

SOVIET RAPID DEVELOPMENT AND THE AGRICULTURAL SURPLUS HYPOTHESIS*

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STUDENTS of Soviet development during the 1930s generally agree 1) that industrial growth was quite rapid, although there is still some disagreement concerning the precise rate of growth, and 2) that the peasantry was badly, even brutally, used by the Soviet regime. These two undisputed aspects of the Soviet experience are commonly held to illustrate two fundamental theoretical propositions regarding the requirements for rapid economic growth in backward economies: a) that the agricultural sector must make a substantial net contribution to the development and growth of the industrial sector and b) that a rapid rate of industrialization may require coercion. Consequently, few have resisted the temptation to insert a 'therefore' between observations 1) and 2) above, although this link has not yet been empirically verified. Others have gone even further to assert that Soviet agricultural policies were peculiarly appropriate, even necessary, to a programme of rapid industrialization.

The principal aim of the first two sections of this essay is to demonstrate that the commonly accepted formulations of the role of agriculture in Soviet rapid development predicate a confusion of description and appraisal which has been obscured by analytically ambiguous concepts of an agricultural surplus. Although specifically directed to the Soviet case, the criticism of the concept of an agricultural surplus that is presented in sections I and II is pertinent to a number of general models of economic development, particularly many two-sector models. Sections III and IV develop an alternative framework for description and appraisal of the role of agriculture in Soviet rapid development and suggest that future research along these lines may show that the role of agriculture in Soviet development has been generally misconceived. If so, our appraisal of Soviet agricultural policies and of their general applicability as a guide to development strategy will have to be revised radically.

* I am indebted to Morris A. Copeland, Walter C. Neale, Lenard Kirsch and Judith Thornton for helpful comments on an earlier draft of this essay. They are not, of course, responsible for any remaining errors of commission or omission.

I. *The Agricultural Surplus Hypothesis*

Everyone seems to know what the 'Soviet model' for economic development is, but it is impossible to find precise specifications in the literature. The characteristic nucleus of the model may be identified, however, by the critical significance that is attributed to the extraction of a sizable agricultural surplus of some sort in support of rapid industrialization.¹ A test of the agricultural surplus hypothesis requires that the concept be formulated so as to lend itself to empirical measurement. The protean guises of the concept of an agricultural surplus may be classified simply and generally according to the criteria utilized 1) to distinguish between what is surplus and what is not, and 2) to draw sector boundaries between agriculture and non-agriculture.

The word 'surplus' refers to a remainder in excess of some specified need or use. The identification of a surplus requires therefore the erection of a standard of need or use. Specification of an economic surplus ordinarily involves a definition of need or use that runs in terms of the maintenance of some given economic condition. Although not exhaustive, two conceptually distinct approaches to the formulation of necessity standards are widely used. One seeks to ground the standard of need in technological relationships which may be expressed in physical magnitudes, as in a production function. An economic surplus defined with reference to a technological standard measures the physical volume of resources (or output) actually or potentially available in excess of those technically (including physiologically) necessary to maintain the given level of economic activity.²

¹ Bruce F. Johnston and John W. Mellor, 'The Role of Agriculture in Economic Development', *The American Economic Review*, vol. LI, no. 4 (September 1961), state (p. 379): 'If communist countries have an advantage in securing rapid economic growth, it would seem to lie chiefly in their ability to ride roughshod over political opposition and divert a maximum amount of current output into capital formation. And agriculture has been a prime target in squeezing out a maximum amount of surplus for investment.' Or consider Paul Baran, *The Political Economy of Growth* (New York, 1962), who argues (p. 268): 'If there were no other powerful reasons for the desirability of collectivization of agriculture, the vital need for the mobilization of the economic surplus generated in agriculture would in itself render collectivization finally indispensable. . . . Collectivization destroys the basis for the peasants' resistance to the "siphoning off" of the economic surplus.' And see William H. Nicholls, 'The Place of Agriculture in Economic Development', in Carl K. Eicher and Lawrence W. Witt (eds.), *Agriculture in Economic Development* (New York, 1964), who states (p. 38): 'When economic planning in the Soviet Union got under way there was already a sizable agricultural surplus, and the task facing the planners was the diversion of this to the towns and industrial centres. . . .' For additional examples, see Alexander Erlich, 'Stalin's Views on Economic Development', in Ernest Simmons (ed.), *Continuity and Change in Russian and Soviet Thought* (Cambridge, Mass., 1955), p. 94; Alec Nove, 'Was Stalin Really Necessary?', in *Economic Rationality and Soviet Politics* (New York, 1964), p. 22; Wilcox, Weatherford and Hunter, *Economics of the World Today* (New York, 1962), p. 37; Abram Bergson, *The Economics of Soviet Planning* (New Haven, 1964), p. 237; Alexander Gerschenkron, *Economic Backwardness in Historical Perspective* (New York, 1962), pp. 146-8.

