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Mass Collectivization and the Contribution of Soviet Agriculture to the First Five-Year Plan: A Review Article

Explanations of the success of Soviet rapid industrialization during the 1930s, whether put forward by Western or Soviet scholars, have generally presupposed the "extraction" of a substantial net contribution from the agricultural sector. According to this view the rapid pace of industrialization, especially during the early years of the campaign, demanded an agricultural contribution well in excess of what might have been obtained by relying on the voluntary acquiescence of the peasantry. Forced mass collectivization, by replacing private (peasant) discretion over the amount, composition, and marketed share of agricultural output with centralized administrative coercion, has been supposed to have ensured the necessary increased flow of agricultural products to industry and urban centers and to have severed the potentially constraining link between the pace of industrialization and peasant willingness to expand output and, particularly, marketings in the face of increasingly adverse terms of exchange.[1]

This conception of the developmental role of Soviet agriculture and the economic rationale it has afforded the policy of mass collectivization have been

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1. This statement of the "standard" hypothesis is somewhat oversimplified. There are in fact several versions, which differ from one another mainly because of differences in the way in which the "agricultural sector" has been defined. Alec Nove, for example, considers primarily the relation between the peasantry and the state in *An Economic History of the U.S.S.R.* (London, 1969), pp. 148–86. Alexander Erlich adopts essentially the same approach in *The Soviet Industrialization Debate, 1924–1928* (Cambridge, Mass., 1960), pp. 119–21. However, the main concern of most economists has been the relation between the agricultural sector taken as a whole and the nonagricultural sector, and this is the form in which the hypothesis has passed into the general literature on economic growth. See, for example, Paul Baran, *The Political Economy of Growth* (New York, 1962), pp. 266–71; 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), pp. 22–24; Bruce F. Johnston and John W. Mellor, "The Role of Agriculture in Economic Development," *American Economic Review*, 51, no. 4 (September 1961): 579; Charles K. Wilber, "The Role of Agriculture in Soviet Economic Development," *Land Economics*, 45, no. 1 (February 1969): 87–96. For a Soviet view see *Politicheskaia ekonomiia: Kommunisticheskii sposob proizvodstva* (Moscow, 1963), p. 286. For an excellent statement and analysis of the standard hypotheses see Robert W. Campbell, *The Soviet-Type Economies Performance and Evolution*, 3rd ed. (Boston, 1974), pp. 62–76, which appeared after this manuscript had already been drafted.

challenged in recent years in the Western literature on both theoretical and empirical grounds.[2] However, an empirical test of the standard hypothesis has not previously been feasible because of the paucity of data on the relevant intersector flows of goods and services. It is indeed fortunate, therefore, that a Soviet historian, A. A. Barsov, has now joined the controversy with an attempt to measure directly the net material contribution of Soviet agriculture during the period 1928–32 (inclusive) based upon much previously inaccessible archival data.[3] Barsov addresses himself to three specific questions (Barsov 1969, pp. 8–10). First, to what extent did the "surplus product" of agriculture serve as a source of socialist accumulation for industrialization of the country? As Barsov notes, earlier attempts by Soviet historians to answer this question have relied either on data only tangentially related to the question (for example, current-ruble as opposed to constant-ruble measures) or on purely speculative considerations (Barsov 1969, p. 9, n. 1). The same can be said for most Western studies, but Barsov is somewhat less generous in his criticism of the Western literature on this issue (Barsov 1969, chapter 5: "Concerning a Myth of Bourgeois Economic Science," pp. 168–75). Second, given the direction and the size of the net flow of material products between agriculture and non-agriculture, what was the role of each trade (or transfer) channel between the two sectors? Barsov's findings on this head represent a signal empirical contribution to our understanding of both the process and the consequences of mass collectivization. Third, how did the aggregate net flow of resources between agriculture and nonagriculture during the First Five-Year Plan compare with that of the last year of the NEP? An answer to this last question is vital to any appraisal of the success of collectivization.

2. Jerzy F. Karcz, "From Stalin to Brezhnev: Soviet Agricultural Policy in Historical Perspective," in James R. Millar, ed., *The Soviet Rural Community* (Urbana, 1971), esp. pp. 37–60; Z. M. Fallenbuchl, "Collectivization and Economic Development," *Canadian Journal of Economics and Political Science*, 33, no. 1 (February 1967): 1–15; James R. Millar, "Soviet Rapid Development and the Agricultural Surplus Hypothesis," *Soviet Studies*, 22, no. 1 (July 1970): 77–93; James R. Millar and Corinne A. Guntzel, "The Economics and Politics of Mass Collectivization Reconsidered: A Review Article," *Explorations in Economic History*, 8, no. 1 (Fall 1970): 103–16.

3. A. A. Barsov, *Balans stoimostnykh obmenov mezhdu gorodom i derevnei* (Moscow, 1969), and "Sel'skoe khoziaistvo i istochniki sotsialisticheskogo nakopleniia v gody pervoi piatiletki (1928–1933)," *Istoriia SSSR*, 1968, no. 3, pp. 64–82 (hereafter Barsov 1969 and Barsov 1968 respectively). Barsov has evidently exploited fully the statistical data available in published sources pertaining to the period, and the bibliography that may be compiled from his footnote citations is essentially definitive. However, and more important, Barsov extensively uses new data series not previously available in published form, derived from the Tsentral'nyi gosudarstvennyi arkhiv narodnogo khoziaistva SSSR (esp. fonds 1562, 4372, and 7733), which was founded in 1961. For a brief description of this new archive see Patricia K. Grimsted, *Archives and Manuscript Repositories in the USSR: Moscow and Leningrad* (Princeton, 1972), pp. 133–34.

