

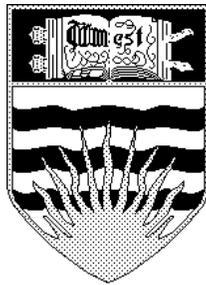
**THE STANDARD OF LIVING IN THE  
SOVIET UNION, 1928 - 1940**

by

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in the Soviet Union, 1928-1940

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### Abstract

New estimates for the growth in aggregate consumption in the Soviet Union from 1929 to 1940 are developed. While Bergson's The Real National Income of Soviet Russia since 1928 had suggested a decline in per capita consumption, this paper argues that consumption rose significantly. The paper includes a detailed discussion of Bergson's procedures.

Most accounts of Soviet industrialization maintain that the standard of living of the working population declined, or was at best static, during the 1930s. According to political scientists and historians, stagnation of consumption was an expected consequence of Stalinism, which was unresponsive to popular desires, and which was concerned with power and aggrandizement rather than with the betterment of the working class. (Tucker 1977, Lewin 1977.) In the parlance of economists, "planners' preferences" replaced "consumers' preferences." Since the planners preferred investment goods and military equipment over consumer goods, that's what the economy produced. The working class paid the price in terms of falling or stagnant living standards.

The bedrock support for this interpretation is the national income accounting of Bergson and the related calculations of real wages by Chapman. Bergson (1961, p. 251) described the record of per capita consumption as "unimpressive." "Valued at adjusted market prices of 1937"--his preferred measure--"per capita consumption in 1937 is 3 percent below the 1928 level." Furthermore, "students of growth wish to know whether industrialization at Soviet tempos can be consistent with progressively rising consumption standards. If the Soviet experience is any indication, the answer must be in the negative." (Bergson 1961, p. 257). Chapman (1963, p. 165) characterized the history of real wages as a "very poor showing." She felt that the best

reading of the evidence indicated "a decline of 6 percent in urban per capita household purchases and a significant decline also in rural per capita household purchases of goods between 1928 and 1937." (Chapman 1963, p. 170.) These conclusions have been accepted by many other economists and historians.<sup>1</sup>

While the interpretation of Bergson has been hegemonic, there have been some suggestions of a more optimistic view. Nove (1990, pp. 236-42, 251) suggested that "aggregate consumption went up" since rural-urban migration was so high and urban incomes were nominally several times rural incomes. In an important study, Hunter and Szyrmer (1992) have reestimated the Soviet national income accounts as part of a simulation study of Soviet policies. While they deal only briefly with consumption, they find that rural consumption per head was higher in the late 1930s than in 1928 and that per capita urban consumption posted a 10% gain between 1928 and 1937. This advance, however, was eliminated with the outbreak of war. I will show later that their new national income estimates, in fact, support even more optimistic conclusions than they drew from them.

Bergson's The Real National Income of Soviet Russia since 1928 was published in 1961, but the basic calculations were done a decade before that. Bergson's study was, and will always

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<sup>1</sup>See, for instance, Gregory and Stuart (1986, p. 116), Ofer (1987, pp. 1778-9, 1789-91), Davies, Harrison and Wheatcroft (1994, pp. 52-3), and Westwood (1987, p. 360).

remain, a classic in national income accounting and Soviet studies. However, it is now almost half a century since most of the research was accomplished, and in the interim a vast amount of new information has become available that bears on almost all of the details of Bergson's calculations. In addition, advances in the theory of index numbers call one of Bergson's important procedures into question. Another look at the standard of living question in the U.S.S.R. is in order.

In this essay I will argue that the average level of consumption improved markedly in the Soviet Union under the first three Five Year Plans. Given the authority of Bergson's calculations, I begin with a review of his work. I show that two reasonable emendations to Bergson's procedures generate a much more optimistic conclusion than he reached; namely a rise of 25% in per capita consumption between 1928 and 1937 instead of a fall of 3%. Then I consider the implications of information that has become available since Bergson first calculated the standard of living. Today, most elements of per capita consumption can be recalculated on a more satisfactory basis. Some of these changes raise the growth in consumption, and some lower it. Together these changes imply that per capita consumption rose 27-30% from 1928 to 1937--a result that agrees with Bergson's original figures once the emendations urged here are adopted.