² See, for example, Joan Robinson, *Economic Philosophy* (London, 1966), p. 108, who states: 'There is . . . a limit to the amount of investment that can be carried out by any given labour force (counting exports used to pay for imported equipment as part of investment). The limit is set by the surplus per man employed in producing the mere necessities of consumption over his own

The other approach has been to formulate the standard in behavioural terms. Functional relationships among economic actors or sectors are conceived as stimulus-response linkages. An economic surplus defined behaviourally measures a discrepancy between some given stimulus and that just necessary to cross the response threshold of a discretionary transactor. Economic rent in the neoclassical tradition, for example, refers to the difference between actual factor remuneration and that just necessary to maintain the factor's given self-allocation.³ These two approaches to the definition of an economic surplus are fundamentally distinct, and a surplus defined behaviourally will not ordinarily correspond to one defined by a technological standard.⁴ However, the failure to distinguish between these two conceptions of the economic surplus is a principal cause of the confusion that is found in discussions of the role of agriculture in Soviet development. It has contributed to the apparent agreement among analysts with quite different economic philosophies on the critical significance of the agricultural surplus, for each means something quite different by the phrase. Moreover, in conjunction with sectoring ambiguities, it has led to a revival of one of the main tenets of the ancient Physiocratic school of thought: the primacy of the agricultural sector.

Given the generic distinction between technological and behavioural concepts of the economic surplus, let us turn now to a consideration of the problems associated with the attribution of a surplus to a particular sector of the economy, for the operational meaning of an agricultural surplus obviously depends upon the way in which the economy has been sectored. There are, of course, a multitude of ways in which the economy may be sectored, one as valid as another so long as it is consistently followed. Despite the apparent simplicity of the task, ambiguity and inconsistency in sectoring criteria has tended to obscure the main obstacle confronting an attempt to attribute a surplus to a particular sector of the economy: sector interdependence.

Alexander Erlich, one of the foremost students of Soviet industrialization strategy, distinguishes the Soviet economy of the 1920s in the following terms:⁵

consumption. The ratio of the surplus to consumption per man governs the maximum proportion of the labour force that can be allocated to investment.'

³ Kenneth E. Boulding, *Economic Analysis*, 3rd edn. (New York, 1955), pp. 211-14; H. H. Liebhafsky, *The Nature of Price Theory* (Homewood, Ill., 1963), pp. 357-8.

⁴ Compare, for instance, the neoclassical and the Marxian conceptions of land rent as a 'surplus' in the aggregate. However, it should be noted that Marx vacillated somewhat between a technological and a behavioural formulation of the economic surplus. So have many neoclassicists. Technological criteria are frequently utilized to specify the upper limit of the potential surplus, with behavioural criteria serving to explain the realized surplus.

⁵ Alexander Erlich, *The Soviet Industrialization Debate, 1924-1928* (Cambridge, Mass., 1960), pp. 119-20.

In a modern industrialized economy the interdependence of its various parts is a two-way affair. However broadly or narrowly an 'industry' is defined, the scale of operation will always depend on the supplies from the rest of the economy at least as much as the scale of operations of the rest of the economy will depend on the supplies from this particular 'industry'. The situation is very different whenever modern manufacturing and mining exist side by side with a backward and overpopulated peasant agriculture. While the first cannot function at all without a certain minimum of supplies from the second, the latter can, although at the price of a more or less considerable drop in output, remain in operation without supplies from the first

In times of critical shortages of manufactured goods such a state of things could have definite advantages for the industrial segment of the economy. A determined policy of confiscating the agricultural surplus with practically no counter-flows of goods from the cities need not under such conditions lead purely mechanically, i.e., by sheer lack of necessary factor inputs, to an immediate collapse of agricultural production.

Erich's standard of need is obviously technological in character: it is not defined in terms of the behavioural response of the peasant sector to changes in intersector flows. What is ambiguous, however, is the way in which sector boundaries have been drawn. At first blush it would appear that the distinction is geographical: the countryside and the industrial-urban area, but in order to draw the line distinctly between 'industry' and 'peasant agriculture' considerable gerrymandering would be necessary, which *ipso facto* demonstrates that another more fundamental criterion is implicit. On the other hand, a strict type-of-product distinction between agricultural products and manufactures would make his assertion of a one-way technical dependency untenable, for the peasant sector could not dispense with all non-agricultural products, e.g., timber, iron, milling and blacksmith services, salt, sugar, woven cloth, fuel oil.

The most satisfactory explanation of the distinction Erlich seeks to make would appear to be a census criterion.⁶ Given, for example, a census classification of the peasant household, the economy may be divided into peasant and non-peasant enterprises. So defined, however, the Soviet peasant sector could not be uniquely identified with agricultural production, although it doubtless accounted for the greater share of it in the late 1920s. Whether or not the peasant sector, defined in some such fashion, was technically self-sufficient in the degree asserted by Erlich would seem to require empirical substantiation. As I have shown elsewhere,⁷ A. V. Chayanov's examination of the Russian peasant economy implies the contrary. Erlich's description of the Soviet peasant economy also slights the extent to which specialization in production had taken place within the agricultural sector in response to the demand of non-peasant sectors for agricultural products.⁸

⁶ This criterion was suggested to me by Walter C. Neale.

⁷ James R. Millar, 'A Reformulation of A. V. Chayanov's Theory of the Peasant Economy', *Economic Development and Cultural Change* (January 1970).