In the course of his analysis Barsov has much of interest to say about the appropriateness of state agricultural policy during the latter part of the NEP and about collectivization itself, but the novelty derives mainly from the fact that it is being said with such candor by a Soviet scholar. His truly original contribution is an empirical demonstration that Soviet agriculture's net material contribution to industrialization was, at most, exceedingly modest. Unfortunately, the particular measure Barsov presents is not likely to persuade the Western non-Marxist economist, for he has recast the data in terms of a labor theory of value approximation. In other words, Barsov winds up measuring the extent to which income created in agriculture and nonagriculture was allocated to the "rightful" claimants.[4] Thus the likelihood is that Barsov's findings may be ignored or misunderstood in the West. However, it is testimony to his careful scholarship that Barsov has made available his principal physical-volume and price time series, accompanied by extensive explanatory notes on their construction. This has made it possible to construct several alternative measures of the net contribution of Soviet agriculture during the First Five-Year Plan. Interestingly enough, Barsov's main findings are not invalidated by the alternative measures developed here, for they suggest that, if anything, Barsov has overstated the contribution of agriculture.

The main purpose of this review article is to render Barsov's data series accessible to the Western reader and to indicate their potential significance. The first two sections below are devoted to the development and assessment of alternative measures of the net contribution of Soviet agriculture for the period 1928 through 1932. The third section seeks to explain why most Western and Soviet students were led to overstate the development role of Soviet agriculture. The fourth undertakes a re-evaluation of mass collectivization and of the centralized agricultural procurement system as components of Soviet development strategy.

There can, of course, be no unique and completely unambiguous empirical measure of the net contribution of any given sector of an economy to growth

4. There are two related but separable issues involved in the standard hypothesis on the contribution of Soviet agriculture. One pertains to the actual net flow of real resources between agriculture and nonagriculture (however defined) and is pertinent to the questions addressed by the typical two-sector growth model. The other has to do with the welfare implications of the net flow—for example, for the agricultural population. Subject to the qualifications set forth below in the text and notes, the first issue lends itself to straightforward empirical measurement. The second, however, involves a choice of value standard and must therefore be answered using data (such as hypothetical price weights) not contained in the actual historical record. Since Barsov's choice of value standard is not likely to gain acceptance among Western students of the period, his principal contribution consists in the collection and reconstruction of the actual data series, and therefore is pertinent to the first issue. Thus this review is focused on the question of the measurement of the net resource contribution of agriculture, as opposed to the issue of peasant welfare.

and development. The fundamental reason for this is that the net contribution of any sector will necessarily be sensitive to the price weights used to net inter-sector transactions, for a case can ordinarily be made for several alternative sets of price weights. That is, some set of prices must be used to compare the quantities flowing to and from the agricultural sector, and different sets of prices, drawn, for example, from different years, will usually yield different answers.[5] A second reason is that the given sector's net contribution also depends on the investigator's conception of the relevant intersector flows. A Marxist, for example, is likely to ignore nonmaterial flows. Third, the con-tribution measured depends on the criteria that have been used to sector the economy. The net contribution of, for example, a "rural sector," defined geographically, will necessarily differ from that of the "peasant sector," defined according to some kind of census criterion. An "agricultural sector," specified by type-of-product, will yield still a third result. Although this is not an un-avoidable source of ambiguity in the measurement of sector contributions, widespread failure to specify sectoring criteria explicitly and consistently has produced a great deal of confusion in the literature on the developmental role of agriculture.

Barsov defines the "agricultural sector" by type-of-product produced, and it includes agricultural production units together with the population engaged in, or dependent upon, agricultural occupations proper. His measure is of the *net material trade surplus* of agriculture so defined, and thus the net flow of direct services to and from the sector is not considered. The nonrural sector is similarly defined to include industrial production units, governmental agencies and ("nonproductive") service establishments, together with the population engaged in these occupations and their dependents (Barsov 1969, pp. 5–6, 52–55). Transactions with a third (and exhaustive) sector, composed of rural nonagricultural employments and population, are excluded from the trade accounts of both the agricultural and the nonrural (industrial) sectors because of data deficiencies. At a later stage we shall have to consider the significance of the omission of transactions in services and in trade with the rural non-agricultural sector.

Barsov has adjusted his price weights to reflect the "labor content" of the various intersector product flows (Barsov 1969, pp. 40–44). Any such adjust-ment must, of course, be regarded skeptically, but it has fortunately proved

5. This is sometimes referred to as the index number problem, or, more technically, the formula error. The comparison of any two years, for example, involves two sets of quantities and two sets of prices. The quantity change may be measured using as weights prices in either the base or the given year. Ordinarily, the two alternative formulas will not yield answers that agree precisely, and the difference can be quite substantial. How-ever, since the two formulas stand on an equal footing, there is no basis for choosing between them. Obviously, some other set of price weights, drawn from a third time or place, will be likely to yield a third answer.

possible to recast Barsov's time series in terms of unadjusted price weights.

