the rate of progress in the household responsibility system in each province).
Units = average per household.   Q1–Q3 are estimated with 28 province dummies.
Numbers in parentheses are the t-statistics.

[5] In a production team, the supply of effort also depends on the peer pressure because of its income-sharing property. For a formal model of the impacts of income-sharing on the incentives to work and the labour supply, see Lin (1987a).

[6] Editorial Board of China Agriculture Yearbook, 1980, pp. 137–8; and 1984, p. 143.

[7] This point seems to be supported by most researchers in Chinese studies. See, for example, Watson (1983), Nolan (1983), Wiens (1983), Johnson (1985) and Putterman (1986).

REFERENCES

Du, Runsheng, 1985, *China's Rural Economic Reform*, Social Science Press, Beijing.
Editorial Board of China Agriculture Yearbook, *Agricultural Yearbook of China, 1980, 1981, 1982, 1983, 1984*, Agricultural Press, Beijing.

General Management Station of Collective Economy, Ministry of Agriculture, *Nongye Shengcan Zhiliao Huibian, 1980–1, 1982, 1983, 1984, 1985, 1986* (Compilation of Agricultural Production Costs, 1980–1, 1982, 1983, 1984, 1985, 1986).

Jingjixue zhoubao (Economic weekly), 1982, A weekly Chinese periodical published in Beijing 11 January.

Johnson, D. Gale, 1985, 'The Agricultures of the USSR and China: A Contrast in Reform.' Office of Agricultural Economics Research, Paper no. 85:11.

Lin, Justin Yifu, 1987a, 'Supervision, Incentives, and the Optimum Size of a Labor-Managed Firm', Economic Growth Center, Discussion Paper No. 525. Yale University.

Lin, Justin Yifu, 1987b, 'The Household Responsibility System in China: A Peasant's Institutional Choice', *American Journal of Agricultural Economics*, 69 (May) pp. 410–15.

Lin, Justin Yifu, 1988, 'The Household Responsibility System Reform in China: A Theoretical and Empirical Study', *Economic Development and Cultural Change*, April.

Nolan, Peter, 1983, 'De-collectivization of Agriculture in China, 1979–82: A long-term perspective', *Cambridge Journal of Economics*, 7, pp. 381–403.

Putterman, Louis, 1986, 'The Incentive Problem and the Demise of Team Farming in China' (unpublished manuscript), Brown University.

State Statistical Bureau, People's Republic of China, *Statistical Yearbook of China. 1981, 1983, 1984, 1985, 1986,* and *1987,* Chinese Statistical Press, Beijing (English editions published by Economic Information & Agency, Hong Kong).

Watson, Andrew, 1983, 'Agriculture Looks for "Shoes that Fit": The Production Responsibility System and Its Implication', *World Development* 11, no. 8 pp. 705–30.

Wiens, Thomas B., 1983, 'Price Adjustment, the Responsibility System and Agricultural Productivity', AER 73 pp. 319–24.

World Bank, 1987, *World Development Report,* 1987, Oxford University Press, New York.

DISCUSSION OPENING – ANTHONY M. TANG*

The instruction to the discussants was to act as 'discussion openers' by identifying certain key issues and questions for possible discussions from the floor. The remarks that follow are offered in that spirit. They are not as sharply focussed on the specifics of Lin's paper as assigned discussions might be ordinarily.

I should think that of central importance to the audience are: (1) the motivation behind the Chinese rural reform; and (2) possible lessons to be drawn from China's success, as gauged from the enormous jumps in its agricultural output and productivity since 1980. China's rural reform has been multi-faceted, including price-quota reform, marketing reform, decentralization in output-mix decision-making, institutional reform through adoption of the household responsibility system (HRS) and abolition of collective farming, and large scale promotion of rural industrialization based on private and co-operative initiative. Lin identifies the introduction of HRS as the single most important change in the package, stating that 'almost all of the productivity growth that occurred between 1980 and 1983 was the result of the institutional change in farming' (p. 460). Furthermore, he attributes the record-shattering output and productivity growths mainly to a single aspect of HRS, namely the 'increase in effort supply' that results from family farming (p. 458). His central argument is that in farming monitoring of labour effort is exceedingly difficult and costly and that monitoring is necessary to ensure good effort under collective farming because of an essential absence of incentive under the system (the individual's realized reward being a

*Read by D. Gale Johnson.

small fraction of output gain from his increased effort). Family farming makes monitoring unnecessary by removing the gap, hence, good effort obtains.

I have no difficulty with the suggestion that family farming is 'efficient' in Lin's context and that the institution must have contributed significantly to China's singular agricultural achievement. Yet, notwithstanding Lin's empirical evidence (which is rather thin, by the way), his inferences are vulnerable for several reasons.