Whatever the case, the agricultural surplus as conceived by Erlich must be the volume of peasant agricultural output produced in excess of the sector's own (minimal) needs. What is important in this connection is the fact that the self-sufficiency assumption permits one to conceive of the agricultural surplus in terms of physical-volume measures such as bushels, tons, and head of stock. The one-way dependency between the two sectors obviates the need to establish an appropriate system of relative prices with which to net inter-sector acquisitions from inter-sector deliveries in the determination of the magnitude of the peasant sector's surplus.

However, unless the power to create a surplus is attributed to a single sector (or factor) of the economy, e.g., the peasant sector or labour, measurement of the surplus produced by the other sectors (factors) will require a system of relative prices. Thus determination of the relative significance of the peasant sector's surplus to Soviet industrialization will necessarily be sensitive to the price weights selected for its measurement. The tendency of investigators to slight the net contributions of other sectors of the Soviet economy to growth, coupled with the emphasis that is commonly placed upon the extraction of an agricultural surplus, as illustrated by Alexander Erlich's presentation of the case, has led to what I shall call a 'neo-physiocratic bias' in explanations of Soviet rapid development. In its extreme form this bias is revealed by those who argue that development and industrialization require a pre-existing agricultural (or food) surplus and thereby reduce the concept of the division of labour to a form of industrial parasitism. For unless the agricultural sector is assumed to be technologically self-sufficient, the surplus of agricultural output over the sector's own consumption cannot be attributed solely to the productive powers of agriculture. Given sector specialization and mutual interdependence, the existence of an agricultural surplus defined in this way is not 'a precondition for industrial development', but a mere tautology.⁹

⁸ Daniel Thorner, Basile Kerblay, R. E. F. Smith (eds.), *A. V. Chayanov, Theory of Peasant Economy* (Homewood, Ill., 1966). See especially chs. 4 and 7 of 'Peasant Farm Organization'.

⁹ William H. Nicholls has urged the necessity for a pre-existing agricultural surplus (*op. cit.*, p. 25). In a supporting theoretical argument he has defined the agricultural surplus as 'the physical amount by which, in a given country, total food production exceeds the total food consumption of the agricultural population' ('An "Agricultural Surplus" as a Factor in Economic Development', *Journal of Political Economy*, vol. LXXI, no. 1 (February 1963), p. 1). But unless his agricultural sector is actually or potentially self-sufficient Nicholls' argument reduces to a simple tautology.

Consider two self-sufficient peasant households, A and B, which are identical in all respects. Assume that, by mutual agreement, A takes over cultivation and husbandry for both farms and henceforward produces only food products, while B subsequently concentrates solely upon the non-agricultural tasks previously undertaken separately by each household, e.g., collecting firewood, processing field and animal husbandry products, weaving, maintenance and replacement of farm plant and equipment. Even if no increase in productivity accompanies specialization of production between the two households, a 'food surplus' as defined by Nicholls is evident under

There is a marked similarity between an approach that attributes the power to create an absolute surplus to the agricultural sector and one that attributes this power to a particular factor type, e.g., labour. Hence the apparent agreement between the Marxist (Soviet or otherwise) and the unwitting neo-physiocrat regarding the controlling significance of an economic surplus in development. However, unless the analyst is prepared to follow such a model to the bitter end, a pre-existing surplus is otiose. But, if one does follow the model through, and this is the Achilles' heel of models of this sort, then economic growth and development must be explained solely in terms of those factors which determine the rate of growth of the surplus. Few contemporary model builders have been prepared to do so, and in this respect their models are logically inconsistent.¹⁰

II. *Measuring the Agricultural Surplus*

If we abandon the dubious quest for a self-sufficient sector with an exploitable absolute surplus, the measurement of any sector's actual or potential surplus, whether defined in terms of a technological or a behavioural standard, will involve finding a suitable common denominator for making the necessary intersector comparisons. For the net contribution of any sector to growth and development will depend as much upon the particular set of price weights utilized in its measurement as upon the physical-volume of intersector flows.

Given a system of interdependent sectors, how useful is the concept of an agricultural surplus to an understanding of Soviet rapid development? Consider an economy divided in such a way that one sector produces agricultural products strictly defined to include, at most, semi-processed fruits of the soil and of animal husbandry. The non-agricultural sector comprehends all non-agricultural production activities, including manufacturing, transport, communications and other service industries. The labour force and the capital stock, including land, may be identified with one or the other sector, but this will not necessarily

the new division of labour. To which household is this surplus to be attributed? Of course, the 'food surplus' does not arise out of thin air, as is obvious if a type-of-product distinction is applied both before as well as after the specialization agreement is concluded between the two households. And it would exist even if both are suffering severe malnutrition.

