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Transformation of Traditional Agriculture

Comparative Study of Transformation of Agriculture in Centrally Planned Economies: The Soviet Union, Eastern Europe and Mainland China

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IT IS TEMPTING to consider the transformation of agriculture in our three areas primarily, if not exclusively, in terms of the interrelationship between the farming industry and rapid industrialization drives. Two-sector models on which an analysis of this type could be based are not in short supply, and it is quite true that the total impact of initial periods of rapid industrialization on agricultural performance and organization was very considerable indeed. Yet, we should bear in mind that transformation of agriculture in all three areas has (so far) passed through three separate stages and that each of these may legitimately be described as a transformation of its own. Thus, we have some some reason to inquire into the trends and policies of periods preceding the industrialization drives. This stage of peasant farming includes changes in land tenure as well as some other institutional arrangements. At least

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one authority has recently formulated a comparison between the Chinese and the Soviet transformation in which the divergent trends during the precollectivization period play a major role.[1] But it is also possible to argue on other grounds that the influence of this stage on the formulation of Soviet strategy and the course of agricultural transformation was very substantial.

The second stage of transformation remains to be defined. It is the stage associated with the implementation of the initial industrialization drive in the Soviet Union and the corresponding strategy of "surplus collection." In this stage agriculture's contribution to growth is viewed narrowly by the planners: for the most part, farming becomes a direct, rather than indirect, supplier of marketable surpluses and of forced savings as well as of labor. During this stage little is done to increase agricultural productivity, and input supplies tend to be neglected. Farm incomes and prices as well as trends in terms of trade reflect these goals quite accurately.

The strategy of surplus collection leads to the emergence of a set of institutions designed to implement its particular goals. The Soviet collective farm is one such institution, and there are certain others characteristic of the Soviet command economy, such as the system of material technical supply, planning through material balances, and certain types of success indicators. The combined impact of these institutions on agriculture as an industry is sufficiently strong to result in the emergence of what may perhaps be called a stage of command farming.[2]

Actually, it is possible to discern a third stage of agricultural transformation that is not easily contemplated apart from its predecessor. That is the stage of "decompression" of command farming. While growth and industrialization still enjoy a priority, the planners no longer neglect the counterdevelopmental impact of surplus collection on the agricultural sector. Modest increases in living standards and in farm productivity become immediate policy goals. A larger supply of inputs and investment funds is allocated to agriculture, and efforts are also made to eliminate some counterincentive features of command farming.

Both the strategy of rapid industrialization and the socialist transformation of agriculture emerged first in the U.S.S.R., and the duration of each of these stages was considerably longer there than in any other

[1] Alexander Eckstein, *Communist China's Economic Growth and Foreign Trade*, New York, 1966, pp. 78–82.

[2] There is more to command farming than simple imposition of wartime controls. In the Soviet Union, at least, command farming has generated a tradition of its own.

area. The precollectivization stage of peasant farming ended in 1929. The second stage may be said to have come to a close in 1953. Decompression is still in progress, and it is by no means clear yet what the final outcome will be. In Eastern Europe the duration of the first and second stages was relatively shorter, but we do observe two cases of reversibility, as Yugoslavia and Poland return to (largely) peasant-type agriculture in 1953 and 1956 respectively. Here, as well as in the Soviet Union, the introduction of "new economic models" and their agricultural counterparts represents the culmination of the decompression effort to date.

My comments (and detailed knowledge) of developments in China are less extensive than for the U.S.S.R. and Eastern Europe. In mainland China, too, three stages of transformation may be distinguished, culminating in the "agriculture first" policy of 1961–62. Yet, developments in the second stage, in particular, were strongly influenced by differences in resource endowments and the much lower level of per capita food production.

THE EMERGENCE OF SOVIET DEVELOPMENT STRATEGY

The issue of land holding in Soviet Russia was resolved summarily during the revolution and the civil war: large estates were seized more or less spontaneously by village communities or individual peasants. Just prior to collectivization some 25.6 million households were engaged in farming, with an average crop area of about four hectares per household.[3]

This agriculture of small peasants succeeded to an astounding degree in recovering from the damage brought by six years of war. By 1925/6–1927/8 average gross farm output exceeded the level of 1913 by about 14 per cent. Livestock holdings were also greater than they had been at the end of that year. Peasant productive capital was growing at the annual rate of 5.5 per cent.[4] Per head of urban population the volume of farm marketings was only 4 per cent below the level of 1909–13. While grain marketings were only slightly lower, it proved impossible

[3] Lazar Volin, *A Survey of Soviet Russian Agriculture,* Washington, D.C., 1951, p. 13 and Vladimir P. Timoshenko, *Agricultural Russia and the Wheat Problem,* Stanford, 1952, pp. 101, 127.

[4] *Voprosy ekonomiki,* No. 10 (1966), p. 49.

to reach the prewar level of grain exports.[5] This was due in part to greater consumption in the village and in part to a shift in the structure of output in response to changes in government procurement prices undertaken in 1926. The change discriminated heavily against sales of grain, and producers responded by shifting resources (including produced grain) to the production of livestock products.[6]

All these developments took place within a short period in an environment of a regulated market economy. The tumult of wars and revolution, however, left some lasting scars of distrust on the peasantry and the establishment alike. During the war it had been necessary to requisition food, and peasants replied by curtailing sowings and effectively forcing the introduction of the regulated market in 1921. Two years later, an abrupt, adverse shift in peasant terms of trade produced another crisis, which was resolved largely to the satisfaction of the peasants. Within the government the experience generated an excessive fear of similar seller strikes in the future.[7]

The story of the Soviet industrialization debate has been told elsewhere,[8] and only the briefest summary will suffice here. A strategy of balanced sectoral growth was ultimately rejected in favor of heavy emphasis on industry in general and heavy industry in particular, with special stress on development of key industries such as electric power and steel. Ultimately consumption was to be reduced or held in check by low farm prices and by heavy turnover taxes included in retail prices. Massive collectivization of agriculture was not contemplated initially.

The decision to collectivize was closely connected with a grain procurement crisis of 1927/8. I have argued elsewhere that the crisis was a natural outcome of certain government policies, but the fact remains that the difficulties with grain supplies in 1927/8, although avoidable, were very real indeed. Solution was sought in arbitrary confiscations from peasant stocks. Even though this procedure (which copied the experience of the civil war) was successful, grain exports declined substantially. A year later, similar difficulties reappeared. By this time, the government was committed to a program of rapid industrialization

[5] Jerzy F. Karcz, "Thoughts on the Grain Problem," *Soviet Studies*, April 1967, pp. 408, 409, 411.

[6] By 1927/8, grain procurement prices exceeded production costs by 0.4 of one per cent. *Ibid.*, p. 415.

[7] Although peasant withdrawal from markets could cause difficulties in the short run, it is difficult to visualize withdrawals persisting over a longer run, as long as war-induced shortages and habits of thought no longer dominate behavior.

[8] Alexander Erlich, *The Soviet Industrialization Debate, 1924–1928*. Cambridge, Mass., 1960, is a standard source on this subject.

and to the satisfaction of the resulting heavy demand for imports. Moreover, difficulties with food supplies led to the introduction of country-wide rationing.[9]

The difficulties might have been avoided by the adoption of alternative policies, but in the atmosphere of crisis, administrative convenience and past experience with procurements suggested a drastic solution. This was sought in the collectivization drive of 1929/30. By March 1930, over half of the peasant households were in cooperative farms. Although a brief period of relapse followed, by 1936 fully 90 per cent of all households were collectivized.

The Soviet government thus applied an essentially short-run war-economy type policy to the solution of a long-run, structural problem: agriculture's contribution to economic growth.[10] If productivity had not improved, such a policy could not have been followed in the longer run without adverse effects on incentives and the size of herds (through the impact on feed supply). Grain procurements rose, productivity did not improve and the violent upheaval of the collectivization campaign increased the already heavy slaughterings of livestock.[11] By the end of 1932 cattle holdings declined by 49 per cent and holdings of pigs and sheep by 55 and 64 per cent respectively. Output dipped below the 1928 levels and did not regain them until the excellent harvest year of 1937.

But from the standpoint of agriculture's contribution to economic growth, the results were not at all unfavorable.[12] From 1928 to 1932 the nonagricultural labor force increased 55 per cent and by 1939, had increased another 44 per cent. In 1930–31 grain procurements were twice as large as they had been in 1926–28 and grain exports were resumed on an unusually large scale. The maintenance of agricultural exports during 1929–32 enabled the government to finance the entire increase in the value of imports between 1926/7 and 1932.

But total food marketings declined between 1928 and 1932. An index, as yet unpublished, of food marketings shows a decline of 20 per cent during this period. The ensuing difficulties in supply were responsible for the major Soviet famine of 1932/3. This, incidentally, is the only

[9] Moshe Lewin, *La paysannerie et le pouvoir sovietique, 1928–1930,* Paris, 1966, p. 260.

[10] Karcz, *op. cit.,* p. 430.

[11] The decline in herds was due not only to peasant slaughterings just prior to collectivization, but also to shortages of feed, hasty collectivization, lack of structures and insufficient care.

[12] This is based on my paper "Soviet Agriculture: A Balance Sheet," in V. G. Treml (ed.), *The Development of the Soviet Economy,* New York, 1968, pp. 108–46.

period in Soviet history during which a reconstructed index of final industrial product shows a decline.[13]

On the other hand, marketings of major technical crops increased by 36 per cent, reflecting privileged treatment for products of high opportunity cost in terms of foreign exchange.

Finally, we note that the government was able to obtain the bulk of its food supplies at prices that had changed little since 1928. This, together with the high rate of surplus extraction and rising retail prices, enabled the government to divert increased savings to finance the industrialization drive.