In addition to calculations for the benchmark years 1928 and 1937, I present annual estimates of consumption per head and

break those down for the farm and nonfarm populations. These figures quantify the fall in living standards that occurred during collectivization and show that, by the late 1930s, the farm sector had only regained the consumption level of 1928. The gains in average consumption in the 1930s were confined to urban residents and, to a lesser extent, accrued to peasants moving to the cities. These calculation also show that 1937 was an especially prosperous year. A more reasonable characterization of changes in the standard of living from 1928 to the later 1930s would use the 1938 value and put the gain at 22% or 2.0% per year. It turns out that Hunter and Szyrmer's new national income estimates point to a similar conclusion even though their figures are constructed on a very basis. A good reason for accepting the revisionist conclusions proposed here is that they are supported by two different procedures.

### I. Bergson's Estimates Revisited

Before considering the implications of information that has become available since Bergson's work, it is important to review Bergson's calculations themselves. While they were pathbreaking, they incorporate two debatable procedures that strongly influence the results. Altering those procedures calls Bergson's pessimistic conclusions into question.

Bergson did not estimate national income annually but only for benchmark years. In the 1920s and 1930s, those were 1928 and

1937. 1928 marked the beginning of the first Five Year Plan, and 1937 marked the end of the second. The analytical issues are simpler in these years than in others since there was a private retail sector in 1928 with market clearing prices and since the price reform of the mid 1930s meant that official prices in 1937 were also market clearing prices. Consumer goods prices were often far from equilibrium in other years of this period.

Table 1 summarizes one of Bergson's basic calculations. It shows only a 3% increase in per capita consumption between 1928 and 1937. This result is not Bergson's absolutely lowest estimate (which was minus 3%) of the growth of consumption per head--the variations in procedure that produce the even lower figure will be discussed in section III--but it is low enough to sustain the usual pessimism in historical writing.

An analysis of the calculation in Table 1 reveals two problematic procedures that underlie all of Bergson's measures and that tilt them toward a low measured growth in per capita consumption. The first concerns the choice of index number. Bergson measured the growth of real household purchases in retail markets by deflating the nominal value of purchases by the rate of inflation. The choice of index number to measure that rate of inflation is a serious issue since prices did not increase uniformly and since consumption patterns changed markedly between 1928 and 1937. Bergson relied on price indices prepared for later publication by Chapman (1963). A Laspeyres price index

with 1937 as the base year increased by a factor of 5.92 between 1928 and 1937, while a Paasche index with a 1937 base increased by 8.69.<sup>2</sup> Evidently, the choice of index number has a big effect on the measured growth in consumption.

The first columns in Table 1 use the Paasche index of the rate of inflation to convert the value of retail sales in 1928 (12.1 billion rubles) into 1937 prices, thus:  $105.0 = 8.69 \times 12.1$  billion. If the Laspeyres index were used instead, real household purchases in 1928 would be reckoned at only  $72.0 = 5.92 \times 12.1$  billion rubles in 1937 prices. The implications of this calculation are also shown in Table 1. Using the Laspeyres index, per capita consumption increased by 32% between 1928 and 1937. Such a rise is so large, that Soviet history would have to be rewritten, if this choice of index number were accepted.

Bergson (1961, pp. 88) was aware of the implications of the choice of index number, for he reported the calculations with the Laspeyres price index. Nevertheless, he believed that the Paasche index was "logically appropriate." (Bergson 1961, p. 47.) He was trying to measure inflation for six benchmark years between 1928 and 1955 with an index number with a 1937 base. Using the Laspeyres index would have imposed the 1937 spending pattern on all of the calculations, while the Paasche

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<sup>2</sup>Bergson sets the 1937 values at 1.00, so the 1928 values, which are the figures he reports, are .168 for the Laspeyres index and .115 for the Paasche index. See Bergson (1961, pp. 46-9, 53, 88, 313).

index allowed the weights to alter from year to year. For that reason, he felt the Paasche was superior.