¹⁰ Gustave Ranis and John C. H. Fei present an example of this kind of inconsistency in the model associated with their names ('A Theory of Economic Development', *The American Economic Review*, vol. LI, no. 4 (September 1961), pp. 533-65). Somewhere between Phase I and Phase III of the model they offer, the basis of sectoring shifts from agricultural self-sufficiency to one of mutual dependence between industry and agriculture. What they have done is to convert a neo-physiocratic model into a neoclassical model. They apparently realized that the Lewis labour-surplus model, upon which they based their Phase I model, would run out of gas as soon as the agricultural surplus, i.e., the volume of 'agricultural resources released to the market through the reallocation of agricultural workers', was exhausted. Otherwise, 'sustained growth' would require a sustained growth of the agricultural surplus. So they introduce technological change in *both* sectors during Phase III to perpetuate the 'take off' provided by the Phase I 'agricultural surplus'.

define unique collections of inputs since individuals, plant and equipment and land may serve either or both sectors. Let us also identify intersector product flows by sector of origin and destination as well as by end use. This approach makes it possible to specify net or gross investment by sector of origin, and it therefore corresponds closely with the way in which the agricultural sector's contribution to Soviet growth has been conceived in the literature.

A portion of gross agricultural production will be consumed or used up in current production activities in each of the two sectors, and the remainder will be devoted to net capital formation in one or both sectors. Gross output of non-agriculture will also be distributed between the two sectors and between consumption and investment within each.* We may define the *unconsumed surplus* of the agricultural sector, therefore, as that volume of current gross agricultural output which is not consumed, used up in current production or otherwise destroyed within the sector during the current year. The unconsumed surplus measures, therefore, that portion of agriculture's current production that has been marketed and/or delivered to non-agriculture plus any amount that has been retained within agriculture and devoted to non-consumption purposes. Let us specify the *marketed surplus* of agriculture as the volume of goods and services the sector has provided in intersector transactions during the current period.

The marketed surplus may therefore be greater than, less than or equal to the unconsumed surplus in any given period, for it differs from

* The discussion and definitions given in the text are based upon the following system of sector accounts: Let gross output of the agricultural sector and its distribution be

$$1) \quad A_1 = C_{11} + C_{12} + I_{11} + I_{12};$$

where A_1 is the gross output of agriculture, C represents output used up or consumed in current production, I measures output devoted to fixed and inventory investment, and where the first subscript indicates sector of origin and the second the sector of destination. C_{12} indicates, for example, a flow of agricultural products to non-agriculture for consumption uses. Gross output of non-agriculture and its distribution is given similarly by

$$2) \quad A_2 = C_{22} + C_{21} + I_{21} + I_{22}.$$

For agriculture, the *unconsumed surplus*, U , may be defined as

$$3) \quad U_1 = A_1 - C_{11}, \text{ or} \\ = C_{12} + I_{12} + I_{11}.$$

The *marketed surplus*, M , is

$$4) \quad M_1 = C_{12} + I_{12}, \text{ or} \\ = U_1 - I_{11}.$$

The *net surplus*, N , is then

$$5) \quad N_1 = U_1 - C_{21},$$

and it measures, given appropriate price weights, the agricultural sector's net contribution to net investment in the economy as a whole. This is made clear if we *consolidate* net surplus accounts for the two sectors:

$$6) \quad N_1 + N_2 = (U_1 - C_{21}) + (U_2 - C_{12}), \text{ and substituting for } U_1 \text{ and } U_2, \\ = I_{11} + I_{12} + I_{22} + I_{21}.$$

the unconsumed surplus by the algebraic sum of the change in agricultural inventories and the volume of net fixed agricultural investment attributable solely to the agricultural sector's use of its own output. However, the difference between the marketed and the unconsumed surpluses will measure the agricultural sector's actual (potential) net investment expenditures only on the unpromising assumption that capital account acquisitions from non-agriculture are (or could be reduced to) nil. Otherwise these two measures do not appear to have any significant analytic value for a determination of the role of agriculture in development.

However, if we net the value of current-account inputs, acquired by agriculture in intersector trade, from the sector's unconsumed surplus, we obtain what may be called the *net surplus* of agriculture. In any given period the net surplus may be positive, negative or zero. Given appropriate price weights, the net surplus measures the sector's net contribution to net investment in the economy as a whole. It is really simply a measure of net investment by sector of origin, which may be seen if we *consolidate* net surplus accounts for our two sectors. All intersector final consumption, replacement and intermediate product and service transactions cancel, leaving us with aggregate net investment.

Only if it could be shown that current-account intersector acquisitions of agriculture were in fact, or potentially, zero, may the unconsumed surplus be uniquely attributed to the agricultural sector. Similarly, the marketed surplus may serve as a measure of the net contribution of agriculture to non-agriculture only if both capital and current account acquisitions from non-agriculture prove actually or potentially zero. In this case the difference between the unconsumed and the marketed surplus would measure net investment or disinvestment in agriculture. Thus, although these two measures have been popular and widely used in discussions of Soviet rapid development, the analytic merit of either depends upon the validity of the assumption that agriculture was in fact, or potentially, self-sufficient. Otherwise, the contribution of agriculture to development will be sensitive to the price weights utilized in its measurement.

The net surplus is the appropriate concept for any model that assumes mutual dependency among the various sectors of the economy, whether conceived in technological or behavioural terms. Given any system of relative prices and the level of aggregate net investment, the larger a sector's net surplus the larger its contribution to aggregate net investment. Similarly, given a sector's gross output, the smaller its acquisitions on current and capital account the greater its net contribution to other sectors. It follows, therefore, that for any specified level of gross agricultural production, steps taken which 1) increase agriculture's

unconsumed surplus and 2) restrain or decrease its intersector acquisitions for current consumption and productive use together serve to increase the net surplus of the agricultural sector. Moreover, other things equal, steps taken either 3) to increase the portion of the unconsumed surplus that is marketed and/or 4) to restrict or curtail capital-account acquisitions and uses by the agricultural sector serve to shift the real output available for net investment to non-agriculture.