There was no basic change in Soviet strategy of surplus collection until the outbreak of the Second World War nor, for that matter, was there any during 1945–52. Some adjustments were made in the institutional structure leading to guaranteed household plots and the introduction of fixed delivery or payment quotas and of the dual-price system in state procurements. Urban markets were reopened in 1931. These measures were aimed simultaneously at the improvement of food supplies through greater marketings and the provision of some undefined real income floor for the individual member of the collective farm. For all practical purposes, these changes completed the transition to the model of "command farming" referred to earlier. This model was subsequently emulated in the transformation of agriculture in both the Eastern European countries and in China, and we shall shortly indicate some key features of its performance. It should be noted that a rising trend in output resulted in an increase in marketings, and food rationing was therefore abandoned in 1935. There was also a temporary improvement in peasant real income. In the prewar period, total factor productivity in agriculture declined. Two independent calculations are available. The first, and the more elaborate, is by D. Gale Johnson, who employed data from his study of Soviet agricultural growth for the National Bureau of Economic Research. The input index is based on series for capital, current purchases, weighted sown areas, livestock, and labor (measured separately in man-days and also in numbers employed). Adjusted 1955 weights were used in calculations for the period 1928–38, which show an increase of 7 to 19 per cent in the input index (depend-

[13] Reference is to calculations of final industrial product by Raymond Powell, "Industrial Production," in Abram Bergson and Simon Kuznets (ed.), *Economic Trends in the Soviet Union*, Cambridge, Mass., 1963, p. 178. The calculation in terms of 1928 prices shows no change in output for 1932 and a decline in 1933. The other two computations (in terms of 1937 and 1950 prices) show declines in both 1932 and 1933. See also Naum Jasny, *Soviet Industrialization, 1928–1952*, Chicago, 1961, p. 114.

ing on measurement of labor in terms of numbers employed or man-days). Productivity indices show a decline of 3 to 13 per cent (with the difference accounted for by the change in the measurement of the labor input).[14]

A much rougher calculation, using official Soviet data for sown area, the size of the capital stock (including livestock), and an independent series for the labor input in man-days, was made by the writer on another occasion. Two sets of weights were used, based on relative factor shares of 1958, but with alternative assumptions as to the magnitude of rent. Between 1928 and 1939 the input indices show increases of 2 to 5 per cent and the productivity index shows declines of 4 to 7 per cent.[15]

Important Characteristics of Command Farming

Details of Soviet farming organization need not detain us here. To summarize, we note that it consists of state farms and collective farms (machine tractor stations, MTS, were abolished in the Soviet Union in 1958). These categories make up the socialized sector. The private sector comprises the household plots of collective farm members as well as those of other citizens and such independent farm units as may still be found in the economy. In the late 1950's, the Soviet private sector accounted for nearly 40 per cent of output.[16]

We now comment briefly on some of the outstanding characteristics of command farming and their impact, intended or unintended, upon the performance of farm units or of the agricultural sector as a whole. These characteristics developed initially in the Soviet Union, but they were also found in those East European agricultures that continued to use the system of command farming.

The farm sector as a whole tended to operate under constant pressure from national planning agencies to satisfy the growing demand for farm products. The rise in this demand was due largely to growing employment outside of the farm sector. Income elasticities of demand for food have been high. At the same time, state demand for exportable produce was also high and at times rising. Inputs necessary for the satisfaction

[14] D. Gale Johnson, "Agricultural Production," in Bergson and Kuznets, *op. cit.*, pp. 214–218.

[15] Karcz, "Soviet Agriculture. . . ," Table 2.

[16] Karl Eugen Wädekin, *Privatproduzenten in der sowjetrussischen Landwirtschaft*, Cologne, 1967, p. 22. In Bulgaria, the private sector accounted for 22–24 per cent of output in 1965. For Hungary, the corresponding figure is close to 40 per cent.

of this demand were not always provided. National planners frequently tended to rely upon the supposed availability of unspecified inputs within agriculture. These pressures tended to place a premium on short-run performance of individual enterprises to the detriment of long-run trends.[17]

Established regulations on output distribution in the collective farms subordinated the return to labor to the task of fulfilling various other obligations to the state and the coverage of material expenses. Thus the necessary level of deliveries or sales to the state was maintained more or less unaffected by harvest fluctuations, but peasant incentives suffered.[18]

Until 1958 almost the entire stock of heavier machinery including tractors was concentrated in the MTS (state farms owned their own machines and tractors). This policy, through which duplication was theoretically avoided, was originally intended to minimize capital outlays and to permit maximum utilization of the capital stock, as well as to increase the size of the surplus through the extraction of payments in kind. Problems arose with MTS because of the low quality of their work and the inability to set up an efficient system of incentives for their workers, as well as because of difficulties in coordinating their operations with those of the collective farms.[19] In general, planning of output as well as of livestock herd composition was carried on not on the farm itself but in the superior administrative agencies. Since these were not directly responsible for the results of their planning, certain inconsistencies tended to develop between various plan indicators. Moreover, specialization was often discouraged, as planning agencies tended to divide the output quotas among a large number of farms in order to minimize the risk of failure for the area as a whole.[20]

Machinery was allocated to state farms and to MTS within the framework of the supply plan. This was also true of other off-farm inputs, such

[17] B. Prouza *et al., Základní problémy soustavy ekonomického řízení ČS zemědělství,* Prague, 1963, p. 12.

[18] On details of these rules see Arcadius Kahan, "The Collective Farm System in Russia: Some Aspects of Its Contribution to Soviet Economic Development," in Carl Eicher and Lawrence Witt (ed.), *Agriculture in Economic Development,* New York, 1964, pp. 251–271.

[19] Lazar Volin, "Agricultural Policy of the Soviet Union," in U.S. Congress, Joint Economic Committee, *Comparisons of the United States and Soviet Economies,* Part I, Washington, D.C., 1959, pp. 297–299.

[20] Jerzy F. Karcz, "The New Soviet Agricultural Programme," *Soviet Studies,* October 1965, p. 147. On discrepancies between planning of feed output and numbers of animals in Bulgaria, see Dimitur V. Kinov, *Efektivnost na proizvodstvenite fondove v selskoto stopansto,* Sofia, 1965, p. 47–48.

as fertilizers, building materials, or spare parts supplied to collective or state farms. The principles of planning material-technical supplies were the same as in the rest of the economy, but in view of the low priority of agriculture, the probability of shortfalls in deliveries to farms was increased. Moreover, administrative allocation of machinery and current inputs often neglected the necessary complementarity between individual items.[21]

As noted earlier, a double-price system was introduced at an early stage in order to stimulate larger sales to state agencies. These sales permitted the maintenance of base delivery prices at low levels for very long periods, but the entire system of dual pricing tended to inhibit rational specialization and to accentuate further the existing differences between the weaker and the more prosperous farms.[22]

The low income paid by farms (a direct result of low procurement prices) caused many farmers to rely on supplementary income from the household plot. This became a source of constant friction between the farmers and the government. Locally, the socialized sector and the household plot competed for labor (during peak activity periods), for feed, and at times for land. The proportion of plot income in total income has been very high—but we should keep in mind that the socialized sector has always been an important provider of feed for the household plots.

With the adopted principles that governed product and income distribution in the collective farm sector (payment in kind to MTS, payment of labor from residue product), calculations for production costs in the collective farms were made very difficult. None were allowed in the prewar period, however, probably because of the embarrassingly low level of delivery prices.[23]

State farms owned machinery directly and paid regular wages, and problems of coordinating the use of inputs with the MTS or of calculating production costs did not arise. Since state farms as well as the MTS did not pay for the machinery in the early period, the distribution of machinery between farms tended to be inefficient. Many of these farms were set up in order to maximize output, with the result that management was seldom cost conscious and heavy subsidization was the rule rather than the exception.

[21] *Plenum Tsentral'nogo Komiteta Kommunisticheskoi Partii Sovetskogo Soiuza, 24–26 marta 1965 g.*, Moscow, 1965, pp. 49–51.

[22] Vladimir Vydra, *Úloha výkupu v ekonomickém svazku dělnické třídy a rolnictva*, Prague, 1963, pp. 120–122.

[23] Nancy Nimitz, "Soviet Agricultural Prices and Costs," in *Comparisons of the United States and Soviet Economies, op. cit.*, p. 241.

Since the rules of the game were often in direct conflict with the personal interest of farm managers and farmers, it was necessary to maintain a large enforcement and control apparatus to regulate procurement and planning. In this manner, a considerable proportion of scarce administrative talent was absorbed in activities that contributed little to increase in productivity.

No explicit rental payments were made, and the state attempted to collect a part of the rent through regional variations in delivery quotas and prices. In practice, grain prices were made to bear the major part of this burden, since prices of technical crops were generally set at higher levels to stimulate production. The result was that grain tended to be consistently undervalued in spite of the fact that it was continuously in short supply for animal consumption.[24]

Nor was there much scope for the supply of those "new factors of production" that are responsible for such a large proportion of the increases in factor productivity. Younger and better trained workers tended to leave agriculture for other occupations providing a more regular income. Many of the specialists trained for agricultural occupations tended to follow suit partly because of the low and at times very primitive living conditions in the villages. The introduction of new strains of crops or better varieties of livestock was often hampered or delayed by changes in procurement quotas that resulted in deliveries of breeding stock or quality seed.[25]

Finally, we should note one characteristic of collectivized, as distinguished from command, farming found in the practice of the Soviet Union as well as elsewhere in Eastern Europe. Although it might have been feasible to leave the livestock sector largely in private hands, as is often done in the case of present day East German and Polish collectives, attempts were made to introduce collectivized animal husbandry. The capital costs of construction were of course considerable, and the problem was accentuated by widespread shortages of materials. Nor was it easy to avoid the spread of tuberculosis or brucellosis under those circumstances. In many instances, livestock suffered from a shortage of stalls.

[24] This was a phenomenon that was encountered in all countries of the socialist camp. If we abstract from the Soviet expansion of grain production in the New Lands, grain acreage tended to decline in all other countries of the camp between 1957 and 1962. Cf. *Ukazatelé hospodářského vývoje v zahraničí, 1965,* Part **2,** Prague, 1966, pp. 48–49.

[25] Douglas Diamond, "Trends in Output, Inputs and Factor Productivity in Soviet Agriculture," in U.S. Congress, Joint Economic Committee, *New Directions in the Soviet Economy,* Part II-B, Washington, D.C., 1966, pp. 360–363.

One last problem should be mentioned. In the course of collectivization of agriculture, special efforts were made to publish only those indicators that tended to present developments in a favorable light. It now appears that major decisions on resource allocation between the various sectors of the economy were at times based on information provided by faulty but readily available statistical indicators. In one such case an improperly calculated rate of investment for Czechoslovak collectives showed an increase over a period of four years; actually the rate had declined. Thus, the information problem was often another impediment to efficient farming.[26]

Early Soviet Decompression Since 1953

The first attempts at mitigating the environment of command farming were made in 1953 in the Soviet Union.[27] Emphasis was placed on acreage expansion in the New Lands, but a number of other measures were introduced elsewhere as well. In the short space of five years, the price level was raised by a factor of 2.7, agricultural taxes (imposed on the private plot) were cut by 60 per cent in two years, and the volume of capital in agriculture almost doubled, with allocations of fertilizer rising by 59 per cent. The quality of feed, and in many instances its supply, was increased by the corn program. In response to all this, output rose: in 1953–58 the increase amounted to 51 per cent.