The modern theory of index numbers suggests a better procedure. Instead of using Paasche or Laspeyres indices, "superlative" index numbers would be a better choice (Diewert 1976, Allen and Diewert 1981). Examples include the Fisher Ideal index (the geometric average of the Paasche and Laspeyres), the Tornqvist-Divisia index, and many others. All of these indices use the spending shares from both years in calculating inflation. Calculating the rate of inflation between successive pairs of years with a superlative index like the Fisher Ideal and then chain linking them would allow the weights to follow the change in consumption patterns over time, would use more information in calculating inflation between successive dates, and would not arbitrarily privilege the spending pattern in one year as does Bergson's choice of the Paasche index or, indeed, as would a preference for the Laspeyres. Common sense, as well as modern economic theory, supports the use of superlative indices like the Fisher Ideal: After all, if the Paasche and the Laspeyres indices differ widely, doesn't it make more sense to use an average of the two rather than to rely on one to the exclusion of the other?

Table 2, first two columns, puts this theory into practice. Inflation is measured with a Fisher ideal price index. As a result, per capita consumption grows by 17%.

The second problematic procedure underlying Bergson's calculations is an adjustment made by Chapman to the price data used to measure inflation. She collected prices for goods sold in Moscow in 1928, 1937, and later years. While she believed the 1937 prices were representative of all transactions in the Soviet Union, she thought the 1928 prices applied only to state and cooperative shops in urban areas. Consequently, she first raised the 1928 prices to encompass transactions in private shops--a correction which I do not question here<sup>3</sup>--and then adjusted them again to reflect differences between town and country. She believed that prices in rural areas were lower and reduced the price indices accordingly to get values for deflating consumption in the USSR as a whole. The only evidence for lower prices is a loose statement in the first Five Year Plan that "the 'purchasing power of the ruble in the village' [was] as much as 35 percent higher than in towns." (Hoeffding 1954, p. 65.) Chapman assumed that this differential applied to the prices of consumer goods sold in shops, so the rural price of these goods was 75% (=1/1.35) of the urban price.<sup>4</sup> Since she estimated that rural

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<sup>3</sup>One might argue that free market prices should be used for 1928 instead of the average of free and controlled prices that she uses in her index. Using free market prices, however, requires that wages then be adjusted to reflect the consumption subsidy of controlled prices in state and cooperative shops when real incomes are calculated. That adjustment brings one back to a procedure like Chapman's.

<sup>4</sup>The correct percentage is 74%. There are several approximations like this in Chapman's calculations.

sales amounted to 40% of the total, she reduced the 1928 price indices by a factor of .90 ( $=.6 \times 1 + .4 \times .75$ ) to get the values of .115 and .168 for Paasche and Laspeyres prices indices that she believed characterized all retail sales in the Soviet Union.<sup>5</sup>

This adjustment is hard to accept. As Hoeffding (1954, p. 65) observed, it "is none too clear" what Gosplan meant when it compared rural and urban purchasing power. Hoeffding interpreted the comparison to cover all consumption--in particular farm income in kind and not just purchases in shops. Indeed, in most places, the prices of agricultural goods (as well as house rents) are less in the country than in the city (Williamson 1988, Hatton and Williamson 1991, pp. 400-1), so Hoeffding's interpretation is plausible. There is, however, no reason to believe that manufactured consumer goods sold for less in the country than in the city, which is what Chapman contends. Indeed, the contrary is more likely. There was excess demand for manufactured consumer goods in state stores in both town and country, and the imbalance was greatest in the country. For that reason, small scale traders found it profitable to buy goods at controlled prices in urban shops and cart them to the villages for resale. Given the added burden of these transport costs, the average price of manufactured consumer goods in the country was