Four measures of the net material trade surplus of Soviet agriculture for 1928–32 are presented in table 1 (rows M, N, O, and P). Measures I and II (rows M and N) use 1928 price weights, and both agree that the net material trade surplus of agriculture was negative in each year covered, and substantially so. According to either of these measures, then, agriculture was a net recipient of material resources (measured in constant 1928 prices) both immediately before and during the First Five-Year Plan. Moreover, mass collectivization was accompanied by an *increased net inflow*. The differences in magnitude between measures I and II reflect, mainly, the fact that measure II is the more comprehensive. Also, a difference in the reporting period for "market output" of agriculture is reflected for 1929 particularly (see rows A and B for 1929 and the notes to table 1). Because it is both more modest and more comprehensive, measure II is here adopted as the best available and used for the various computations that follow.

The price weights for measure III (row O) are 1913 world market prices. Barsov computed it as an aid in the construction of his adjusted labor content weights. It is of some interest because it shows the net material trade surplus of agriculture to have been positive in each year of the period and thus contrasts rather sharply with measures I and II. The difference reflects the fact that world industrial prices in 1913 were much lower relative to world agricultural prices than was the case within the Soviet Union in 1928. There are, however, two reasons why measure III should not be regarded as validation of the standard view of the role of Soviet agriculture. First, there are some very substantial reasons for avoiding as a weight-base year one that is so very far removed in time from the years being compared by the index. There is, for instance, little reason to suppose that 1913 world market prices had any relevance to relative scarcities in the Soviet Union during 1928–32, especially considering the turbulent nature of the intervening historical period and the small number of domestic commodities that were actually traded in world markets. Second, even if we agree to accept 1913 world market prices, the positive trade surplus so obtained does not support the emphasis that has been placed on the "mobilization" of resources from the agricultural sector. Net material agricultural exports to the nonrural sector, in 1913 world market prices, do indeed increase between 1928 and 1931, but much more gradually than the increase in nonrural (industrial-urban) accumulation, measured comparably (see table 2, especially rows E and F). The "explanatory power" of the agricultural trade surplus diminishes sharply at the outset as well as during the course of the First Five-Year Plan.

The current-ruble volume of net material product exchange between agriculture and the nonrural sector is given by measure IV (table 1, row P). It

cannot, of course, reveal anything about the flow of real resources, but it is important for other purposes. With this series it is possible to estimate the net gain (or loss) of the agricultural sector in material product trade resulting from the relative inflation of agricultural and industrial product prices. As may be seen in row Q, the agricultural sector did experience a net gain, because its prices rose faster than those of the goods it acquired from the nonagricultural sector. The terms of trade changed, on balance, in favor of the agricultural sector during the First Five-Year Plan. This is a very surprising finding, for it has been universally assumed that the reverse was the case.

As we have seen, by the best available measure (II), agriculture was a net importer of material products throughout 1928–32. The question remains, however, whether consideration of the net flow of services and of transactions with the rural nonagricultural sector might not change the outcome significantly. In 1928 (the only year for which data are available) agriculture, in its exchanges with the nonagricultural rural sector, received 330 million rubles worth of goods more than it gave up (Barsov 1969, table 3, pp. 60–61). Given the magnitude of the negative balance for 1928, and the relatively small and declining size of the rural nonagricultural sector during these years, there seems little reason to think that this net receipt of goods from the rural nonagricultural sector could have been reversed to create an outflow of resources that would have offset the large inflow which Barsov shows agriculture was receiving from the nonrural sector. We may be confident, therefore, that agriculture was a net recipient of material products, and probably substantially so, throughout the First Five-Year Plan.

Inclusion of the net flow of services cannot but reinforce the point, for agriculture had little in the way of services to offer nonagriculture, while it certainly benefited from educational, medical, and other governmental services as well as from service industries proper, such as passenger transportation and communications (Barsov 1969, pp. 137–38). Consideration of the two missing flows, then, indicates strongly that the agricultural sector proper was a net recipient of real resources during 1928–32.

The net resource contribution of a sector may be conceived in two conceptually distinct but measurably equivalent ways.[6] It may be conceived as the net flow of goods and services in constant, base-period prices (for example, table 1, row N), or it may be conceived as the net flow of funds through price, transfer, and financial channels, because a sector that receives a net real product and service contribution from the rest of the economy must simultaneously

6. For a detailed explanation see Millar, "Soviet Rapid Development," esp. pp. 87–92.

Table 1. *Trade Balance of Agriculture with the Nonrural Sector, 1928–32*[a]