The period was also characterized by sharp increases in productivity. Johnsón's calculation (referred to above) shows an increase of 30 to 34 per cent between 1950 and 1959. Another careful study by Douglas Diamond (also based on reconstructed input series and a recomputed index of output) shows an increase of 20 to 22 per cent during the same period. Among the factors that contributed to the increase in productivity, Diamond cites a doubling of real payments to collective farm members between 1953 and 1958. Other beneficial factors include the improvement in the quality of the labor force (through an increase in the share of able-bodied farmers), the rise in the number of specialists in agriculture, permissive policies towards the private plot, and the positive impact of the New Lands and corn campaigns.[28]

[26] Jozef Nikl in *Politická ekonomie*, No. 6 (1963), p. 457, and in *Statistika*, No. 3 (1967), p. 117.

[27] There is by now a large literature on this period. The main titles are given in my "Seven Years on the Farm: Retrospect and Prospect," in *New Directions in the Soviet Economy*, p. 399, n. 41.

[28] Johnson, *op. cit.*, p. 218 and Diamond, *op. cit.*, p. 352. Johnson suggests that his index may be too high because of the likely overstatement of output by Soviet indices in this period.

In 1958, however, priorities shifted against agriculture. Deliveries of machinery declined as did the rate of increase in fertilizer allocations. Prices of machinery and of spare parts were raised, while newly set farm prices were cut. In 1959 and 1960 the real value of earnings per man-day from collective farms declined by 10 per cent. Restrictions on private plot farming caused further reductions. The outflow of labor from collectives increased while the quality of the labor declined.[29]

Though input supplies, including investment allocations, improved after 1962, productivity indices for 1961–64 show a small decline.[30]

TRANSFORMATION OF AGRICULTURE IN EASTERN EUROPE

In Poland, Hungary, and Czechoslovakia inequalities in land holdings were already burning political issues before World War II. Hence, land reforms implemented in the postwar period were also affected by political considerations. In the struggle with the remaining political parties, the Communist parties often sought to neutralize a considerable segment of the farm population through the support of land reforms. They were often very successful.[31]

In Eastern Europe as a whole, land reforms affected almost a quarter of all land used for agriculture and forestry. The state kept about half of the confiscated land. Large-estate farming disappeared completely (except on state farms), and most of the land was given to small peasants. After completion of the reforms, small and subsistence farm units accounted for two-fifths or more of all land in Bulgaria and Hungary and about a quarter of private acreage in Poland and Czechoslovakia. Medium-large and large peasant farms were important only in Czechoslovakia, where they comprised about half of total private land, and in Poland, where they comprised a third. Their share of total private holdings in Bulgaria and Hungary was one-fifth and one-fourth respectively.[32]

It has sometimes been argued that the reforms failed to establish a sound base for commercial-type farming. In retrospect, it seems that

[29] Karcz, "Seven Years on the Farm . . . ," pp. 402–410

[30] Diamond, *loc. cit.*

[31] For an excellent study on developments in Poland, see Andrzej Korbonski, *The Politics of Socialist Agriculture in Poland, 1945–1960,* New York, 1965, pp. 67–98.

[32] Nicolas Spulber, *The Economics of Communist Eastern Europe,* New York, 1957, p. 245. The small category comprises holdings of up to five hectares, while the "medium-large" begins at ten hectares.

almost any reform would have led to similar results, since alternative employment opportunities were small. It also seems likely that with the choice of proper technology and inputs the base for more intensive and productive farming could have been laid down.

Nevertheless, after the establishment of Communist regimes, the future of private farming was grim, although the intent to collectivize was initially denied. In the early postwar years there was a flurry of collectivization in Yugoslavia and Bulgaria, but the first major drive came in Yugoslavia in 1948/9. By the end of 1949 nearly a sixth of all land was collectivized. Thereafter, however, progress was very slow, and in 1953 the government formally allowed dissolution. Within a year the share of collectivized land dropped from 17 to 3 per cent.[33]

The campaigns to collectivize in other countries began in 1948/9. Occasionally the collectivization campaigns were preceded or accompanied by campaigns against richer peasants (taking the form of discriminatory variations in tax and delivery rates, confiscation of machinery, etc.). The beginning of collectivization corresponded roughly with the implementation of the first development plans, which contemplated high rates of economic growth, especially in industry.

The progress of collectivization was by no means uniform. By 1953, Bulgaria alone had collectivized nearly half of its land; most of this had been achieved within a single year in a campaign unique for its forced pace. Elsewhere, the progress was slower. Though numerous types of collectives were set up to ease the process of transition, only 26 to 40 per cent of the land was collectivized in Hungary and Czechoslovakia. The corresponding figures for Poland and Rumania were smaller.[34]

During this early period, Soviet planning and pricing practices, including compulsory deliveries and dual price systems, were introduced in Eastern Europe. To facilitate recruitment, quotas for collectives were commonly kept low. Crop prices were reduced in Bulgaria between 1949 and 1953 by about 50 per cent; the intent was to raise the rate of saving.[35]

The year 1953 brought major policy changes in Eastern Europe. The "New Course policies" resulted in general relaxation of the collectivization drive, a reduction in compulsory delivery quotas, changes in prices, and an increase in agricultural investment's share of total investment.

[33] Jozo Tomasevich, "Agriculture in Eastern Europe," *The Annals of the American Academy of Political and Social Sciences,* May 1958, pp. 47–48.

[34] United Nations, *Economic Survey of Europe in 1960,* Geneva, 1961, p. IV-5.

[35] N. Dimitrova in *Ikonomicheska Misul,* No. 7 (1963), p. 33. As late as 1956, the total losses of Bulgarian collectives in sales to the state were greater than total investment in agriculture, state and collective.

Fundamentally, the reason for the New Course was the same as for the Soviet reforms of 1953: stagnation in output. In 1950–53, the level of prewar production was exceeded only in Albania and Bulgaria (where the war damage was small).[36]

Milder goals for increases in farm output characterized the new wave of medium-term plans (introduced about 1955). Higher investment allocations to agriculture began a trend that, with some exceptions, continues today.

The earlier pattern of developments was broken by the events of 1956. In October nearly 85 per cent of Polish collectives were dissolved spontaneously, and no further drives to collectivize were launched thereafter. In Hungary, the revolution of 1956 had a similar effect,[37] though a few months later nearly half of the cooperatives were back in operation.

Collectivization drives were, however, resumed elsewhere. Bulgaria and Czechoslovakia largely completed the process by the end of the decade, and Hungary renewed the drive in 1959. East Germany collectivized nearly half of its land in 1960. Rumania resumed the drive in 1958 and completed it in 1962. In all countries, drastic decline in herds and output was avoided, although periods of stagnation did occur, and there was some decline in herds.[38]

By 1965, the socialist sector (excluding the household plots) accounted for the following percentages of arable land: Bulgaria—89; Czechoslovakia—93; East Germany—95; Hungary—87; Poland—14; Rumania—87; Yugoslavia—15.[39] Most of the lower type, looser collectives have since disappeared and the more advanced ones have been consolidated. The 1959 merger drive in Bulgaria yielded collectives of which the average size in 1965 was 3,910 hectares. The year before, Hungarian collectives averaged about 1,200 hectares. The mean size of Czechoslovak cooperatives in 1965 was 608 hectares.[40]

The state farm system also expanded rapidly, in part at the expense of the private sector (as the state took over land abandoned by indi-

[36] *Economic Survey of Europe in 1960,* p. IV-15.

[37] I. S. Kuvshinov *et al., Mirovoe sel'skoe khoziaistvo,* Moscow, 1966, p. 59 and Tomasevich, *op. cit.,* p. 47. See also Korbonski, *op. cit.,* pp. 250, 255 for developments in Poland.

[38] J. M. Montias, *Economic Development in Communist Rumania,* Cambridge, Mass., 1967, pp. 96–97. Large numbers of livestock were purchased by collectives at rather advantageous prices.

[39] U.S. Department of Agriculture, Economic Research Service, *The Europe and Soviet Union Agricultural Situation, Review of 1966 and Outlook for 1967,* ERS-Foreign-185, Washington, D.C., 1967, p. 113.

[40] Kuvshinov, *op. cit.,* p. 59; *Statisticheski godishnik na Narodna Republika Bulgaria 1966,* Sofia, 1966, p. 210; *Statistická ročenka ČSSR 1966,* Prague, p. 314.

viduals) and partly at the expense of weaker collectives. In 1962–64, state farms accounted for between 10 per cent (Hungary) and about 17 per cent (Czechoslovakia) of agricultural land.[41]

Reforms of planning, pricing and institutional practices continued. In most instances (with the exception of total or partial abolition of compulsory deliveries) the Soviet reforms were followed. This was true of the abolition of dual pricing, of the introduction of machinery sales to collectives, as well as of the reforms in planning practices. In many instances, the faults, as well as the advantages of Soviet models, were copied faithfully, e.g., the setting of livestock product prices below the cost of production in Bulgaria, Czechoslovakia, and Hungary.

What was the performance of socialized agriculture in Eastern Europe? The answers depend a good deal on the country and the type of indicator used. Bulgaria and Czechoslovakia each lie close to, or at the opposite ends of, the spectrum. In the former, gross output in 1965 was more than twice as high as in 1932–38. In the same year, Rumanian output exceeded its 1938 level by some 40 per cent. In Czechoslovakia, however, prewar levels of output were not recovered until 1960—in the next five years, gross output index fluctuated narrowly around that level.[42]

The preceding comparisons refer to national indices of gross output. In the same terms, there were substantial improvements between the early and the late 1950's. The increase ranged between 19 and 23 per cent for Hungary, Bulgaria, and Poland; in Czechoslovakia it was 13 per cent. In part these increases reflect greater allocation of investment funds to agriculture. National data indicate that the share of agricultural in total (or state) investment rose during the same period by a factor of about 1.5.[43]

Homogeneous data on trends in the labor input are very difficult to come by. Between 1950 and 1960, however, the decline in total agricultural employment in Bulgaria, Czechoslovakia, East Germany, Hungary, and Rumania (taken together) came to about 16 per cent.[44]

Tractor supplies rose by a factor of 3.4; but since in this period the

[41] Kuvshinov, pp. 43–44, 52, 59, 66. In Rumania, state farms accounted for 16.6 per cent of arable land—Montias, *op. cit.*, Chapter 2, Table 1.

[42] *Ibid.*, Chapter 2, Table 6; *Statisticheski godishnik na Narodna Republika Bulgaria 1966*, p. 172 and *Statistická ročenka ČSSR 1966*, pp. 32–33.

[43] *Economic Survey of Europe in 1960*, p. IV-15. On volume of investment see *Ukazatelé hospodářského vývoje v zahraničí 1965*, Part 1, Prague, 1966, pp. 163–170.