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<sup>5</sup>Chapman's reported value of .115 for the Paasche price index is slightly in error. The correct value is .118 on her assumptions and incorporating the slight error in inverting 1.35.

probably higher than in the city--not lower as assumed by Chapman. (Johnson and Temin 1993, Gregory 1994, pp. 97-8.) The simplest procedure is to ignore the downward adjustment Chapman made in urban prices and to treat the Paasche and Laspeyres indices for sales in all urban markets--.168 and .115, respectively--as estimates for the Soviet Union as a whole. It must be recognized, however, that these are lower bound estimates since they understate the price of manufactures sold in rural areas in 1928. Consequently using .168 and .115 as deflators for 1928 leads to overestimates of 1928 consumption, and, consequently, underestimates of the growth in real retail sales from 1928 to 1937.

Table 2, last two columns, shows the result of abandoning the rural-urban adjustment. The Fisher Ideal index of 1928 prices relative to 1937 prices becomes .153. As a result, measured consumption per head grows by 25% between 1928 and 1937. In contrast to the usual stagnationist view of living standards during the first two Five Year Plans, this is marked improvement.

## II. Quantity Index of Private Purchases in Retail Markets

Another way in which Bergson's and Chapman's work should be modernized is by incorporating the results of research since the 1950s. Wheatcroft's (1984) and Davies, Harrison, Wheatcroft's (1994, 286-8) revision of Soviet agricultural production data--in

the case of grain these figures incorporate new archival material--provide a surer basis for estimating food availability. The work of Malafeyev (1964), Vyltsan (1966), Barsov (1969), and Karcz (1979) on the volume of agricultural marketings, the collective farm market, and agricultural prices show who was getting the food and on what terms. The publication of many industrial production series in 1956, and their critical reassessment by Nutter (1962) and Kaufman (1962) provide a more certain basis for calculating the output of manufactured consumer goods. Since the publication of these data, they have been used by several investigators (e.g. Nutter 1962, Moorsteen and Powell 1966, and Hunter and Szyrmer 1992, pp. 34-5) to construct sectoral and aggregate GDP series for the Soviet Union. The implications of these data for the growth in consumption have not, heretofore, been systematically investigated. I present the various revisions separately, so the reader can compare their import, but the effect of all of the revisions should really be considered together, in their entirety.

I begin with household purchases in retail markets. As noted previously, Bergson estimated this component by deflating spending with a consumer price index. An alternative approach is to aggregate the output of consumer goods. This approach was not available to Bergson and Chapman since the industrial production

data had not been published.<sup>6</sup> Consumer goods production can be aggregated using either consumer spending shares or value added shares of the industries concerned. The former is the more relevant for assessing consumer welfare, while the latter is a building block of gross domestic product. Both approaches are used here, and they agree closely. This is encouraging since their weights are derived from independent sources. The choice of weights is always contentious with Soviet data, so this correspondence confirms the calculation.

The use of consumer spending weights is the simplest extension of Chapman's work, and I begin with it. Appendix Table 1 shows the commodities that make up her "food" and "manufactured goods" price indices along with the spending weights associated with each. I have amended Chapman's work in two ways. First, I reworked her 1937 weights so they now include estimates (derived from Vyltsan (1966) and Karcz(1979)) of the volume of sales on the collective farm market as well as sales in state and cooperative shops. These new weights are shown in the table. Second, I have included consumer durables (bicycles, clocks, watches, etc) as an expenditure. While little money, in toto, was spent on

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<sup>6</sup>Bergson and Chapman did most of their research in the late 1940s and early 1950s, although their definitive statements were not published until the early 1960s. The major studies of benchmark years that Bergson (1961) relied on were Hoeffding (1954) for 1928, Bergson (1953) for 1937, and Bergson and Heyman (1954) for 1940-48. There were some subsequent revisions in these figures. Chapman (1954) included most of her results, although, again, there were later revisions. See also Davies, Harrison, Wheatcroft (1994, p. 34).

durables, they were, in fact, a rapidly growing category. The production of bicycles, for instance, rose from 11 thousand in 1927/8 to over half a million in 1937 (Nutter 1962, p. 458).