	1928	1929	1930	1931	1932	Operation
Market output[b] *of agricultural sector*						
A. Physical-volume index I (1928 prices)[c]	100.0	109.5	127.9	131.6	101.9	
B. Physical-volume index II (1928 prices)[d]	100.0	123.5	129.7	131.6	101.9	
			(millions of rubles)			
C. Value of marketings I (1928 prices)[e]	3,167	3,468	4,049	4,167	3,217	
D. Value of marketings II (1928 prices)[f]	3,876	4,687	5,027	5,101	3,949	
E. Value of marketings III (1913 world market prices)[g]	3,313	3,727	4,237	4,360	3,376	
F. Value of marketings IV (current prices)[h]	3,876	5,493	9,049	10,948	12,380	
Industrial goods purchases of agriculture[i]						
G. Physical-volume index I (1928 prices)[j]	100.0	122.2	134.7	130.4	120.7	
H. Physical-volume index II (1928 prices)[k]	100.0	112.2	128.4	130.4	120.7	
			(millions of rubles)			
I. Value of purchases I (1928 prices)[l]	3,951	4,805	5,322	5,153	4,768	
J. Value of purchases II (1928 prices)[m]	4,492	5,040	5,768	5,858	5,422	
K. Value of purchases III (1913 world market prices)[n]	1,463	1,787	1,971	1,908	1,767	
L. Value of purchases IV (current prices)[o]	4,492	5,065	6,316	9,829	13,062	
Trade balance of agriculture						
M. Export surplus I (1928 prices)	— 784	—1,337	—1,273	— 986	— 1,551	(C — I)
N. Export surplus II (1928 prices)	— 616	— 353	— 741	— 757	— 1,473	(D — J)
O. Export surplus III (1913 world market prices)	1,850	1,940	2,266	2,452	1,609	(E — K)
P. Export surplus IV (current prices)	— 616	428	2,733	1,119	682	(F — L)
Q. Net gain from inflation[p]	0	781	3,474	1,876	791	(P — N)

Notes and Sources for Table 1:

[a] The agricultural sector is defined to include agricultural production units plus the population engaged in or dependent on agricultural pursuits. The nonrural (industrial) sector is similarly defined. Transactions with the third sector, rural nonagriculture, are excluded from the trade figures presented for the other two. See A. A. Barsov, *Balans stoimostnykh obmenov mezhdu gorodom i derevnei* (Moscow, 1969), pp. 52–55.

[b] Market output (i.e., "commodity production") of grain is computed net of the repurchase of grain products by the agricultural sector. All other products are reported as gross flows. Barsov (1969), pp. 100, 103.

[c] Barsov (1969), table 10 (facing p. 112). The index is constructed from data on eighteen commodity groups (i.e., grains, sunflower seed, flax seed, hemp seed, raw cotton, flax fiber, hemp fiber, sugar beets, tobacco, makhorka, potatoes, vegetables, meat, milk, eggs, small and large animal hides, and wool), which accounted for 95 percent of market output in 1928 (p. 102).

[d] Barsov (1969), table 12, pp. 130–31. Market output of agriculture for 1928–30 (inclusive) is derived from the intersector accounts (*po mezhotraslevomu balansu*) adjusted to exclude repurchases of grain products by the agricultural sector. Index II is therefore more comprehensive for these years than index I. The relatives for 1931 and 1932 are, however, merely taken from index I. The substantial difference to be noted between the two indices for 1929 is explained by the fact that index I measures output from the harvest of that year, while index II measures the volume of output marketed during 1929. Since the procurement campaign begun in 1928 developed slowly and became increasingly effective throughout 1929, the greater part of the harvest of 1928 as well as that of 1929 was procured during 1929. Thus index II indicates a larger increase in market output than index I does for this year.

[e] Barsov (1969), table 10 (facing p. 112).

[f] The 1928 value figure is derived from the intersector balance given in table 3, Barsov (1969), pp. 60–61, adjusted to correspond to the definition of "market output" given in note d above. Values for the remaining years are derived by means of physical-volume index II (row B of this table).

[g] A. A. Barsov, "Sel'skoe khoziaistvo i istochniki sotsialisticheskogo nakopleniia v gody pervoi piatiletki (1928–1933)," *Istoriia SSSR*, 1968, no. 3, p. 78.

[h] Determined as the product of the constant-ruble value series II (row D) and the weighted, all-trade price index for agricultural marketings given in Barsov (1969), p. 123.

[i] Includes acquisitions of industrial commodities by the agricultural population as well as by productive units, on capital and current account, through all channels, Barsov (1969), pp. 118–19, exclusive of agricultural repurchases of grain products.

[j] Barsov (1969), table 11, pp. 118–19. The reconstruction of the component time series is explained by Barsov on pp. 109–20.

[k] Barsov (1969), table 12, pp. 130–31. The relatives for 1928–30 are determined by means of the intersector accounts available for these years (only). Relatives for 1931 and 1932 are merely taken from physical-volume index I (row G of this table).

[l] Barsov (1969), table 11, pp. 118–19.

[m] The 1928 value is derived from the intersector balance given in Barsov (1969), table 3, pp. 60–61, adjusted to exclude agricultural repurchase of grain products. Values for the remaining years are determined by means of physical-volume index II (row H of this table).

[n] Barsov (1968), p. 78.

[o] Determined as the product of the constant-ruble value series II (row J) and the weighted, all-trade price index for industrial goods purchases given in Barsov (1969), p. 123.

[p] That is, the difference between the "gain" from inflation on marketed output of agriculture (row F minus row D) and the "loss" from inflation on agricultural acquisitions of industrial products (row L minus row J), which, rearranged, is (row F minus row L) minus (row D minus row J), or (row P minus row N).

finance the real inflow. A sector may acquire the funds with which to finance a net inflow of real resources from the rest of the economy in any one, or some combination, of three ways. It may obtain funds through financial channels by borrowing or by drawing down its own financial assets. It may be a net recipient of transfer payments—that is, unrequited payments, such as remittances by urban workers to relatives in the agricultural sector. Finally, an advantageous change in the terms of trade may serve to finance the increased net inflow of real goods and services. Consideration of these three channels offers an independent measure of the net contribution of Soviet agriculture during the First Five-Year Plan.