[44] *Razvitie sel'skogo khoziaistva i sotrudnichestvo stran SEVa*, Moscow, 1965, p. 101.

number of draft animals declined rapidly, the increase in total draft power availability was smaller. Substantial increases were also achieved in fertilizer applications. Here again, the total increase in the supply of plant nutrients was lower as a result of the decline in the application of manure (probably greater on the socialized than the private fields).[45]

Trends in total factor productivity over this period are not easy to gauge. I presume that, in spite of substantial outflow of labor, the increases in the flow of current purchases and of fixed investment (some of which contributed little to output in the short run) would probably cause a decline in total productivity in the East European countries. This impression is supported by Western estimates of agriculture's contribution to GNP (Western concept) for the period 1950–53 and 1960–63. Here, as elsewhere, performance varied, often drastically, from one country to the next.[46]

In the more recent period, indices of net farm output prepared for the area by the U.S. Department of Agriculture show moderate upward trends for Bulgaria, Poland, and Rumania and more modest increases for other countries. The outflow of labor continued, with the decline in agricultural employment estimated at 11 and 12 per cent for Czechoslovakia and Rumania, respectively, at 15 per cent for Bulgaria and 17 per cent for Hungary. Capital productivity, on the other hand, declined by 15 per cent in Rumania, 24 per cent in Hungary, 29 per cent in Bulgaria and 34 per cent in Czechoslovakia.[47] Since 1961, tractor inventories rose at a fairly uniform rate of 50 per cent, while fertilizer applications registered more spectacular increases, especially in Rumania, Bulgaria, Poland, and Hungary. The last three countries are now approaching the level of application reached by Czechoslovakia in the 1950's (70–75 kilograms of pure matter per hectare of arable land).[48]

All these trends resulted in the continuation of a phenomenon that was already present in the earlier period. Current expenditures for production rose still further. In Bulgaria these expenditures increased by

[45] *Economic Survey of Europe in 1960,* pp. IV-20–IV-21. On the sharp decline in manure applications in Rumanian collectives see Montias, *op. cit.,* Chapter 2.

[46] Maurice Ernst, "Postwar Economic Growth in Eastern Europe," in *New Directions in the Soviet Economy,* Part IV, p. 884. In general, the more industrialized countries have a far worse record than those with more abundant labor supplies.

[47] *Economic Bulletin for Europe,* v. 18, No. 1, pp. 45–47. The index of net output is in *The Europe and Soviet Union Agricultural Situation, etc.,* p. 5.

[48] *Ibid.,* p. 112. See also United Nations. *Economic Survey of Europe in 1965,* Part 1, Geneva, 1966, p. 33 and *Economic Survey of Europe in 1964,* Part 1, Geneva, 1965, p. 27.

44 per cent per hectare of cultivated land in collectives between 1959 and 1964. In Czechoslovakia the increase in cooperatives between 1959 and 1963 was 42.4 per cent. In Rumania material expenditures for agriculture as a whole rose by 31 per cent in the period 1958–64.[49]

The only western index of total factor productivity is that calculated for Czechoslovakia by Gregor Lazarcik. The index of output-input ratio based on 1936 prices (with inputs aggregated geometrically) declines to a postwar low of 63 in 1947, recovers to a level of 92 in 1950 and only surpasses the 1936 level by 1958. In 1962 (a very poor harvest year) the index (1936 = 100) stood at 107.[50]

THE NEW ECONOMIC SYSTEMS

Since 1965 a number of reforms have been introduced in Eastern Europe with the aim of reducing inefficiencies in utilization of resources, stemming from rigidities in planning and reliance on faulty performance indicators. In agriculture, the new systems represent attempts to reduce the impact of command farming on decision making, incentives, and resource utilization by greater use of market type instruments such as changes in prices, taxes, or interest rates.[51] These efforts proceed in several directions.

Greater farm autonomy in decision making is one objective. Indicators of the national or local production plan are no longer binding on farms. In theory, production goals were replaced by sale or procurement quotas after 1955. But in many instances the imposition of procurement goals determined the structure of output almost as effectively as a production plan. Now, the number of quotas is being reduced: in Bulgaria quotas will be distributed for only six products. The only physical quotas remaining in Hungary refer to bread grains, while no quotas are imposed on Czechoslovak farms "in ordinary circumstances." In the Soviet Union

[49] P. Marinov and N. Andreev in *Ikonomicheska Misul*, No. 4 (1966), p. 46; Montias, *op. cit.*, Chapter 2, Table 12; J. Nikl *et al.*, *Problémy vývoje a plánoviteho řizení reprodukce v JZD*, Prague, 1966, p. 208.

[50] Gregor Lazarcik, *Czechoslovak Agricultural Output, Expenses, Gross and Net Product and Productivity, 1934–38 and 1946–62*, Occasional Paper No. 7 of the Research Project on National Income in East Central Europe, Columbia University, New York, 1965, pp. 18–19.

[51] This section is based in part on my paper, "Some Aspects of New Economic Systems in Czechoslovakia and Bulgaria," delivered at the Conference on the Agrarian Question in the Light of Communist Experience, University of Washington, Seattle, August 23–26, 1967. An early publication of the proceedings is expected.

efforts were made to stabilize the size of the quota over time and thus to facilitate farm planning. In Bulgaria the quotas are supplemented by formal investment ceilings and limits on acreage to be diverted to orchards or vineyards.[52]

The extent to which administrative interference in farm planning and management will diminish is still uncertain. In the past, more subtle forms of intervention by administrative officials were devised to circumvent outright prohibitions. Such interference is particularly likely when administrative officials retain power to allocate industrial inputs or even to approve financial or output plans of the farms. They are then able to direct the structure of farm investment or to impose larger delivery quotas in return for permission to implement profitable investment projects. The apprehension about continued administrative interference is evident in all countries, and efforts are being made in Hungary and Czechoslovakia to shift a large part of administrative authority to voluntary associations of farms.[53]

Efforts are also being made to promote vertical and horizontal integration of farming, as such, with input-producing and especially with processing industries. At least a partial duplication of the conditions prevailing in the so-called "agro-business" complexes of the West was sought in 1967 by the merger in Czechoslovakia and Hungary of ministries of agriculture with ministries of food processing and some other administrative agencies.[54] The hope is that the reduction in administrative boundaries will reduce the friction between the farming community and the processing industry that led to much waste in the past. Considerable attention is devoted to the provision of better advisory and technical services, some of which are modeled on extension services. Thus, what is sought is the creation of conditions conducive to the use of new factors of production and more modern production techniques in the farming community. There is, however, no provision as yet for the inclusion of farm machinery producers within this surrogate "agro-business complex."

Simultaneously, greater emphasis is being placed on the allocative function of prices. In all countries introducing new systems there were

[52] This reflects the high profitability of grape and early vegetable production in Bulgaria and the unwillingness of authorities to depend on imported grain.

[53] These associations are to be formed within the framework of the new agro-business complexes described below.

[54] More detailed data are available in *Hospodářské noviny*, No. 13 (1967), insert. The Hungarian reform is mentioned *ibid.*, No. 23 (1967), p. 12. It is described in detail in Radio Free Europe, *Situation Report Hungary*, June 14, 1967 (mimeographed).

considerable increases in farm prices during 1965 and 1966. These increases tended to be reflected in higher prices of grains and cattle—the two product groups that were consistently undervalued in previously effective price structures. The vast majority of agricultural economists in all countries feel that the level of farm prices remains too low and that prices (along with taxes) continue to be used as an instrument through which saving is diverted to the central government. The view that prices will continue to rise in the future is virtually unanimous.[55]

Although marginal cost pricing was advocated by several economists in the discussions preceding the introduction of reforms, it was not accepted anywhere as far as the major products are concerned. The explanation for this is twofold. First, very sharp variations in the level of production costs raised doubts as to the possible counterincentive effect of the very large tax rates necessary to absorb the major part of quasi rents. Second, marginal cost pricing in agriculture as well as further increases in farm prices would be in conflict with the still prevailing objective of stabilizing the existing level of retail prices.

Thus, prices continue to be set more or less at the level of average costs, and the need for subsidization will continue. This is particularly apparent in the state farm sector. In the past, state farms benefited from a number of privileges that were in part designed to offset the financial difficulties connected with the takeover of the land of weak and inefficient collectives. State farms are now being brought into a competitive position with collective farms, but the process will take some time. For example, Czechoslovak farms will pay taxes and insurance premiums out of operating revenues for the first time.[56]

The need for subsidies in Czechoslovakia engendered an unbelievably complex system of prices, premiums, and differential payments, designed to preserve the allocative function of relatively low base prices. It is impossible to say whether the structure of these prices corresponds to the priorities of the long-run perspective plan for development of agriculture, for the excellent reason that the plan has not yet been prepared.

Emphasis is also given to the role of credit. In the past, credit often performed the function of a "tool for the socialization of the village," and whenever the size of repayments relative to farm incomes became too large, the outstanding debts were written off. This happened in

[55] A number of recomputations of agriculture's contribution to the national product has been undertaken recently. One such calculation is described by J. Nikl in *Politická ekonomie,* No. 7 (1967), pp. 545–554.

[56] The result is that only 4 out of 329 state farms in Czechoslovakia are not expected to show a loss in 1967 (interview material).

Czechoslovakia in 1958 and 1967, in the Soviet Union in 1965 (as well as earlier), and in Hungary in 1966.[57] It is now hoped that higher farm prices will make it possible for farms to pay the burden of the remaining debt financing in a normal manner.

The role of the state banks as sources of investment funds has been widened. In 1967, the State Bank of Czechoslovakia will allocate (through its branch offices) about 20 per cent of all investment funds. About half will be self-financed, while the rest will be covered by direct state subsidies. The rates of interest were raised slightly: they now amount to 3 per cent for short-term loans and 5 per cent for long-term loans.

Under the general rules of the Czechoslovak New System, five-year plans for the economy are to show the level and the structure of farm prices, tax rates, and interest rates, as well as the availability of credit, off-farm inputs, and other services. On that basis farm planning will continue. But all this is largely in the future, because of uncertainty with respect to future levels of prices.

Much stress is also placed on the introduction of normal—one is tempted to say fully commercial—relations between the farm as a seller of farm products and purchaser of inputs and the various procurement and supply agencies. In all countries proposals have been advanced (and in many instances permission has been given) for bypassing of ordinary "commercial" channels by farms, or for establishment of direct contacts between the producer and the processor. These proposals reflect uneasiness about the ability of the socialist middleman, accustomed in the past to local monopolies, to alter his stance in accordance with the desiderata of the new systems.[58]

Another objective is further democratization of the collective farm system, through guarantees of secret elections, and the right to discuss and approve production plans, and the like in direct or representative assembly.