(1)   Institutional reform and market signal reform are policy complements. Restoration of family farming alone cannot carry the load. In some socialized countries agriculture has long been privatized without producing noteworthy results. In many developing countries with family farming as the dominant institution of longstanding, wrong-headed government price and marketing policies have brought farming to a standstill or worse. No reminder is needed of the damage that the 'price scissors' and unwitting government control of markets can do to agriculture, socialized or otherwise. It is, therefore, a bit shocking to see Lin argue that 'Other policy changes before 1980 [mainly price and marketing reforms] do not seem to have had significant carryover impacts on the productivity growth' in 1980–3 (p. 460). Would HRS have done as well if not preceded or accompanied by the price and marketing reforms? By the same token, price reform alone will not accomplish much if not accompanied by institutional reform that generates incentives to respond to the 'correct' price signal. The large literature on market or liberal socialism attests to that.

(2)   Lin makes an over-attribution when he singles out the 'labour-augmenting' aspect of HRS which in itself is multi-faceted. The old collective system contained a wedge in returns considerations between work on one's private plot and work on the collective. Lin's 'effort thesis' is sharpened by the fact that monitoring is not of the same degree of difficulty across all farming activities. Those that are even less susceptible of monitoring are reserved for private farming; others for collective farming. Surely, the restoration of unity to allocative decision making under HRS must have made some contribution to output and productivity growth. HRS also meant more peasant autonomy in making production decisions regarding output mix. Here, too, the abolition of the old 'grain-as-the-key-link' doctrine and of the Maoist 'self-reliance' imperative for each farm area must have contributed to productivity growth by restoring regional specialization through HRS. Lastly, the breathtaking pace at which rural industries have grown in output and employment must have given rise to higher opportunity costs of labour on farms, requiring corresponding productivity-raising adjustment on the family farm. The latter consideration constitutes an additional reason for Lin's observation of 'dramatic reduction of labour-days' (p. 457) for the cultivation of rice, wheat, and corn, which he attributed to his 'effort thesis'.

(3)   The above considerations have to do with static efficiency gains. What about some dynamic considerations? Adoption of new inputs, practices

and output entails risk and uncertainty. Such decisions are also location and farm specific. HRS enables the decision making agent to internalize the returns and do so in his local setting. The incentive to innovate in the HRS context is consistent with the Schumpeterian thesis. What do we know about China's pace of agricultural innovation and its relationship to the HRS? To ask this and the other earlier questions is to suggest that Lin may have identified in his 'effort thesis' a relatively unimportant aspect of China's rural reform package. This suggestion may be particularly appealing to those readers whose persuasions include the Lewis 'surplus labour' model for the traditional sector, a model where workers are supposed to work on, say, six cylinders instead of all eight in order to share the limited amount of useful work to be done.

   Let me conclude this discussion by turning to the issue of China's motivation for its precedent-shattering rural reforms. Lin's present and several earlier contributions have significantly advanced our understanding of the problems inherent in collective agriculture. And he is to be commended for it. But collective farming was not adopted without what were seen as good and valid reasons by the Communist Party leadership in the Soviet Union and the PRC. It was to be an efficient mechanism for transferring the agricultural surplus to the state in support of forced-draft industrialization while retaining a residual claimancy for the peasant as incentive. The difficulties pointed up by Lin were to be treated as a necessary cost of the system. How large these costs loom is a matter that depends critically on whether or not the residual, subject to distribution to peasant members of the collective, is allowed to follow a rising trend. In China under Mao there was a virtual absence of any rise in farm household incomes. The need for maximum squeeze implicit in the income trend is traceable to China's unfavourable initial conditions. To control output loss due to flagging effort under such circumstances, Mao resorted to non-material incentives by appealing to the peasant's 'higher instinct', an exercise itself subject to increasingly severe diminishing returns. It was clear to Mao's successors that the old game was up. The reforms under Deng were motivated by these 'situational imperatives'. In this connection, Lin's conclusion about the origin of China's HRS may be less than helpful. He argues that the HRS 'was worked out among farmers . . ., spread to other areas because of its merits . . ., was not imposed by the central authority. In short, the shift in the institution . . . was not carried out by any individual's will but evolved spontaneously in response to underlying economic forces' (p. 455).
   The argument may not be very helpful because the peasant's desire to cultivate his own land (whether owned or not) was always there. For the desire to translate itself into reality, it takes: (a) the state's permission to allow private use of the collective land; and (b) profitable price and market opportunities for a private cultivator to respond to. The HRS was tried out briefly (with success) by individual households during the reformist period following the trauma of the Great Leap Forward. But the movement was effectively suppressed. Thus, the successful institutionalization of the HRS in the early 1980s required the price and market reforms of the late 1970s to provide the right economic environment,

the permissive policy of the central authority in land use, and also the latter's promotion to override resistance by local cadres.