Thus it is possible to test Barsov's conclusion by considering whether or not it is consistent with what is known, or can be deduced, about pecuniary flows through price, transfer, and financial channels. The positive gain from a differential rise in prices favoring agriculture over the nonrural sector (table 1, row Q) is, of course, completely consistent. In fact, it is more than sufficient to have financed the import surplus for the three-year period 1929–31, even granting a substantial margin for a possible adverse change in the terms of trade with the rural nonagricultural sector (about which we have no evidence one way or the other). Indeed, during this three-year period, there is every reason to suppose that the algebraic sum of the two remaining entries—that is, net transfer receipts and net funds raised through financial channels—was negative, representing a net outflow of funds from agriculture. For 1932 the financial gain from higher prices on the goods agriculture sold was not adequate to finance the recorded growth in the physical quantities of the goods it acquired from the nonrural sector, and it follows as an accounting truism that it had to finance its purchases by obtaining funds through financial or transfer channels. These findings are consistent with what is known, or can be inferred, about transfer and financial flows during the period in question.

Table 2. *Nonrural*[a] *Accumulation and the Trade Balance of Agriculture in 1913 World Market Prices* (in millions of rubles)

		1928	1929	1930	1931	1932
A.	Nonrural accumulation[b]	2,744.4	4,676.5	6,337.6	7,954.0	8,016.1
B.	Increment in accumulation		1,932.1	1,661.1	1,616.4	62.1
C.	Trade balance[c] of agriculture	1,849.3	1,940.6	2,256.9	2,451.5	1,608.9
D.	Increment in trade balance		91.3	325.3	185.6	−842.6
E.	Trade balance as percentage of accumulation	64.3	41.5	35.7	30.9	20.4
F.	Row D as percentage of row B		4.7	19.6	11.5	

[a] Excludes rural nonagricultural sector.
[b] Includes accumulation and productive consumption of the nonrural nonproductive sub-sector.
[c] Material export surplus.
Source: Barsov (1968), pp. 78–80.

The most difficult item to pin down is the sign of net transfer receipts of the agricultural sector. There are four main flows to consider. First, personal and enterprise tax and other "voluntary" payments (including profit withdrawals from state agricultural enterprises and agencies) increased slightly more than fourfold between 1928 and 1932. (Barsov 1969, p. 125. Tax and voluntary payments increased from 984.8 million rubles in 1928 to 4,595.7 million in 1932.) This outflow was offset to some unknown, but probably slight, extent by state direct transfer payments to individuals and in somewhat greater degree by personal remittances from relatives residing in urban areas. The provision of free state services (for example, educational or medical) must be treated as an imputed transfer receipt by agriculture and affords another offset to tax and other voluntary payments. Finally, and most important, the state's investment in the state-farm system and in the establishment of the machine-tractor station system (MTS), to service the expanding collective-farm sector, was financed almost exclusively by means of grants from the state, which may very well have been large enough to give agriculture a net inflow of funds in respect to these various forms of unrequited transfer payments, particularly in the later years of the period.[7]

Even if net transfers were negative during the three-year period 1929–31, it seems unlikely that this was large enough to offset the gain agriculture received from the favorable price trends described above. The implication is that the agricultural sector was able to advance funds to the nonrural sector through financial channels, an implication that is consistent with the many reports of official concern about the accumulation of cash balances by the agricultural population during 1929–31.[8] Similarly, official reports on the successful diminution of cash hoards in the countryside in 1932 imply that the population was drawing down its financial assets to finance the excess of its current-ruble outlays over current receipts in transactions with the nonrural sector (Barsov 1969, p. 115).

We may conclude with some confidence, therefore, that the agricultural sector was a net recipient of real resources during the First Five-Year Plan and that mass collectivization did not serve to facilitate the "extraction" of real resources from the agricultural sector taken as a whole. This conclusion rests, of course, upon acceptance of 1928 price weights. It should be noted in this connection that 1928 was the last year of the New Economic Policy, which

7. Ia. I. Golev, *Sel'skokhoziaistvennyi kredit v SSSR* (Moscow, 1958), pp. 19–21; V. P. D'iachenko et al., *50 let sovetskikh finansov* (Moscow, 1967), pp. 49–50; Barsov (1969), p. 82.

8. A. N. Malafeev, *Istoriia tsenoobrazovaniia v SSSR (1917–1963 gg.)* (Moscow, 1964), pp. 131–32, 172–73; M. Atlas, *Razvitie gosudarstvennogo banka SSSR* (Moscow, 1958), pp. 129–30; Barsov (1969), pp. 115–24.

permitted open markets for agricultural products. Since a continuation of the NEP represented one possible alternative to mass collectivization, there is good reason to consider 1928 prices as meaningful in the context of the argument.[9]

In the concluding chapter of the book, Barsov criticizes sharply the standard Western interpretation of the role of agriculture during Soviet rapid industrialization, and he is particularly unhappy about the concepts of "primitive socialist accumulation" and of "agrarian colonialism" that underlie some of these treatments. As a strictly empirical proposition, *given 1928 price weights and a type-of-product definition of the agricultural sector,* Barsov is correct in rejecting the standard interpretation as inconsistent with the facts. However, it does not follow that the agricultural population was not exploited, and Barsov confuses the issue by presenting his argument exclusively in terms of hypothetical labor-content price weights. Nonetheless, it is clear that we must revise our conception of the role of agriculture during the First Five-Year Plan as a consequence of Barsov's empirical research. Moreover, it is possible to use Barsov's disaggregated data series to ascertain why and how Soviet agriculture, taken as a whole, came to be a net recipient of real resources during this period.[10] Consideration of these factors also serves to provide a picture of the relations between the various subsectors of Soviet agriculture in these years, and particularly those between the state, private peasant, and socialized subsectors.