At the same time, attention is also concentrated on the matter of peasant income. This comes to about 70 per cent of the level of average earnings in industry (Bulgaria and Czechoslovakia) and some 85 per

[57] Interview material. In Czechoslovakia the write off in 1958 followed a long standing policy of writing off 5 per cent of outstanding collective farm debts annually. For Hungarian data, see Radio Free Europe, *The Hungarian Agricultural Policy After the Ninth Congress of the HSWP*, April 10, 1967 (mimeographed). On the Soviet write off see *Pravda*, March 25, 1965.

[58] The new Czechoslovak approach is explained in V. Eremias *et al.*, *Dodavatelsko-odběratelské vztahy a rozvoj služeb ve zdokonalené soustave řízení zemědělství*, Prague, 1967.

cent of the real income of workers and employees in Hungary.[59] In the past, peasants fared much worse. Guaranteed farm income was first introduced in Bulgaria in 1962. There are some indications that it led to an inflation of job norms (the state guaranteed minimum income per man-day). A similar system of guaranteed wages at about the level of state farm wage rates was introduced in the Soviet Union in 1966. Pension schemes (which existed in Eastern Europe before their introduction in the U.S.S.R. in 1964) have been revised and benefits raised. In recent years, real income of peasants in most countries rose more rapidly than income of workers and employees. If the 1967 Soviet plan is fulfilled in this respect, real income of collective farmers will have risen by 30 per cent in three years. The new Bulgarian five-year plan foresees a faster rise in peasant income than in that of other citizens, and concern about the persistence of income differentials continues in Hungary.[60]

Concern with the level of peasant income is at least partially explained by labor supply problems. In East Germany and Czechoslovakia, the two most developed countries, labor shortages are frequent: the average age of the agricultural worker in the latter country is forty-seven years. But the problem of attracting the specialist—whether a tractor driver or an agronomist—to agriculture and/or of holding him there against the substantial allurements of urban life is present in all countries, including those in which the availability of unskilled labor is generally not an issue.[61]

The new models are being introduced this year and it would be too early to pass considered judgment on the results. Some skepticism is, however, in order because of the dependence of the agricultural component of the "new model" on the appropriate functioning of its industrial component. Even if—and this is a large if—there were no problems on that score, one would still be entitled to question the wisdom of directing production through prices of the chosen type, as well as the ability to apply unfamiliar tools of economic policy making.

[59] *Szabad Fold,* January 22, 1967, as quoted in *Situation Report, Hungary, op. cit.* For Bulgaria and Czechoslovakia reference is to incomes from socialized sector only. For Czechoslovakia and Bulgaria, reference is to income from the collective farm. With private plot incomes the difference is not large, but labor inputs tend to be 18 to 20 per cent higher than in industry or the rest of the economy.

[60] N. K. Baibakov in *Ekonomicheskaia gazeta,* No. 51 (1966), and *Rabotnichesko delo,* July 30, 1966.

[61] Jiři Karlik *et al., Československé zemědělství a pracovní síly,* Prague, 1967, p. 45. Difficulties in attracting trained specialists to the village are felt acutely in Bulgaria.

At the same time, even a partial implementation of some of the objectives of the new models should result in direct and noticeable improvement in efficiency of resource use. And it should be borne in mind that large-scale investment expenditures, a further expansion of mechanization as well as of irrigated acreage, and increased fertilizer supplies are contemplated under the plans running through 1970. Thus, the change in institutions is also accompanied by a favorable pattern of resource allocation.

Special Cases: Poland and Yugoslavia

In these two countries private peasant agriculture still accounts for about 85 per cent of agricultural land use. Because of limitations of space and Yugoslavia's earlier experiments with market socialism, we will emphasize developments in Poland.

In both countries the important sector of socialist agriculture is the state farm sector. In Yugoslavia, these farms tend to concentrate on crop production, employing modern production techniques, improved seeds, and large amounts of fertilizers. They also acquire land through purchase from the private sector. The Polish state farms are not yet in a position to serve as models of agricultural technology, but their condition has improved very considerably since 1956. As for the socialization of the village, there is as yet no official Polish policy.[62] In Yugoslavia, on the other hand, the socialization of the village has been carried out as a part of the official policy on land acquisition.

Production trends since 1956–59 for these two countries have not been markedly different from those for Eastern Europe as a whole. The net output series for Poland is consistently above the total index for Eastern Europe; the Yugoslav index fell below the area total in three out of seven years. The application of fertilizer per hectare of arable land in Poland is the third highest of the European socialist camp; in Yugoslavia it is much lower but nevertheless more than double the Soviet norms.[63]

Polish peasant farming was incorporated into the centrally planned economy through a combination of administrative and market stimuli. Compulsory deliveries still apply to grains, potatoes, and meat. Norms are moderate, and the main aim is to assure minimum supplies of foods,

[62] Cf. Andrzej Korbonski, "Peasant Agriculture in Socialist Poland since 1956: An Alternative to Collectivization," in J. F. Karcz (ed.), *Soviet and East European Agriculture,* Berkeley, Cal., 1967, pp. 427–429. See also Joel M. Halpern, "Yugoslav Peasant Attitudes," *ibid.,* 366.

[63] *The Europe and Soviet Union Agricultural Situation, etc.,* p. 5.

particularly of meat. In addition, the state uses free purchases and also a system of contract sales. These have been developed as a method of influencing peasant output decisions and of integrating small-scale production into the larger framework of the industrial sector. The area to which they apply is scheduled to reach 30 per cent of total sowing in 1970.[64]

Farm prices are flexible and usually upward (other measures are generally used to force acreage reduction). Seasonal price variation is a common phenomenon. Since 1957 planning has been based on the over-all principle that the productive capacity of agriculture (rather than requirements in terms of marketings as has been the case elsewhere in the socialist camp) shall be the starting point.

Since 1956 marketings of the small peasant sector rose by 30 per cent. This is less than the 74 per cent increase in the marketings of Polish state farms during the same period, but it compares favorably with a 29 per cent increase in the market output of Czechoslovak command farming. Soviet market output rose during the same period by about 30 per cent.[65]

In both Poland and Yugoslavia there exists an important group of part-time farmers who often derive a considerable portion of their income from nonagricultural activities. This group is a source of concern to the authorities because it is less sensitive to pressure to raise productivity and therefore less likely to modernize its operations. (In Czechoslovakia also, part-time farming affects the supply of effort to the collectives unfavorably.)

A SKETCH OF AGRICULTURAL TRANSFORMATION OF MAINLAND CHINA

The structure of land holdings in China after the end of World War II is not known with certainty, but many western observers believe that approximately half of the land belonged to the peasants directly. Land reform began in 1950; the first measure was a compulsory reduction of rents. Strict rent control was ultimately followed by the seizure and the distribution of lands. The reform was characterized by apparent leniency towards some of the richer peasants, who were allowed to keep land even if it was worked with the aid of hired labor. Considerable violence

[64] On this subject, see Henryk Cholaj, *Kontraktacja produktow rolnych*, Warsaw, 1965, pp. 121–134.

[65] *Rocznik statystyczny 1965*, Warsaw, 1965, p. 219; *Statisticka ročenka ČSSR*, *op. cit.*, pp. 34–35 and unpublished calculations for the U.S.S.R.

accompanied the reform, however, and the landowner class was eliminated from the country-side, while the ruling party gained in popularity among the peasants. The reform was completed in 1952.

On the average, the distribution amounted to about one-third of an acre per household and approximately one head of large cattle per 100 households affected by the reform.[66] The economic impact was thus very small.

Almost immediately thereafter, efforts were made to enroll the peasants into mutual aid teams. Such teams were known in parts of prewar China: they were now organized for the purpose of enlarging the size of worked land holdings and also to prevent the peasant, as Professor Eckstein puts it, "from consolidating his gains"—such as these were. The teams were generally composed of six to ten households. Even in this form of loose association, there was further differentiation between teams formed on a temporary and on a permanent basis. By 1954, there were nearly ten million teams comprising about 58 per cent of all households.[67]

Agricultural cooperatives of various types were then formed by merging mutual aid teams. Less advanced cooperatives worked the land in common and possessed investment funds. Distribution of income allowed for payment of rents, and private plots were permitted. The more advanced collectives were modeled more closely on the Soviet type.

Formation of mutual aid teams and of the early cooperatives proceeded while the country was already implementing the first five-year plan (1953–57). The plan gave a priority to industrial development and was characterized by rising rates of investment and some growth of urban population. Thus the problem of marketings arose in China.

Compulsory grain quotas were introduced in 1953 and were shortly thereafter extended to other crops. Growth in marketings was fairly rapid in 1954 (13 per cent), but in the next year the rate of increase declined in spite of high delivery quotas that caused some difficulties with feed and seed in agriculture itself. The correlation between the rate of change in agricultural output and that of industrial output is very high. Thus, in 1955, the government was apparently faced with the problem of raising industrial output as well as that of increasing market-

[66] Marion R. Larsen, "China's Agriculture Under Communism," in U.S. Congress, Joint Economic Committee, *An Economic Profile of Mainland China*, Washington, D.C., 1967, pp. 213–214. See also T. J. Hughes, D. E. T. Luard, *The Economic Development of Communist China*, 2nd ed., London, 1961, pp. 141–147.

[67] Quotation from Eckstein, *op. cit.*, p.73; figures from Larsen, *op. cit.*, p. 217.

ings. It was, however, unwilling to divert resources from industry to agriculture.[68]

Against this background, the collectivization drive was adopted in 1955–56. Although as announced, the plan called for a relatively slow pace, by February 1956, 85 per cent of households were in collectives and the percentage rose to 96.1 per cent towards the end of the year.[69] This was apparently achieved without mass slaughter of livestock; total output rose in 1956 and 1957. This may have been due in part to the policy, in effect since the beginning of the land reform, of conditioning of the peasants to constant changes in organization and to the introduction of mutual aid teams.

Yet, the basic problem facing the leadership remained unsolved: how to increase farm output without an increase in state investment in agriculture (which would have meant a reduction of resources assigned to industrial development).