Most discussions of Soviet industrialization imply that one or both of these paired steps were successfully implemented by collectivization and subsequent agricultural procurement policy, but this has not been demonstrated empirically, particularly with respect to steps 1) and 4). However, most investigators have not in any case been content with so relativistic a statement concerning the contribution of agriculture. As was pointed out above, the nucleus of the Soviet model for rapid development, as it has been quite generally conceived, implies that agriculture's contribution was relatively large and therefore a significant explanatory variable for Soviet rapid industrialization. But, since the relative size of agriculture's contribution depends upon the prices used in its measurement, any attempt to trace and measure its share unambiguously must first establish the uniqueness of the price weights utilized for this purpose.

As has already been shown, defining the agricultural surplus in terms of a technological standard avoids this problem only on the assumption of sector self-sufficiency.¹¹ Discussions of the process of Soviet industrialization in what are essentially neoclassical terms represent an alternative and incommensurable approach to the specification of the agricultural sector's contribution. This approach has tended to emphasize the 'forced saving' of the peasant sector, which is attributed to collectivization and the predatory agricultural procurement system.¹² What investigators have argued with respect to the Soviet case is that the rate of real saving imposed upon the agricultural sector and the distribution of the economy's net product that obtained in the Soviet Union during the period of rapid industrialization were other than would have prevailed had Soviet leaders relied upon the preferences and free market behaviour of the agricultural community. The discrepancy in this instance measures forced saving of agriculture. This portion of saving is forced, presumably, because the terms of trade that obtained in fact would not have been sufficient to have called it forth as voluntary behaviour. In so far as the underlying behavioural standard is

¹¹ The neo-physiocratic bias alluded to above is a direct result of the attempt to substitute a technological standard for a price system.

¹² Technically speaking, 'forced saving' is the obverse of an economic surplus. If a surplus measures an amount in excess of some standard of need, forced saving measures the deficit between the behavioural standard and realized saving.

normative rather than empirical, forced saving derives from an evaluation of Soviet development couched in terms of distributive justice. The prescriptive standard thus provides the necessary unique set of relative prices.

On the other hand, if the behavioural assumptions underlying the standard accurately reflect peasant market behaviour in the Soviet Union at that time, it follows that non-market policy instruments, e.g., collectivization, obligatory procurement quotas, coercion, were necessary to enforce the net contribution realized in the agricultural sector. This appears to be what Alec Nove has in mind when he asserts that Stalin's agricultural policies were 'objectively necessary'.¹³ But, as an empirical proposition, the necessity for collectivization has by no means been established. There is, indeed, evidence to suggest that the response of the peasantry to an adverse change in its terms of trade and/or to increased money taxation might well have been to increase both output and marketings.¹⁴ Moreover, new research on collectivization suggests that a full-scale reappraisal is overdue.¹⁵

At the outset of this essay I suggested that most Western discussions of Soviet rapid industrialization are characterized by a failure to distinguish clearly between description and appraisal. What I had in mind is the attempt to explain the attainment of a high rate of industrial growth in terms of the exploitation or mobilization of an economic surplus of one sort or another. Western confidence in a necessary link between a high rate of industrial growth, on the one hand, and collectivization and a predatory, coercive agricultural procurement system, on the other, rests more on the normative preconceptions of Western analysts than upon an empirical, dispassionate examination of the process. The economic surplus and forced saving, as applied to the Soviet case, have been defined in terms of distributive justice rather than empirically. As such these concepts have no explanatory power. Surplus value in the Marxian scheme, an agricultural surplus in the neophysiocentric view and forced saving in the neoclassical conception are derived from non-empirical standards of appraisal. The first two refer to the value of product that may be extracted from the rightful claimants to economic output. Forced saving refers to a discrepancy between the terms of trade that in fact obtained and what it is believed these terms ought to have been. So long as discussions of Soviet economic

¹³ Nove, *op. cit.*

¹⁴ Millar, *op. cit.*

¹⁵ See, for example, Jerzy F. Karcz, 'Thoughts on the Grain Problem', *Soviet Studies*, vol. XVIII, no. 4 (April 1967); M. Lewin, 'The Immediate Background of Collectivization', *ibid.*, vol. XVII, no. 2 (October 1965); M. Lewin, *Russian Peasants and Soviet Power: A Study of Collectivization*, translated by Irene Nove with the assistance of John Biggart (London and Evanston, 1968); Z. M. Fallenbuchi, 'Collectivization and Economic Development', *The Canadian Journal of Economics and Political Science*, vol. 33, no. 1 (February 1967).

development predicate putative property rights or just price they cannot purport to explain in what way the agricultural sector served industrialization.¹⁶

Finally, the attempt to trace uniquely and unambiguously sector contributions to economic growth appears to be a futile exercise, at least as an empirical proposition where the sectors stand in a relation of mutual dependency to one another.¹⁷ This suggests that we ought to treat the question of who ultimately paid the costs and/or reaped the benefits of Soviet development as an important but separable issue, one upon which general agreement has not and will not readily be obtained since it is value-loaded. Distinguishing the task of description and the problem of appraisal in this way makes it clear that the first step towards appraisal is a good description.