The net flow of resources to the agricultural sector may be analyzed from several different perspectives, and each helps to illuminate a different aspect of the relations between the various sectors and subsectors of the economy. First, a comparison of rows D and I in table 3 shows that the terms of trade turned in favor of agricultural products taken together. However, within the agricultural sector the terms of trade did turn against kolkhozes with respect to planned (obligatory) procurements (compare rows A and I), but the rise in prices on the open collective-farm market more than compensated for it.[11]

9. It would be extremely useful to be able to calculate the trade surplus of agriculture using price weights drawn, say, from 1932, because the size of the discrepancy between it and the 1928 price-weight index could serve as a measure of reliability. Unfortunately, Barsov does not provide price data for the years following 1928. It is doubtful, however, that the discrepancy would be larger than exists between the 1913 and the 1928 price-weighted indices.

10. As was indicated above, different sectoring criteria and different price weights may be expected to yield different concepts and measures of the "contribution" of agriculture. It is possible, therefore, that what I have called the standard interpretation of the role of agriculture may be valid for some subset of sectoring criteria and price weights. However, in my opinion the sectors designated by Barsov are appropriate to an attempt to measure the contribution of the agricultural sector to economic development, conceived within the framework of a two-sector growth model. In addition, 1928 price-weights are all that are available from the actual historical period.

11. Much depends, of course, on the reliability of the wholesale price index for

What this means is that, thanks to inflation on the open market, the peasants were able to shift a part of the burden thrown on them by the state to the non-rural population. It is unfortunate that the available data do not permit us to ascertain more precisely the relations between the state and the rural and non-rural populations.

Second, the private subsector of agriculture recorded a very substantial real volume import surplus with the nonrural sector (table 4, row F), which reflected mainly spending on industrial consumer goods financed by income earned from sales on the collective-farm market. Moreover, the state succeeded in controlling trade in manufactured goods in the rural area to a much greater extent than it did in the cities, where private trade continued to flourish (Barsov 1969, pp. 27–29). Consequently, what manufactured goods were available in the countryside—and the volume did of course decline sharply—were sold at lower prices than would otherwise have been the case. Thus the private house-hold sector may be viewed as principally responsible for the size of the net import surplus of agriculture in the years covered by table 4 (row F), even though the constant-ruble value of both sales and purchases declined. In this sense, the import surplus of agriculture may be attributed to the incompleteness of collectivization, which permitted the peasantry to continue private production and the marketing of products on the open market to the urban population.

Third, there was a substantial increase in the flow of industrial products to the agricultural sector, particularly to sovkhozes and the MTS system (table 3, row L). These products were also made available at favorable prices (row H), which contributed measurably to the favorable change in the terms of trade for the agricultural sector taken as a whole. As may be seen in table 4 (rows B and D), both the sovkhozes and the MTS recorded large physical-volume import surpluses with the nonrural sector, and the combined effect was to swamp the real volume export surplus of kolkhozes (rows A, C, and E). Put differently, the "squeeze" applied to kolkhozes was offset by the net flow of real resources into the MTS and sovkhozes. Thus the state was successful

"means of production," which indicates constant prices on equipment and materials directly supplied by the state to sovkhozes, the MTS, and for state-financed purchases only to kolkhozes (see note b, table 3). One of the (anonymous) referees of this paper has called attention to the relatively high prices of tractors in 1928. He has also suggested that this index may have been applied (inappropriately) to construction costs and other elements where price controls would have been much less effective than for equipment and materials. The latter criticism, if correct, implies that the favorable change in the terms of trade for agriculture may be overstated, and possibly substantially so. There does not appear to be any way to resolve this question directly. However, as I pointed out in the text above, the available data on transfers, financial flows, and the change in the terms of trade are consistent with a net import surplus for the agricultural sector. Moreover, the generally high quality of Barsov's works provides another reason for placing confidence in the sign of the change in the terms of trade, if not the precise magnitude of the change.

Table 3. *Price and Quantity Indices for Agricultural Trade, 1928–32* (1928 = 100)

	1928	1929	1930	1931	1932
Agricultural Commodities					
A. Planned procurement price index[a]	100.0	110.6	115.7	118.7	109.3
B. Decentralized procurement price index	100.0	—	—	—	354.3
C. Private trade (uncontrolled) price index	100.0	233.2	525.3	814.6	3005.7
D. All-trade (weighted) agricultural price index	100.0	117.2	180.0	198.8	313.5
E. All-trade physical-volume index	100.0	109.5	127.9	131.6	101.9
Industrial (Nonrural) Commodities					
F. State and cooperative rural retail price index	100.0	98.6	107.4	130.1	284.5
G. Private trade price index (1927/28 = 100)	100.0	139.3	218.2	392.8	845.7
H. Wholesale price index on "means of production"[b]	100.0	100.0	100.0	100.0	100.0
I. All-trade (weighted) industrial price index	100.0	100.5	109.5	171.2	240.8
J. Physical-volume index state and retail trade	100.0	131.9	142.3	118.3	108.2
K. Physical-volume index private trade	100.0	65.6	89.5	73.7	26.8
L. Physical-volume index wholesale producer goods	100.0	120.5	154.2	240.8	239.2
M. Physical-volume index all trade	100.0	122.2	134.7	130.4	120.7

[a] All price indices use as a comparison base all-trade (weighted) prices in 1928 (or 1927/28) for agricultural (or industrial) trade.