The brief experiment with Soviet-type collectives during 1956 and 1957 does not appear to have been particularly successful in this respect. Though output rose, net marketings may have remained approximately the same. Within agriculture, there was some tendency to permit decentralization of decision making and to pay greater attention to individual incentives. Yet, these improvements were small and they were abruptly cast aside in the Great Leap Forward of 1958–60.[70]

During a single year, 1958, all of the 740,000 collectives were amalgamated into some 27,000 communes which took over all administrative functions of government together with responsibility for agricultural production and initiated unprecedented efforts at capital formation through giant "community-type" projects directed primarily towards water management and other land improvement projects. Although the existing internal structure was preserved (brigades—roughly corresponding to earlier collectives—continued within the communes and teams within the brigades), the entire pattern of farm work was drastically changed. As the communes embarked on large scale projects and construction of local industrial facilities—complete with backyard furnaces —they paid less attention to the purely agricultural aspects of their activities. Egalitarianism, inherent in the assumptions of the Leap Forward and ideologically appealing to local leaders, exerted a detrimental

[68] Dwight H. Perkins, "Centralization and Decentralization in Mainland China's Agriculture," *Quarterly Journal of Economics*, May 1964, pp. 214–215.

[69] Hughes and Luard, *op. cit.*, p. 154.

[70] Perkins, *op. cit.*, pp. 223–225. On grain procurement statistics and their reliability see Eckstein, pp. 312, 315–316.

influence on rural incentives. Private plots were abolished, food was provided in communal dining halls, and small cash wages were introduced. These latter, however, were not made dependent upon the achieved results—as was the case in earlier collectives—but on the number of hours or days worked. Because of the larger size of the operating unit, the degree to which wages were detached from performance was correspondingly increased.[71]

The level of food crop production is believed to have declined by some 14 per cent between 1958 and 1960, while the drop in total farm output is thought to be considerably greater (number of large draft animals available was approximately halved between 1958 and 1961). The decline in food crop production during this time is likely to have reduced available domestic supplies by 18 to 20 per cent.[72]

Recognition of the seriousness of the problem was delayed—in part because of the considerable damage to the statistical apparatus, and in part because of the euphoria generated by the bumper crop harvest of 1958. As the extent of difficulties became clear, various efforts were made to reduce the adverse impact of communal organization and of community investment projects on agricultural production. Rural markets for farm products were again allowed during 1959 (though there is evidence of local variation in implementation), and private plots were again encouraged. Beginning in 1961, the ownership of land devolved upon production brigades, while various efforts were made to limit the use of labor on construction projects during peak periods of farm work. A year later, further devolution of decision-making authority was implemented as production teams stepped up their activities in planning, performance of tasks, and income distribution.[73]

The decline in output with the concomitant reduction in agricultural exports and the shift to import surplus in grains, eventually resulted in a major shift in developmental strategy. The priority of heavy industry was considerably reduced, while that of industries supplying agriculture and producing consumer goods was raised. The rate of investment was also reduced. The "agriculture first" strategy, then, involved an explicit recognition of the necessity of solving the basic problems of agricultural productivity that defied solution within the framework of traditional formulae involving socialization and "cheap" community projects. A

[71] See Larsen, pp. 217–219, and Gordon Barrass, "Measures of Economic Planning," in Werner Klatt (ed.), *The Chinese Model*, Hong Kong, 1965, p. 78.

[72] Eckstein, and Edwin Jones, "The Emerging Pattern of China's Economic Revolution," in *An Economic Profile of Mainland China*, p. 82.

[73] Perkins, p. 232; Larsen, pp. 220–22.

restoration of per capita farm output is apparently planned for 1970, but this goal is not likely to be met. The key role in this task is now assigned to the so-called "modernizing areas" which will absorb most of the available inputs other than labor.[74]

Thus, China finds itself in a position in which the nature of the industrialization strategy, originally patterned broadly on the Soviet model, had to be basically altered because of stagnation and later deterioration in agriculture. In the process, the collective sector was set back to the position in which it is again found necessary to emphasize production teams (as in 1954–55). Furthermore, more resources must be allocated to agriculture than before in order to eliminate some of the adverse impact on soil conditions of low quality "improvements" instituted during the Great Leap Forward.

CONCLUSIONS

Although the common pattern of three stages of agricultural transformation may be discerned in all centrally planned economies discussed in this paper, there were important variations with respect to timing as well as the context in which the phase of surplus collection was applied in these economies. The most outstanding example is that of China, where the introduction of communes within the framework of the Great Leap Forward resulted in a dangerous disturbance of the balance between food production and population growth.

Alexander Eckstein suggests that "the Chinese Communists . . . relatively successful in the drive to collectivize . . . were emboldened to go beyond the tested forms of agricultural and economic organization under socialism. . . . Their success in agrarian policy lay in the tactical adaptation of a tested model." This is undoubtedly true, because the initial collectivization drive of 1955–56 was not accompanied by a decline in output. Yet a related question is in order. How relevant was the tested model to the particular conditions of China in 1957? Could it perform its functions satisfactorily without a major shift of resources to agriculture? [75]

With the stagnation in government procurements of food crops up to 1957, a negative answer seems indicated. Probably, major shifts in the pattern of investment were particularly difficult to introduce in 1957, the

[74] Larsen, p. 224. See also Jones, pp. 83–84 and Eckstein, pp. 37–38.
[75] Eckstein, p. 81.

last year of the first five-year plan. Apart from the matter of prestige, there must have been considerable complementarity between recent additions to capital stock and investments contemplated in industry within the framework of the second five-year plan. Hence, if the leadership opted for the radical solution of the Great Leap Forward, this could have been the result of failure to visualize meaningful, "second best" alternatives.

The tested model did not perform well for a number of reasons. The difficulties associated with command farming must have been particularly acute in the stage immediately after collectivization, because of the lack of experience. But this is only a partial explanation. More fundamentally, it would have been more difficult for the Chinese to pursue the policy of surplus collection than it was for the Soviets, because of large initial differences in the food supply position of Communist China and the Soviet Union. In terms of caloric or grain equivalent the Russians enjoyed a very considerable advantage over China on the eve of the industrialization campaign. It was this advantage that could be used in the process of surplus collection. The Chinese had little room to maneuver.[76]

Thus, the one lesson of the Chinese experience with the adjusted Soviet model is that if a country is to derive the full advantages of the Soviet development strategy and of surplus collection in agriculture, it must be sufficiently rich in terms of per capita caloric supplies and be able (as were the Soviets under Stalin) to make substantial shifts in diet towards starchy foods.

One could also argue that the adherence to Soviet development strategy and to the policy of surplus collection is a hindrance to speedy acceptance of those patterns of agricultural transformation that had been so successful in raising farm productivity in market-type economies. Command farming is the logical consequence of policies of surplus collection. Furthermore, in the postwar period it was also elevated to the status of the only available model of socialist agriculture. But the environment of command farming is basically hostile to introduction of new technology and to the dissemination of, and receptivity to, information on new techniques. We do know now that emphasis on surplus collection virtually put a stop to studies of production functions and delayed those on specialization and regionalization. As long as national policies fail to emphasize rising agricultural productivity, and the total

[76] This has been stressed by Anthony M. Tang in "Input-Output Relations in the Agriculture of Communist China," a paper delivered at the 1967 Conference at the University of Washington, referred to in n. 51.

amount of agricultural investment is severely restricted, the supply of new factors of production, such as better seeds, feed mixtures, and the like, tends to be limited. Even to the extent that they *are* supplied, producers may find it physically impossible as well as unprofitable to introduce them into production. If they are introduced, their impact tends to be reduced by failure to supply complementary factors.

Thus, greater emphasis was placed on the supply of traditional factors of production (primarily structures and machinery). In Eastern Europe, the final collectivization drives were generally carried out in the phase of partial decompression and were accompanied by larger allocations of investment to farming. Although competition for investment funds in centrally planned economies remains strong, the share of fixed investment in estimated GNP (at factor cost) was found to be considerably greater in most Eastern than in Western European countries. In many instances, however, productivity of capital was reduced by neglect of complementarity.[77]

In centrally planned economies progress in decompression of the agricultural sectors has not been rapid. Partial attempts at reform were helpful, but their effectiveness was reduced by the features of command farming that were retained. Among these, irrational price systems—in part a legacy of an early Soviet decision to extract forced saving through prices—are a persisting obstacle to more efficient use of resources.

The introduction of the new economic systems is a vivid testimony to the dissatisfaction with the realized extent of transformation. As noted earlier, this stage is now in progress and it seems best to reserve judgment on the extent of transformation that will ultimately be achieved. If these systems are implemented (and improved), considerable improvement in the use of resources should result. But agricultural reform is being introduced jointly with reforms in planning of industry, and progress in agriculture depends to a large extent upon the improvement in the quality and kind of inputs that industry supplies. Here, too, it seems best to reserve judgment.

One feature of the general pattern of agricultural transformation in centrally planned economies has been a shift in expenditures on agricultural development as such, from an early to a later stage of general economic development. Hence, it is possible to apply resources to other

[77] Maurice Ernst, "Commentary," in Karcz, *Soviet and East European Agriculture*, p. 409. Neglect of complementarity has taken a variety of forms. Farms invested in livestock while the necessary number of stalls was considerably below requirements. Efficient use of fertilizers was often rendered impossible by the lack of appropriate machinery. Irrigation facilities were often unused because the necessary draining ditches were not dug.

sectors of the economy at an early stage. This may be said to be one of the advantages of the Soviet strategy. One opportunity cost, however, represents benefits foregone in the application of new inputs. In advanced market economies the rate of return on agricultural research and extension service activities has been estimated at close to 100 per cent.[78] As we have just noted, these returns were generally foregone by centrally planned economies.

This writer ventures the judgment that in Soviet as well as in Eastern European conditions a less exclusive reliance on surplus collection and greater emphasis on the application of new inputs might have yielded superior results in terms of agricultural productivity and of both the potentially realizable saving and the marketing contributions to growth consequent on such productivity. There is no doubt at all that this would have been the case in mainland China.[79]

Comment

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Professor Karcz tells us at the start of his paper that he will not succumb to the temptations of theory, and indeed his paper hardly swerves from the path of detailed description and historical analysis. The historical role of agriculture in the Soviet developmental process is so little known, and Karcz has learned so much about it in the course of years of research on the subject, that his expertise dictates his comparative advantage along the lines he has chosen to pursue. I, for want of expertise, must seek my least disadvantage in the other direction—toward the theoretical range of discourse if not in theory itself.

To justify his rejection of the model approach, Karcz argues that agriculture in the Sino-Soviet area has gone through three separate stages,

[78] As cited in Wyn F. Owen, "The Double Developmental Squeeze on Agriculture," *American Economic Review*, March 1966, p. 57.

[79] *Ibid.*, pp. 65–67. In his stimulating study, Owen finds only one real advantage to the Soviet (in his terms Marx-Leninist) model over the competing market oriented, family farming (Mill-Marshall) model. This is the virtually automatic transmission of increments of real income in the nonagricultural sector to saving (through the system of turnover and profit taxes). As Owen notes, the problem is primarily one of devising an appropriate tax structure for the market economy.

each of which "may be described as a transformation of its own." The first is linked to the redistribution of landed estates to the peasantry, the second to the collection of farm surpluses to sustain an ambitious industrialization program, the third and most recent to the decompression of command farming, when more resources have been allotted to the sector and an effort has been made to substitute incentives for coercion.