As with price deflation, a Fisher Ideal index of consumer goods is calculated. It increased by 81% between 1928 and 1937. Consumption per head increased 35% over this period when household purchases in retail markets are measured with this aggregate of consumer goods (Table 3, first two columns).

The second approach to measuring household purchases in retail markets is to aggregate the output of consumer goods using value added shares in the production of manufactured goods. One must first distinguish the two marketing channels--farmers' markets and shops. In 1937, consumers spent 16 billion rubles on the collective farm market and 110 billion rubles in state and cooperative shops. The collective farm market was the main channel for distributing fresh meat, vegetables, and dairy products. The state and cooperative stores sold processed foods (bread, sausages, alcohol, oil, etc) and manufactured goods (textiles, clothing, shoes, housewares, kerosene, tobacco, etc.) Indices of the goods sold in each channel must be developed to determine the 1928 levels of sales in 1937 prices, as in Table 3, last two columns.

The first step is measuring the volume of farm products sold on the collective farm market. This task is only possible because of the archival research of Soviet historians. There are

official returns for the prices and quantities of goods bought and sold on collective farm markets between 1932 (when they were officially recognized) and 1940,<sup>7</sup> and I rely on Malafeyev's (1964, p. 402) and Vyltsan's (1966, p. 61) summaries of this material. Barsov's (1969) work was used to extend the index of collective farm market sales back to 1928.<sup>8</sup>

The results of these calculations are shown in Table 3, last two columns. Between 1928 and 1937, sales in farmers' markets increased almost five times. Such a high growth rate is plausible in view of the abolition of private trade in 1930. Prior to that date, peasants could sell to private wholesalers at uncontrolled prices that exceeded state procurement prices, so it was not necessary to sell directly to consumers in farmers' markets to realize high prices. After 1930, however, selling directly to urban consumers in farmers' markets was the only way peasants

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<sup>7</sup>Zaleski (1971, 1984) reproduces these returns as series 235. However, for 1940, the value shown by Zaleski is extremely large, and I use the smaller value shown in Sovietskaya Torgovlia, 1956, p. 19. In his first estimate of Soviet national income in 1940, Bergson apparently also used the "large" value for 1940 but revised it downward to the "small" value in his final work. Cf. Bergson and Heymann (1954, p. 21) and Bergson (1961, p. 46).

<sup>8</sup>(Barsov 1969, p. 107n 11, 108, table facing p. 112) published a constant price index of the volume of agricultural marketings through all channels and indices of procurement and farmers' market prices for 1929-32 and an overall price index which was weighted by the volumes of the two sorts of sales. One can work backwards from his price indices and calculate relative volumes of procurements and farmers' market sales. When the total volume of sales is multiplied by the latter fraction for each year, the result is an index of the volume of sales on farmers' markets. I assumed the fraction was the same in 1928, for which Barsov gave no information, as in 1929. I used this index to extend the index of collective farm market sales back to 1928.

could realize high prices for their produce, so sales on those markets exploded.

The second step is measuring the growth of sales in shops. This is done by aggregating the output of manufactured consumer goods.<sup>9</sup> I rely on Nutter's (1962) massive and scholarly study of Soviet industrial statistics. He developed an index for consumer goods output for benchmark years. For the principal commodities, he computed "value added" prices (value added per unit produced) for 1928 and 1955. Weighting output by these prices is equivalent to aggregating by value added. Nutter (1962, p. 524) presented estimates of the value of output in 1928 and 1937 using both 1928 and 1955 prices.