[b] Direct state supply of equipment and materials at wholesale prices to sovkhozes, the MTS, and, for state-financed purchases only, to kolkhozes.

Sources: Barsov (1969): Rows A through D, p. 108. Rows E and I, p. 123. Rows F through H, pp. 112–15. Rows J through M, table 11, pp. 118–19.

Table 4. *Material Trade Balance by Agricultural Subsector, 1930–32* (in millions of rubles, 1928 prices)

			1930	1931	1932
A.	Export surplus:	kolkhozes only	+631	+1,500	+ 876
B.	Export surplus:	MTS	− 75	− 580	− 762
C.	Export surplus:	kolkhoz sector (A + B)	+556	+ 920	+ 114
D.	Export surplus:	sovkhozes only	−472	−1,018	− 934
E.	Export surplus:	socialized sector (C + D)	− 84	− 98	− 820
F.	Export surplus:	private sector	−825	− 659	− 653
G.	Export surplus:	nonstate sector (A + F)	−194	+ 841	+ 223
H.	Export surplus:	state sector (B + D)	−547	−1,598	−1,696
I.	Export surplus:	all agriculture (E + F) or (G + H)	−741	− 757	−1,473

Note: Figures shown with pluses represent a net flow from agriculture to the nonrural sector. Those with minuses indicate a net flow from the nonrural sector to agriculture.
Source: Barsov (1969), table 13, pp. 142–43, converted to 1928 price weights, and table 1, rows D and J, above.

in diverting resources within the agricultural sector to capital formation in the state subsectors.

Finally, the state was undoubtedly successful in procuring products from kolkhozes "on the cheap" (see table 3, row A, and table 4, rows A and C), and the export surplus of kolkhozes (only) more than compensated for the import surplus of the private sector in two of the three years for which data are available (row G). From this perspective, the import surplus of agriculture may be attributed to state investment in the state subsectors of agriculture. However, the state's investment in sovkhozes and the MTS system failed to offset peasant destruction of the agricultural capital stock, and tractive power per unit of land area declined sharply during the First Five-Year Plan (Barsov 1969, p. 85, n. 53). Moreover, although grain procurements increased remarkably between 1928 and 1931, from 157.4 million centners to 237.3 million (Barsov 1969, p. 103), state procurements of many other products declined sharply, most notably animal husbandry products and certain industrial crops (for example, sunflower seed, hemp seed and fiber, flax seed) (Barsov 1969, table 10, facing p. 112). The increase in grain procurements reflected this adverse change in the composition of agricultural output and marketings, not the success of state procurement policy. It has been shown, in fact, that the entire increase in state grain procurements is more than explained by the decrease in fodder requirements caused by the wholesale destruction of livestock herds by the peasantry in hostile response to the collectivization drive.[12] The aggregate volume of agricultural procurements increased much less significantly and less permanently than for grain alone, and this temporary increase

12. Karcz, "From Stalin to Brezhnev," p. 42.

was, as has been seen, accompanied by a more than compensating increase in the supply of industrial products to the agricultural sector.

Ultimately, therefore, although the state did succeed in raising real resources from the peasantry and via the peasantry for investment purposes, the destruction occasioned by resistance to collectivization obliged it to turn around and use those resources for replacement investment in agriculture. This inflow, together with the net inflow to the private sector that was financed by the favorable change in the terms of trade with the nonrural population, caused the agricultural sector taken as a whole to become a net recipient of resources during the First Five-Year Plan.

The widely held conception of Soviet agriculture as a net contributor to rapid industrialization was very largely a result of the paucity of data for the sector as a whole and for the individual subsectors. As I have argued elsewhere,[13] a number of the interpretations put forward were also flawed by faulty theoretical modeling, particularly with respect to the concept of an economic surplus. In addition, observing both the unmistakable hardships collectivization imposed upon the Soviet peasantry and the undoubted success of the industrialization drive, investigators were led to assume that the two phenomena were causally related, for where else could the resources devoted to industrialization have come from? That many Soviet leaders and planners expressed an intent to "milk" the agricultural sector in support of rapid industrialization made this assumption all the more plausible.[14]

Whatever its merits may have been on other grounds, mass collectivization of Soviet agriculture must be reckoned as an unmitigated economic policy disaster. As with any kind of economic disaster, such as a tornado, there was no way in which the economy as a whole, and thus the state, stood to benefit, although certain fortunately placed individuals may have done so at the expense of others. Agricultural output increased only marginally over the entire period of the 1930s,[15] while labor productivity, yields, and rural and urban consumption per capita declined.[16] Despite considerable state investment in state farms

13. Millar, "Soviet Rapid Development," pp. 78–82.

14. See, for example, Alexander Erlich, "Stalin's Views on Economic Development," in Ernest Simmons, ed., *Continuity and Change in Russian and Soviet Thought* (Cambridge, Mass., 1955).