III. *Measuring Agriculture's Role in Soviet Rapid Development*

In what follows I shall formulate and elaborate four measurable aspects of the part an agricultural sector may play in the process of economic growth and development for application to the Soviet case in subsequent research. Since the research task suggested by the resulting framework is a substantial one, and only just now under way, I shall confine myself to certain speculations regarding Soviet agriculture's contributions to rapid development according to these measures.

Recognizing the inherent element of ambiguity in the assignment of contributions to member sectors of an interdependent economic system, let us follow the advice Professor Simon Kuznets has offered elsewhere and conceive any one sector's role 'as the result of the activities of the economy whose particular *locus* is the given sector—rather than as a contribution of the given sector fully creditable to it as if it were outside the economy and offering something to the latter'.¹⁸

A sector *participates in growth* if its own deflated gross or net output grows. Similarly, if the sector's product per worker grows, this is evidence of *participation in development*.¹⁹ Defining the agricultural sector by type of product, it is clear that the process of industrialization implies a secular relative decline in agriculture's participation in the growth of the economy's GNP. But there is no necessary reason to

¹⁶ It would serve clarity to avoid the analytic use of the term 'surplus' altogether, especially since alternative terms with precise operational meanings are available as substitutes. Or, at the very least, it would seem incumbent for authors to specify explicitly both the sectoring criteria and the standard of need being utilized to define the surplus.

¹⁷ The problem is illustrated by the question: does the bee depend upon the surplus product of the flower, or the flower upon the surplus labour of the bee?

¹⁸ Simon Kuznets, 'Economic Growth and the Contribution of Agriculture: Some Notes on Measurements', in Carl K. Eicher and Lawrence W. Witt (eds.), *Agriculture in Economic Development* (New York, 1964), pp. 104–5.

¹⁹ Kuznets treats these two aspects as a single type of contribution, which he calls the 'product contribution' of agriculture (*ibid.*, p. 114).

expect that the agricultural sector's participation in development should differ from that of the more rapidly growing non-agricultural sectors. This will depend upon the sector's access to the sources as well as the fruits of modernization. However, agricultural production units, especially where peasant agriculture prevails, may be more resistant to change than is the case for other sectors. Also, given a more rapid growth of non-agriculture, the movement of labour out of agriculture may cause a deterioration in the average quality of the agricultural labour force to the extent that it is the young and the ambitious who move. The focus of state development efforts will also affect the degree to which the agricultural sector participates in development.

The apparently small degree to which Soviet agriculture participated in development during the period of rapid industrialization (and after) seems to represent only a difference in degree rather than in kind by comparison with the early patterns of growth of other industrializing economies. What is striking about Soviet agricultural performance during the 1930s is the well-documented failure to participate in growth. Agricultural production stagnated during the period of rapid industrialization and the composition of agricultural output deteriorated by comparison with the more usual pattern of a developing agricultural sector.²⁰

The question is, then, whether agriculture's other contributions were of a volume and nature so to preclude the sector's participation in growth and development. Consider again the two-sector model presented in section II above in which the economy is divided into agricultural and non-agricultural sectors according to a strict type-of-product criterion. Let us designate agriculture as sector 1 and non-agriculture as sector 2. Let M_1 and M_2 stand for the deflated values of intersector marketings (and/or deliveries) by agriculture and non-agriculture respectively. We may determine the value of the net flow of products and services from or to agriculture:

$$1) \quad P_1 = M_1 - M_2.$$

As we have seen, the conventional view holds that P_1 , the *net product contribution* of agriculture, was positive, increased as a result of collectivization and represented a significant provenance of resources to non-agriculture in support of rapid industrialization.²¹ But this is by

²⁰ This is clear from Soviet official data, not to mention the somewhat more severe Western estimates. Gross product of agriculture exceeded the 1928 level only in 1937 and 1940 according to Soviet statistical handbooks, e.g., *Narodnoe khozyaistvo SSSR v 1958 godu* (M. 1959), p. 350. For a Western appraisal see Arcadius Kahan, 'Soviet Statistics of Agricultural Output', in Roy D. Laird (ed.), *Soviet Agricultural and Peasant Affairs* (Lawrence, Kansas, 1963), pp. 134-60.

²¹ In terms of the 'net surplus' defined in section II above, P_1 equals the difference between the net surplus of agriculture and agricultural net investment, i.e., $P_1 = N_1 - (I_{11} + I_{21})$.

no means an established fact of the Soviet experience. In fact, when due account is rendered for the destruction of the capital stock of the agricultural sector in consequence of the peasants' resistance to collectivization, investment in Machine Tractor Stations (MTS) by the state and their operating expenses, for the administrative costs of the system of state procurement agencies, and for the direct intersector purchases of agricultural enterprises, including counterpart sales,²² on current and capital account, a significantly large or expanding net flow out of the agricultural sector cannot be assumed with any confidence. If private consumption of industrial products decreased, as seems likely, capital consumption (including destruction), capital acquisitions and productive consumption of industrial output surely increased.