I emended Nutter's calculations in two ways. First, I rectified his error in pricing fish, which he notes (Nutter 1962, p. 537), and, second, I added knitwear and hosiery to his index weighted with 1928 prices. It is not clear why Nutter left out these industries. They were included in the index using 1955 price weights, and a consistent treatment of the data requires their inclusion in 1928, as well.

When output is measured in 1928 prices, it grows by 93%, but growth is only 66% when 1955 prices are used. This discrepancy is an example of the "Gerschenkron (1947) effect"--the industries

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<sup>9</sup>Since international trade in these commodities was negligible, production indicates consumption.

that were unimportant at the beginning of industrialization were likely both to grow exceptionally rapidly and to have particularly steep reductions in price and cost as technology was modernized. As a result, aggregate growth rates differ depending on whether early or late prices are used for indexing. In the case at hand, consumer durables (bicycles, clocks, phonographs) grew the most rapidly and had the most steeply falling relative prices between 1928 and 1955. The prices of textiles also fell relative to foods, and the production of some textile products, notably hosiery and knitwear, grew very rapidly. Food products in general had the slowest growth and also prices that rose relative to other commodities.

Further insight into the index number problem comes from valuing Soviet output with American prices. Nutter (1962, pp. 530-6) recorded American prices for 1914, 1929, 1939, and 1955 for many of the Soviet goods. I have extended this effort to include all products in 1929, 1939, and 1955 and all important ones for 1914. When Soviet output is indexed with American prices from any of these years, it grows at a rate about equal to that found using 1955 Soviet prices. There is some evidence of the Gerschenkron effect with the American prices, but it is less pronounced than with the Soviet prices, as one would expect in view of the earlier industrialization of the United States. Detailed comparisons indicate that the Soviet price structure had moved close to the American structure as the Soviet economy

developed from 1929 to 1955. That movement gave rise to the Gerschenkron effect and the divergence in the prices indices.

The solution to this problem is the same as the solution to the index number problem that arose with Bergson's calculations. Rather than plumping for 1928 or 1955 prices as weights, one should use an index number incorporating both sets of value added shares. The simplest procedure is to use a geometric average of the two indices, and that is what I have done. It shows that the output of manufactured consumer goods grew 79% between 1928 and 1937.

Table 3, last two columns, shows the impact of these revisions on the growth in per capita consumption. The actual 1937 values of sales in shops and on the collective farm market were 110 billion and 16 billion rubles respectively. Dividing these values by the growth in consumer goods output and volume on the collective farm market gives the 1928 volumes in 1937 prices. Per capita consumption rose 40% when the calculation is done in this way.

### III. Revaluing Farm Income in Kind and Services

Farm income in kind and services are the other two components of private consumption that require revision. Farm income in kind is calculated by subtracting three items from gross agricultural production--marketings, losses, and the utilization of farm products as seed and feed--so changes in any of these

items or their prices will change farm income in kind. Bergson's calculations must be revised in view of new information on two aspects of the calculation. First, Bergson used prices from Karcz (1957), but Karcz has since revised them twice (see Moorsteen and Powell 1966, p. 621, and Karcz 1977, p. 105), mainly due to Vlytsan's (1966) publication of prices on the collective farm market. I use Karcz's most recent revisions. Second, Bergson used official Soviet production figures, which Wheatcroft (1990) and Davies, Harrison, Wheatcroft (1994, pp. 114-6) have urged should be revised downward. Eliminating Gosplan's upward "corrections" for the late 1920s raises the growth rate of grain consumed on the farm.

These revisions imply a smaller fall in farm income in kind than computed by Bergson, as shown in Table 4, first two columns. With these alterations, the growth in per capita consumption rises to 43% from 1928 to 1937 when the value added weights are used in calculating household purchases in retail markets.