15. Gross agricultural output exceeded the precollectivization 1928 level only in 1937 and 1940, according to Soviet official figures; see, for example, *Narodnoe khoziaistvo SSSR v 1958 godu* (Moscow, 1959), p. 350. Western estimates have presented an even bleaker picture; see Arcadius Kahan, "Soviet Statistics of Agricultural Output," in Roy D. Laird, ed., *Soviet Agricultural and Peasant Affairs* (Lawrence, Kans., 1963), pp. 134–60.

16. Barsov (1969), pp. 84, 87, 90; Iu. V. Arutiunian, "Osobennosti i znachenie novogo etapa razvitiia sel'skogo khoziaistva SSSR," collected in *Istoriia sovetskogo*

and the MTS, tractive power available to agriculture declined precipitously between 1928 and 1933, thanks to the slaughter of livestock by the peasants.[17] The Soviet official history of World War II explicitly singles out Stalin's agricultural policies for criticism, for agriculture was one of the least developed sectors of the economy and thus a major handicap at the outbreak of war.[18] The long-term consequences of collectivization (and of World War II) have also proved exceptionally difficult and costly to reverse, and success is not yet within reach despite two decades of economic, administrative, and social reforms in the countryside.[19]

The evidence suggests that the oppressive state agricultural procurement system, rather than serving to extract a net contribution from agriculture as a whole, should be credited with preventing the collectivization disaster from disrupting the industrialization drive. The squeeze on the kolkhozes, and on the peasantry generally, served to offset, at least partially, the adverse effects of the collectivization drive. The level of agricultural procurements was maintained in the face of extreme hardship in the countryside—hardship attributable partly to peasant resistance to collectivization and partly to administrative ignorance and confusion about how to reorganize agricultural production (Barsov 1969, pp. 193–94). That the terms of trade changed in favor of agriculture does not in the least mean that the peasantry became better off in consequence. On the contrary, what it means is that the peasantry was able to shift a portion of the real cost of collectivization and industrialization to the urban population, mainly through the uncontrolled collective-farm market.

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krest'ianstva i kolkhoznogo stroitel'stva v SSSR (Moscow, 1963), p. 409. According to Arutiunian, average annual agricultural output per capita changed as follows (1926–29 = 100): 90.3 in 1913; 100.0 in 1926–29; 86.8 in 1930–32; 90.0 in 1938–40; and 94.0 in 1950–53.

17. Iu. A. Moshkov, "Zernovaia problema v gody kollektivizatsii sel'skogo khoziaistva," in *Istoriia sovetskogo krest'ianstva i kolkhoznogo stroitel'stva v SSSR*, p. 272; Barsov (1969), p. 85, n. 53.

18. *Istoriia Velikoi Otechestvennoi voiny Sovetskogo Soiuza, 1941–1945*, vol. 6, p. 43.

19. It has frequently been argued that mass collectivization did at least serve to ensure an adequate flow of labor out of the countryside to fill the growing number of industrial occupations. It would be inappropriate to include the net flow of labor between agriculture and the nonrural sector as they are defined by Barsov, for it would involve double-counting where sectors are identified by type-of-product criteria. It would, of course, be suitable where geographical criteria are used. However, as an economic rationale for collectivization, the mobilization-of-labor argument is without force. In the first place, there is no evidence to suggest that the supply of labor was deficient prior to the initiation of collectivization. In the second place, it is clear that collectivization encouraged an excessive off-farm flow of labor and population, and its continuation at the present time remains one of the most intractable obstacles to the modernization of Soviet agriculture today. On this subject see Norton T. Dodge, "Recruitment and the Quality of the Soviet Agricultural Labor Force," in Millar, *Soviet Rural Community*, pp. 180–213.

Whether or not this was sufficient to equalize the burden between the two sectors remains at issue. Barsov's own computations on this heading will not persuade anyone who is not prepared to adopt his particular operational definition of the labor theory of value.

Despite this shortcoming, Barsov has made a very important empirical contribution to our understanding of the process and consequences of mass collectivization. It is clear that, as an economic measure at least, mass collectivization was counterproductive even in the short run.[20] Since there has never been any disagreement among Western scholars with respect to its adverse long-run consequences, mass collectivization is thereby deprived of any economic rationale whatever. This suggests that a continuation of the New Economic Policy of the 1920s would have permitted at least as rapid a rate of industrialization with less cost to the urban as well as to the rural population of the Soviet Union.

20. It must be remembered, of course, that we remain essentially in the dark with respect to the balance of trade during the Second Five-Year Plan, and, according to Barsov, who has seen the archival material available for that period, we are likely to remain ignorant. Very little information apparently exists, and what is to hand is evidently insufficient to permit the reconstruction of the necessary price and physical-volume time series (Barsov 1969, pp. 186–90). Consequently, the force of this conclusion obtains (with the reservations noted above) primarily for the period 1928–32. However, Barsov's findings do appear to be consistent with Bergson's findings for the 1937 data, which suggest that agriculture contributed considerably less to Soviet capital formation than had previously been supposed. See Abram Bergson, *The Real National Income of Soviet Russia Since 1928* (Cambridge, Mass., 1961), p. 257. On this same point see also Karcz, "From Stalin to Brezhnev," pp. 48–51.