The implication of Karcz's argument is that the objective function of the relevant decision-makers and/or the institutional framework of the system are so altered from one period to the other that no single model can encompass all three.

The merit of this argument depends on our conception of a model and on the questions one might wish to address to the historical facts. But I for one would contend that the type of model Ranis and Fei have built is, to some extent at least, capable of integrating these divergent episodes and of illuminating the causes and effects of the changes that occurred. If these models cannot fully capture the diversity and complexity of the real world, their excessive degree of aggregation is to blame rather than their inability to cope with the broad institutional changes that marked Soviet and East European agricultural development.

In their book-length analysis of the labor-surplus economy, Fei and Ranis [1] focused on the marketable surplus of the agricultural sector in its relation to the supply and demand for off-farm workers on the part of the industrial, or nonagricultural, sector. On the demand side, they found that when wages were fixed at an institutionally determined level, the rate of capital accumulation, the intensity of innovations, and their degree of labor-using or labor-saving bias in the industrial sector were the key factors governing the growth in demand for laborers on the part of the industrial sector at an early stage of development. To meet this demand for labor at a constant wage, however, the agricultural sector has to generate sufficient agricultural surpluses to keep the terms of trade from turning against industry. The growth of the industrial sector, despite a high rate of innovational intensity, is likely to be frustrated when agricultural output stagnates and farm marketings per nonfarm employee decline.

The Soviet and East European experience may fruitfully be analyzed in the context of this model with suitable modifications to fit its institutional peculiarities.

First, we may note that the policy objective implicit in the Fei-Ranis

[1] J. C. H. Fei and Gustav Ranis, *Development of the Labor Surplus Economy: Theory and Policy*, Homewood, Illinois, 1964.

model is not very different from that which can be imputed to the planners in a Soviet-type economy, that is, to maximize some combination of industrial output and nonagricultural employment (although I should expect that the social welfare function Fei and Ranis had in mind would give a higher relative weight to the employment criterion than Communist planners would).[2] But in any event, agricultural output both in the model and in the Soviet scheme of development generates little or no welfare directly. It may be considered an intermediate good, necessary to the production of industrial goods and to the generation of nonfarm employment, both of which enter as arguments in these welfare functions.

Consider the first stage of the evolution described by Karcz. By the early 1920's in the Soviet Union and soon after the end of World War II in Eastern Europe, land reform had been completed, and the independent family farm had become the principal mode of agricultural enterprise. Such surpluses as could be spared from on-farm consumption belonged to the farmers themselves and, after governmental obligations had been met, could be traded directly for industrial consumer goods and services on the one hand, and capital goods on the other. In the absence of rent payments to coax out marketings, one might have expected a marked reversion to self-sufficiency. But as Karcz has shown in his study of Soviet net marketings in 1926–27 and as the prompt recovery of urban food consumption in Poland and Czechoslovakia in the period 1947–49 testify, marketings, in the wake of land reform, need not decline drastically and may in fact keep up with the recovery of output. (In the Soviet Union the recovery took place after the ravages of the civil war (1919–21) and in Eastern Europe after the devastation of World War II and the chaos of the liberation period.) The supply of light industrial products for sale in rural areas rose fast enough to stimulate peasant marketings during the NEP period in the U.S.S.R. and in the late 1940's in Eastern Europe. Both urban and rural food consumption per capita were rising. As a first approximation, it may be claimed that the two sectors grew, or recovered, more or less on a balanced path, neither sector acting as a serious drag on the other, given the rates of capital formation and of industrial growth prevailing

[2] See the discussion in Fei and Ranis, *op. cit.*, pp. 139–141. Industrial employment may enter as a separate argument in the Communist planners' objective function because it helps to widen and to strengthen the power basis of the ruling Party (*cf.* the Rumanian argument in favor of protectionism discussed in J. M. Montias, *Economic Development in Communist Rumania,* Cambridge, Massachusetts, 1967, p. 206).

at the time, rates that were of course much more moderate than in the period that followed.

Accelerated industrialization dominates the second stage in Karcz's scheme. Capital formation was raised significantly and channeled to an unprecedented extent into heavy industry and supporting sectors including transportation, wherever bottlenecks arose. We may, as Karcz and M. Lewin have recently done in their articles in *Soviet Studies*,[3] question whether the Soviet Politbureau in 1928–29 was judicious in choosing its "time limits." By analogy, the discontinuous acceleration in the pace of industrialization in Eastern Europe, starting in 1949–50, may also be taxed as irrational. But if we gauge rationality by planners' preferences, including the planners' time rate of discount—which must have been extraordinarily high at the time of the Soviet Five-Year Plan and in Eastern Europe in the early 1950's—then the instruments for carrying out this policy, at least in the agricultural sector, appear to be in keeping with the logic of these desiderata.[4] For if agriculture was to make its maximum contribution to domestic saving without absorbing more than a fraction of investments in fixed capital, the terms of trade had to be kept favorable to industry and industrial wages had to be repressed. Moreover, to assure the flow of farm laborers into industrial and other occupations, the supply price of farm laborers on the margin of choice between retaining their agricultural occupation and getting a city job had to be held down. These aims were simultaneously achieved by imposing steep schedules of compulsory deliveries to "state funds" for basic farm products and thus turning the terms of trade sharply against the peasants. To offset, at least in part, the blunting effect of these deliveries on incentives, farmers were allowed to sell on the free markets any surplus they wished to dispose of after their obligations to the state had been met. The prices on these markets in the Soviet Union and Eastern Europe were many times higher than the purchase prices paid for by the state for compulsory deliveries and for other forms of more or less obligatory government acquisitions.

A remarkable feature of this first round of intensive industrialization,

[3] J. Karcz, "Thoughts on the Grain Problem," *Soviet Studies*, Vol. XVIII, April 1967; and M. Lewin, "The Immediate Background of Soviet Collectivization," *Soviet Studies*, Vol. XVII, No. 2, October 1965.

[4] In the Soviet case, the logic was probably carried too far. It is hard to believe that any degree of urgency of expanding industrial output could justify the hardships inflicted on the farm population, including widespread starvation in 1932–33 and the massive slaughtering of cattle. The East European Communist leaders learned their lessons from these excesses and followed a more prudent course in their respective countries in the 1950's.

both in the Soviet Union and Europe, was that despite stagnant or even (as in most countries) declining real wages in industry, the capital-to-labor ratio went up in industry itself and, more generally, in the entire nonagricultural economy.[5] These statements jointly imply a "very labor-saving bias" (to use the precise Fei-Ranis terminology) in the aggregate production function of industry.[6] Thus the entire growth of nonfarm employment in the countries that followed the Soviet strategy of development can be traced to the expansion of the capital stock, at least in the industrialization period under consideration.

This capital-using bias in industry may, at first blush, appear counterproductive. But this impression must be modified if we take into account the costs of rural-urban migration—the additional housing capacity and social services that must be provided for new migrants after an initial compression of the average space occupied per urban dweller.[7] The new industrial laborers may well "carry their average agricultural surplus on their back," as in one variant of the Fei-Ranis model, but they can hardly bring their cottage and one-room school house along with them. This may explain why raising the participation of women in the labor force, with the relatively moderate capital outlays that this entailed, seemed a more desirable alternative than stepping up the inflow of farm laborers to city jobs, at least after the overcrowding of existing housing and social facilities in urban areas had reached a certain point. It should also be recalled that the low priority in the development program of service sectors with low capital intensity made for a higher average capital-to-

[5] For the increase in the capital-to-labor ratio outside Soviet agriculture in the 1930's, see Richard Moorsteen and Raymond P. Powell, *The Soviet Capital Stock 1928–1962*, Homewood, Illinois, 1966, p. 255. Official capital-stock series in Eastern Europe are generally undepreciated and based on original value. Nevertheless, even if a generous allowance be made for the overstatement of the growth of the capital stock, it would seem that the capital-to-output ratios rose throughout the area in the early 1950's in industry and, to a lesser extent, in the nonagricultural, nonresidential sectors of the economy taken as a whole.

[6] I assume here that wages are approximately equal to the marginal value product in industry. Then, from Fei-Ranis, *op. cit.*, equation 7.3, and from definition A3.3, we have:

$$H_L = \eta_W - \epsilon_{LL}\,\eta_{K/L} < 0$$

where H_L is the growth rate of the marginal product of labor and the Hicksian labor saving bias, η_W is the rate of increase of wages, ϵ_{LL} is the elasticity of the marginal product of labor with respect to labor (positive by definition), and $\eta_{K/L}$ is the growth rate of the capital-to-labor ratio. If η_W is zero or negative and $\eta_{K/L}$ positive, H_L must be negative.

[7] For a systematic theoretical discussion of this point, see Gregory Grossman, "Some Current Trends in Soviet Capital Formation," in *Capital Formation and Economic Growth*, Princeton University Press for National Bureau of Economic Research, 1955, pp. 188–193.

labor ratio outside agriculture than if these sectors had been allowed to expand at the same pace as in market economies.

But whatever the rational or irrational causes of the bias toward capital intensity, the fact remains that the agricultural working force in the Soviet-bloc countries declined very slowly—more slowly than in most Western European countries—particularly in the Soviet Union, Rumania, Bulgaria, and Poland, the countries where rural overcrowding and hidden unemployment were thought to be the most serious prior to industrialization. To this day the labor force in agriculture in the less developed countries of Eastern Europe makes up a larger share of the total labor force than in most noncommunist countries at a comparable stage of development. Compare, for example, Rumania with a national income per head of 600 to 750 U.S. dollars, and over 50 per cent of the labor force still engaged in agriculture in the mid-1960's, with Spain and Portugal—national income per head 350–400 dollars and 500–550 dollars respectively—and about 35 per cent of the labor force still on the farm.[8]

Whether the Fei-Ranis model can provide a better insight into Soviet and East European agricultural policy than a straightforward historical chronicle hangs on its ability to suggest an economic interpretation for Karcz's third stage, which he summarizes as the "decompression of the command economy." In this stage the terms of trade shift in favor of agriculture, recovering some of the ground lost in the second stage. Mainly through the higher farm incomes resulting from this shift, peasants' living standards improve and the farm sector begins to absorb a significant share of total investments.