This increase is an overestimate, however, for some tricky issues must be dealt with before a final figure is obtained. In Tables 1-4, farm income in kind is valued at the average price received by farmers across all marketings. However, the value to peasants was greater than that. Consider a woman who had three eggs. Suppose that the first was sold to the state at the procurement price of 24 kopecks, that the second was sold on the collective farm market for 40 kopecks, while the third was

eaten. What price should be used to calculate her income in kind? Clearly, the collective farm market price--not the average price, which is the procedure adopted in Tables 1-4--for she could have sold the egg on the collective farm market for 40 kopecks and bought 40 kopecks worth of cloth instead. The opportunity cost of eating the egg was, therefore, 40 kopecks, and the egg should be valued accordingly.

Bergson (1961, pp. 161-2) did revalue farm income in kind at collective farm market prices, and he also revalued services, where analogous problems exist. The problem in services arises since their relative prices were lower in the Soviet Union than in capitalist economies. (Bergson 1963, p. 165-6.) The divergence was particularly marked for housing since rents were not raised as rapidly as goods prices and wages. If excessively low prices are used to value housing and services, then the volume of these services will have an inappropriately small impact on the measured standard of living. To avoid this, Bergson (1963, pp. 165-6, 315-20) revalued services in relative prices like those prevailing in the United States. This is obviously a speculative exercise but no better alternative is apparent, so I repeat Bergson's adjustment for services in Table 4, last two columns.

We are on surer ground with agricultural prices, and I have followed Bergson's lead in revaluing farm income at collective farm market prices except that I have used new information

pertaining to the quantities and prices. This procedure seems satisfactory for grain, potatoes, vegetables, sunflower seeds, meat, milk, and eggs--the foods that were, in fact, sold on the collective farm market and for which there are collective farm market price quotations. Bergson reduced this value by 20% to account for transport and processing costs (like grinding the grain) that the peasants would have incurred on their collective farm market sales, and I have done the same.

The more difficult question is how to value the remaining products--flax, wool, and hides.<sup>10</sup> In the 1920s, there were substantial rural industries producing a range of textile and leather products for peasant consumption. Less than half of the raw wool, for instance, was sold outside the village for industrial processing. The bulk of the raw wool was turned into yarn and cloth by peasant producers. (Wheatcroft and Davies 1985, pp. 404-5, 459-60.) These industries were destroyed during the First Five Year Plan, and peasant living standards fell accordingly. (Fitzpatrick 1994, pp. 158-63, 215-8.) Raw wool output fell 61% from 1928 to 1933 as flocks dropped 65%. (Wheatcroft 1983 and Davies, Harrison, and Wheatcroft 1994, p. 289, Nimitz 1954, Table 6.) Sales to industrial purchasers declined only slightly due to the compulsory delivery requirements of the

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<sup>10</sup>Cotton and sugar beets were the other principal farm products, but their valuation is not an issue in computing farm income in kind since the entirety of their output was sold to the industrial sector.

procurement system. As a result, the rural manufacture of woollen cloth and other wool products ceased. It was the same story with sheep and goat hides, which were the raw material for the rural leather industries, and for flax except that the pattern was more erratic in that case.

What were these rural manufactures worth to the peasants? I estimate rural production as factory production multiplied by the ratio of the raw material processed by the peasant economy to the raw material processed by the industrial sector. In the case of wool, for instance, 716 thousand centners of wool (in washed condition) were processed by the "agricultural population" in 1928, while 618 thousand were processed by industry. (Wheatcroft and Davies 1985, pp. 404-5, 459-60.) Industry produced 117 million meters of cloth in the same year, and this output required all of its raw wool supply--only a negligible amount was sold as yarn or processed by the factory knitwear and hosiery industry.<sup>11</sup> Hence the raw wool retained by the agricultural population was enough to produce 136 million meters of cloth (= 117 million x 716/618). Analogous calculations indicate a rural production of 190 million meters of linen cloth and 47 million pairs of shoes.

These quantities were valued with 1937 prices from Chapman

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<sup>11</sup>This is shown by applying input-output coefficients from the 1920 United States census of manufactures to the Russian production data summarized in Nutter (1962, p. 455-7).