In the end, of course, the question must be resolved by empirical investigation. Unfortunately, reliance upon concepts of the economic surplus or forced saving has led to an attempt to resolve this question with partial data, e.g., grain marketings and deliveries. However, if we must await empirical investigation for a final answer, it is possible to examine certain implications of the hypothesis that P_1 was growing and significantly large in the 1930s.

Measured in current, rather than in constant, prices, product account 1) represents an abbreviated sources and uses of funds statement for the agricultural sector. Denoting current price magnitudes with small letters, we have:

$$2) \quad m_2 + p_1 = m_1,$$

where m_2 represents uses of funds by agriculture in the acquisition of products and services from non-agriculture, m_1 is the revenue from sales to non-agriculture and p_1 measures the net flow of funds through transfer and financial channels from or to agriculture. As the balancing item in the account, p_1 may be either a net source or a net use of funds for agriculture. If p_1 is negative, for example, the right-hand, or sources, side of account 2) would be: $(m_1 - p_1)$.

Let us assume that the net flow of funds through financial and transfer channels between agriculture and non-agriculture (p_1) is positive, and thus we may treat it throughout as a net use of funds by the agricultural sector. It is composed of two types of pecuniary flows: a) net funds obtained, or advanced and returned through financial channels (f_1) and b) net transfers of funds paid out or received by agriculture (t_1). Obviously, a net use of funds for agriculture is a net source of funds for non-agriculture, and thus $p_1 = -p_2$; $f_1 = -f_2$; $t_1 = -t_2$. Substituting for p_1 in account 2) yields:

²² 'Counterpart sales' provided preferential access and prices for industrial and processed products to producers of technical agricultural products, e.g., cotton, sugar beet, hemp, tea.

$$3) \quad m_2 + (f_1 + t_1) = m_1,$$

which is a statement of sources and uses of funds for the agricultural sector on intersector trading account.

Now, if $p_1 = 0$, agriculture's product and service purchases (m_2) serve precisely to finance m_1 , non-agriculture's purchases from agriculture. Thus, by purchasing the output of non-agriculture, the agricultural sector serves to finance non-agriculture's purchases of agricultural products. Let us label this the *market contribution* of agriculture, for to the extent that m_1 and m_2 grow simultaneously and commensurately the expansion of output and specialization of production for the two sectors is self-financing.²³

Ordinarily, of course, m_1 and m_2 will not precisely offset one another for any sector, and f_1 and/or t_1 will usually be non-zero. The algebraic sum of net transfer payments and net financial flows (p_1) serves, therefore, to finance the difference between m_1 and m_2 . However, since we want to relate the value of the net product flow (P_1) and the net flow of funds (p_1) for the two sectors, it is also necessary to consider the net change in the terms of intersector trade for the agricultural sector. For an understanding of how the various sectors have financed their intersector transactions, a Laspeyres price index seems the most appropriate deflator of current price magnitudes. Let us define for each sector the 'gain from inflation' on intersector sales of its own products as the difference between its sales valued in current-period prices and in prices of the previous period. The gain from inflation for agriculture is, then,

$$4a) \quad g_1 = m_1 - M_1.$$

For non-agriculture the gain from inflation is:

$$4b) \quad g_2 = m_2 - M_2.$$

Substituting in account 3) for m_1 and m_2 , according to 4a) and 4b), we obtain:

$$5) \quad M_2 + g_2 + (f_1 + t_1) = M_1 + g_1, \text{ which reduces to:} \\ P_1 = (f_1 + t_1) + (g_2 - g_1).$$

In plain words account 5) states that the value of the net intersector product flow (P_1) is financed by the algebraic sum of the net flow of funds through financial channels (f_1), the net flow of intersector transfer payments (t_1) and the net change in intersector terms of trade ($g_2 - g_1$).

It follows, therefore, that if P_1 is positive, the algebraic sum of

²³ This, I take it, is what Kuznets means also by the 'market contribution of agriculture' (*op. cit.*, pp. 109-14).

$(g_2 - g_1)$, f_1 and t_1 must also be positive. Which means that the sector providing a net value flow of products and services to other sectors must also help to finance that net flow in one or some combination of the three ways specified. These flows provide an alternative way of measuring and thinking about the net product contribution of a sector in development. Let us call this a *finance contribution*.²⁴

Again, it is not possible on the basis of the data thus far put together to do more than speculate about the extent to which the agricultural sector helped to finance the development of non-agriculture in this sense. It is clear that the terms of trade did turn against the agricultural sector during the 1930s, but the degree to which this happened varied considerably for the various sub-sectors of agriculture. Producers of technical crops received better terms than did those of food products.²⁵ But the net change was, doubtless, adverse. With respect to transfer payment flows, the situation is considerably more complex, for the budgetary grants which financed the MTS system, as well as interest-free capital grants to state farms, must be treated as transfer payments to agriculture. Given that state investment in agriculture far exceeded plan and expectation,²⁶ it is not clear that the net transfer flow out of agriculture was large, or even positive. Finally, it does not seem likely that the agricultural sector advanced and returned net funds through financial channels during the 1930s. The contrary seems much more probable, especially since collective farms had access to long-term borrowing.²⁷ On balance, therefore, one cannot assume with confidence that the net flow of products and services (P_1) and the net pecuniary flow $(f_1 + t_1) + (g_2 - g_1)$ were large during the period of rapid industrialization.