The simultaneous inception of the new stage, after the death of Stalin, in both the Soviet Union and in Eastern Europe is certainly no vindication of the model, since one would have thought that, if economic factors alone had been operating, the turning point would have occurred at different dates in countries with more or less surplus labor or which were recovering from greater or smaller war devastation. No doubt dogmatic inflexibility played a role in this timing, and in some countries of Eastern Europe at least the turnabout was delayed after the old strategy had reached a point of no return. But it would be futile to deny that even the most "Stalinist" planners would eventually have realized that the disincentive effects on output of the old strategy had begun to outweigh

[8] For data on the agricultural labor force, see Moorsteen and Powell, *op. cit.*, p. 246 (for the Soviet Union); and Maurice Ernst, "Postwar Economic Growth in Eastern Europe (A Comparison with Western Europe)," in *New Directions in the Soviet Economy*, Joint Economic Committee, 89th Congress, 2nd Session, Part IV, p. 893.

its short-term effectiveness in extracting agricultural surpluses and in getting the swelling urban population fed (at ever so low a standard).

The reversal in the terms of trade and the simultaneous rapid increase in urban real wages that took place after 1953 created a situation akin to the one described by Fei and Ranis, in which a massive industrialization drive is eventually brought to a halt by the failure to expand agricultural output.[9] In contrast to the case they describe, however, the growth of industrial output slowed down as capital formation declined, but did not fall to zero, although it diminished significantly. Most notable is the fact that, in the countries of Eastern Europe that were hardest hit by the New Course, including Rumania, Hungary, and Czechoslovakia, nonagricultural employment virtually ceased to expand during the years following 1953. This shut off the only outlet for the natural increase of the farm population, whose absolute size actually increased during the next two to four years.

Except in Bulgaria, where collective farms occupied about 50 per cent of the country's cultivable area by the time of Stalin's death, it was not until 1958–60 that the majority of peasants were herded into collectives in Eastern Europe (outside Poland, of course, where individual farming has been permitted to hold sway to the present day). In Rumania, the only country I have studied closely in this regard, the improvement in the terms of trade for agriculture ceased about the time of the final collectivization drive.[10] The deterioration that occurred after 1958 seems to have been caused, not by a decline in official procurement prices, but by a curtailment and eventual near elimination of the free market. Yet capital investments in the farm sector kept on rising, in large part through the medium of the machine-tractor stations, which, in contrast to the Soviet Union where they were liquidated after 1959, continued to perform their traditional role as "vanguard of the proletariat" in the Danubian economies. Collectivization provided an added degree of freedom for the economic planners who were in a better position than in the past to force the peasants to reinvest—via the "indivisible fund" of the collectives—a significant share of the gains in real incomes that accrued to them from larger output and sales.

Far from "decompressing command farming," the rulers of Rumania pulled the reins tighter during this period; but they also prudently stepped up the resource flow from industry to the farm sector in the form of fertilizers, insecticides, and machinery. This complex policy mix had yet another dimension: the government now supplied industrial resources

[9] Fei and Ranis, *op. cit.*, pp. 181–182.
[10] J. M. Montias, *op. cit.*, Chapter 2.

in first priority to state farms, which were technically better equipped to absorb modern machinery and chemicals, and which offered the special advantage of marketing the bulk of their production. The Rumanian planners apparently came to the conclusion that a concentration of inputs in this modern enclave of the agricultural sector would yield a larger pay-off in the form of exportable marketings than if they had been spread more evenly (and thinly) throughout the sector. The upsurge in food exports of the period 1958 to 1962, which helped to finance larger raw material and machinery imports and which was therefore partly responsible for the acceleration of industrial output that took place in these years, must have justified this preferential allocation in the eyes of the authorities.

This success story leads me to a broader conclusion: The performance of Soviet and East European agriculture cannot be assessed in terms of diminishing capital productivity, rising material costs, and of other partial indicators. In some countries, like Czechoslovakia, the decision has been made to let food imports fill the consumption gap created by a stagnant agriculture. In others, like Rumania and Bulgaria, exports have bought critical inputs for the industrialization program. The wisdom of Czechoslovakia's decision to adopt a British-type strategy hinges on its ability to increase exports of manufactures *pari passu* with its rising food and material requirements. In the case of Rumania, it depends in part on the external opportunity costs of the resources that have lately been injected into the farm sector. Even if the type of industrialization strategy pursued by the communist states were to lead to a deficit in foodstuffs for the entire bloc—a possibility by no means inconceivable in the light of the divergent trends in the area as a whole between the consumption of foodstuffs and their output—this would not necessarily be catastrophic, nor would it necessarily show the improvidence of the planners' single-minded stress on industry. The outcome of such a trend might be good or bad, depending on the aggregate capacity of the bloc to export non-food raw materials and manufactured goods to the rest of the world, and particularly of course to countries, such as the United States, Canada, New Zealand, and Argentina, which enjoy a comparative advantage in exporting farm products. Peter Wiles and the London *Economist* some time ago advocated such a policy for the Soviet Union. It also makes sense, in my opinion, for the more developed East European countries, if not for the entire Soviet bloc.

Now that Professor Karcz and other specialists have pinpointed the various reasons why agriculture in the Soviet bloc is not as efficient as it might be, further analytical studies of the sector in the wider context

of these countries' industrialization problems are in order. Changes in labor productivity in agriculture must be assessed in the light of the efficient distribution of labor and capital between agriculture and the rest of the economy. This allocation in turn hinges on the expansion of the branches of the chemical and machine-building industry that provides inputs for agriculture, as well as on the trading policy of the Communist authorities—on their willingness to let the economy become more immersed in foreign trade, either as importers or as exporters of food products. The Fei-Ranis model, if it can be opened to trade and disaggregated to include some of the variables discussed in the present comments, may provide a useful analytical framework for this wider approach.

Reply

JERZY F. KARCZ

Had I, in fact, succumbed to the temptation of using a two-sector model as the analytical framework for my investigation, it would probably have been of the Fei-Ranis variety. I was, however, charged with the review of the transformation of agriculture in centrally planned economies and not with the analysis of the role of agriculture in their economic development. But even in the latter case, the required degree of suitable modification seems much more substantial than Professor Montias suggests. Leaving aside the knotty problem of excessive aggregation, we must inevitably face the question of the applicability of a model based on the existence of surplus labor for the analysis of a very large and varied area. Even if we ignore the more obvious cases of East Germany and Bohemia, there is the difficult issue posed by the fact that "empirical evidence does not favor the doctrine of an absolute zero marginal productivity in mainland China's agriculture." [1] Nor was the release of agricultural labor a priority objective of Chinese planners. It is also apparent that Fei and Ranis deal with genuine agricultural

[1] Lawrence J. Lau, "Peasant Consumption, Saving, and Investment in Mainland China," paper delivered at the Conference on "The Agrarian Question in the Light of Communist and Noncommunist Experience," University of Washington, Seattle, August 1967.

surpluses, while those of centrally planned economies are more appropriately described as "forced surpluses." This is a matter of consequence for the functioning of the farm sector. Under the circumstances, I feel more comfortable within the looser (and unavoidably) less precise framework of my three stages (it will, of course, be understood that they differ conceptually from other, more famous, stages that have at times been used to describe the over-all process of development).

The looser framework also makes it possible to bypass, at this time, the awkward question of the relation of turning points of the Fei-Ranis model to the actual developments in centrally planned economies. As Professor Montias himself implies (p. 271), the major turning point after 1953 was more influenced by issues of dogmatic conformity than by the purely economic factors that rule the Fei-Ranis turning point.[2] From this standpoint, it is futile to speculate whether or not the "most 'Stalinist' planners" would—at some point—have called for a turn of the development strategy. The fact remains that in the crucial and pathbreaking Soviet case they did not choose to do so in spite of the mounting evidence of the negative effects of this strategy on farm output.

It is appropriate to touch, even if all too briefly, on yet another consideration. Professor Montias notes correctly that the Soviet development strategy viewed the agricultural output (if not, indeed, the farm sector as a whole) as an intermediate product: final goods are represented by increases in industrial production and nonfarm employment (p. 268). This view implies that we may ignore the impact of developments within the agricultural sector, including trends in output, as long as the major objectives of the planners' preference function are realized (a formulation that takes us a very long way indeed from the emphasis on increases in agricultural productivity which are stressed by Fei and Ranis [3]).

Yet, it is a truism that the quality of the final product depends, *inter alia,* on that of intermediate goods used in its production. To put the matter somewhat differently while stressing the issue of forced surpluses, we could say that it proved possible to treat agriculture as an intermediate product only at the cost of developing and maintaining the institutions of command farming. In a stimulating book, David Granick has recently suggested that organization may be viewed as a major constituent of a nation's intangible capital," and that organizational changes

[2] John C. H. Fei and Gustav Ranis, *Development of the Labor Surplus Economy: Theory and Policy,* New York, 1964, pp. 264-266.
[3] *Ibid.,* pp. 43 ff., 195–199, 214–219.

"can be treated as representing positive or negative intangible investment." [4]

Viewed in this manner, the institutions of command farming should indeed be considered as a disinvestment (measured by the discounted value of foregone income streams). When we recall that command farming in centrally planned economies also absorbed a very considerable amount of capital in the stage of surplus collection as well as in that of decompression, it is difficult to avoid the conclusion that the transformation of agriculture in centrally planned economies was very capital-intensive (as Professor Montias notes, so was the development of industry). Certainly, trends in capital productivity as well as in material costs are of some consequence in assessing the total impact of a development strategy (an issue to which I did not address myself in the paper).

The attempts at partial decompression as well as the introduction of the new economic systems in agriculture may thus be viewed as an effort to increase the volume of intangible national capital. For a variety of reasons, the gestation period has been—and will probably continue to be—a long one, but it should ultimately lead to improved decision making processes as well as to improved incentives. Both form the economic content of decompression. It is for this reason, of course, that I am not perturbed by the absence of recent terms-of-trade effects in Rumania; the stage of decompression of the Rumanian economy as a whole has barely begun. It is precisely because tangible investments are being made in Rumanian agriculture and especially in its "modern," state farm sector—following the Yugoslav model of seed improvement and fertilizer application in state farms—that I am willing to predict the emergence of a stage of agricultural decompression soon.

In closing, one brief comment is called for. I fully agree with Professor Montias that the emergence of a net, blocwide, food deficit need not be a disaster provided that the bloc succeeds in generating a sufficient volume of good quality exports. (From a different standpoint, the magnitude of the deficit could raise some questions.) Japan succeeded in doing so; but in centrally planned economies this along with other scenes of the final act, must still be written.

[4] David Granick, *Soviet Metal-Fabricating and Economic Development: Practice Versus Policy*, Madison, Wisc., 1967, p. 266. See also Chapter 3. I did not consult this work until after I wrote the paper presented in this volume.