Given that the agricultural sector did not participate significantly in either growth or development, that its market contribution was clearly negligible if not negative, and that a significantly large finance contribution appears dubious, we must, pending fuller examination of the facts of the case, leave open the possibility that agriculture played a

²⁴ Kuznets (*ibid.*, especially p. 114), comes up with what he calls a 'factor contribution', which would seem to correspond to our net product or finance contribution. However, he apparently had a geographical criterion in mind since he treats the flow of labour from agriculture to non-agriculture as a possible factor contribution. In our system of sectoring a flow of labour from agriculture to non-agriculture may be viewed as an aspect of the agricultural sector's participation in growth, if gross agricultural product is constant or rising. Otherwise it would show up in a declining gross product of agriculture.

There is, of course, nothing inherently wrong with a geographical criterion. But it should be noted that sectoring in this way tends to merge the question of the contribution of a particular sector such as the agricultural with the larger question of the emergence of the industrialized economy from the pre-industrialized. And in a closed economy the modern can only emerge from the older.

²⁵ A. N. Malafeev, *Istoriya tsenoobrazovaniya v SSSR (1917-1963 gg.)* (M. 1964), pp. 266-71.

²⁶ Ya. I. Goley, *Sel'skokhozyaistvennyi kredit v SSSR* (M. 1958), p. 19.

²⁷ *Ibid.*, pp. 20-25.

very modest economic role in Soviet rapid industrialization. Indeed, the Soviet model for economic development, as usually formulated, may not be applicable to the Soviet experience in this respect.

IV. *Appraising Soviet Agricultural Policy*

Once the job of description has been completed it will be possible to appraise the merits of Soviet agricultural policy, specifically collectivization and the agricultural procurement system. Should it prove true that agriculture's economic role was a modest one, the appropriateness of Soviet agricultural policies is clearly questionable, if only because the long-term consequences of these policies have been so devastatingly deleterious to the agricultural sector and so difficult to reverse.²⁸

The question we must seek to answer in appraising Soviet agricultural policy is not whether or not collectivization and a predatory procurement system were necessary or in accord with some standard of distributive justice, for an answer to the one flirts with the doctrine of historical inevitability and the other requires for most outside observers no sophisticated analysis. What we need to know is whether or not Soviet policy was appropriate to a programme of rapid economic development, that is, whether or not it approached the optimal policy.

One possible approach to an objective standard of appraisal is to be found in the comparison of Soviet policies with those practised in support of successful industrialization elsewhere, e.g., Japan. An alternative approach is possible in terms of the studies that are available dealing with peasant economic behaviour in Russia prior to the decision to collectivize. These studies make possible the formulation of peasant behaviour patterns as responses to different types of state policy, e.g., changes in the terms of trade, money taxes.

There is reason to believe that Soviet agricultural policy in support of rapid industrialization was founded on an incorrect analysis of peasant economic behaviour, specifically the official Soviet interpretation of the 'scissors crisis'.²⁹ Moreover, the decision to collectivize may have been taken on the basis of inappropriate statistical information, or, perhaps, for completely non-economic reasons.³⁰ Given the models underlying the famous industrialization debate preceding the decision to collectivize, it is clear that many Soviet economists, planners and

²⁸ Joseph W. Willett gives a good survey of the results of the various programmes instituted during the first decade after Stalin designed to help agriculture 'to catch up' ('The Recent Record in Agricultural Production', in *Dimensions of Soviet Economic Power*, Joint Economic Committee, Congress of the United States (Washington, D.C., 1962), pp. 91-136); also Jerzy F. Karcz, 'Seven Years on the Farm: Retrospect and Prospects', in *New Directions in the Soviet Economy*, Joint Economic Committee, Congress of the United States (Washington, D.C., 1966), Part II-B, pp. 383-450.

²⁹ Millar, *op. cit.*

³⁰ Karcz, 'Thoughts on the Grain Problem' (see footnote 15), pp. 399-434.

leaders intended to exploit agriculture in furtherance of industrialization,³¹ but these models display a strong neo-physiocratic bias.

It is possible, therefore, that we shall ultimately discover that Soviet agricultural policy was far from optimal with respect to a programme of rapid industrialization. Let me suggest as a possible fruitful approach that we ought to give separate consideration to collectivization and the agricultural procurement system, for it may be that the latter served merely to offset the economic costs of the former. In any event, we may discover that the Soviet Union achieved growth and development not because the peasantry was exploited and agriculture neglected, but despite it. If such a finding would make the fate of the Soviet peasant all the more tragic, it would also provide a somewhat more optimistic outlook for those countries currently hesitating between adoption of a Soviet model that works, with its attendant necessary evils, and the certain misery of indefinite stagnation.

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³¹ Erlich, *op. cit.*