(1963, pp. 190-5). She reports eight prices for different grades of woolen and worsted cloth. I use the price of "coarse wool baize, solid color" (29.51 rubles per meter) since it was described as coarse and since it was not particularly expensive and so may have been appropriate for rural, handwoven material.<sup>12</sup> The wool cloth was worth 4 billion rubles in 1928. Parallel calculations imply that the value of the linen was 2.5 billion rubles while the shoes were worth 2.4 billion. All told the value of rural production amounted to 8.9 billion rubles in 1928 and .9 billion in 1937--all in 1937 prices.<sup>13</sup> These values are considerably greater than Bergson's estimates.<sup>14</sup>

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<sup>12</sup>Following Bergson (1961, p. 167), I reduce the prices by 15% to exclude the marketing mark-up.

<sup>13</sup>I checked these calculations by reworking Nutter's index of the output of manufactured consumer goods. This index, as originally calculated, included only factory production. Both large scale and small scale industry were included but not fabrication by the peasant community. The flour and bread made by the peasants from their farm income in kind, for example, was not included in the index of manufactured goods. These exclusions were appropriate when the object was to develop, as previously, an index of the volume of goods sold in shops. To check the estimate of rural manufacturing, I recomputed the index after adding the estimated rural production to the factory production. The result was to increase the index by 12.2% in 1928 and by 0.4% in 1937. Multiplying these increases by the 110 billion rubles of retail sales in 1937 translates into an extra 7.5 billion rubles in 1928 and .5 billion rubles in 1937--all in 1937 retail shop prices. These figures agree reasonably well with the direct calculations.

<sup>14</sup>Bergson (1961, p. 344) valued the flax, wool, and hides by increasing the prices received for them in proportion to the overall ratio of the collective farm market prices of foods to the average price on all marketings for the same commodities. Applying his procedure (with the most recent figures) implies that the rural manufactures of wool, flax, and hides were worth 2.2 billion rubles in 1928 and .8 billion in 1937 (all in 1937 prices).

The figure for shoes is particularly artificial and shows the approximate nature of these calculations. While the small hides (from sheep and goats) consumed by the rural population probably were fabricated into shoe uppers (a rather poor use of that material) by factory industry, Jasny (1949, p. 229), at least, maintains they were used for coats by the peasants. In the absence of any information on the price of sheepskin coats, I reckon the small hides as though they were converted to shoes and value them accordingly. The implicit assumption is that the value of the leather in shoes was the same as its value in clothing.

Table 5 incorporates all of the considerations discussed. When consumer expenditure weights are used to aggregate the output of the consumer goods industries, per capita consumption grew by 27% in the Soviet Union between 1928 and 1937--2.7% per year, on average. When value added weights are used the cumulative increase is 30% for an average annual rate of 3.0%. Either weighting implies a substantial rate of growth.

In fact, the figures imply an even higher growth rate when the most recent population estimates are used. Tables 1-5 use Bergson's population figures, which show a 9% increase from 1928 to 1937, as indicated. These figures, however, have been superceded by recent demographic reconstructions based on suppressed information discovered in the archives. The population history of Andreev, Darskii, and Kar'kova (1990, p. 41,

1994, p. 85) places the growth in population between 1928 and 1937 at 7%. Hence, the growth in per capita consumption between 1928 and 1937 was 32% (not 30%) and the annual growth rate was 3.2%. Using the population estimates of Andreev, Darskii, and Kar'kova would raise all of the 1937 per capita income indices in Tables 1-5 by two percentage points. To facilitate comparison with Bergson's work, the new population figures have not been introduced previously, but they will be used in subsequent calculations.

#### IV. Annual and Sectoral Estimates of Consumption per Head

While there was an overall rise in per capita consumption during the prewar Five Year Plans, it was neither continuous nor evenly spread across the population. Consumption dropped sharply in 1932 and 1933 when there was famine in the Ukraine and North Caucasus and when urban living standards were at their nadir. Conditions improved markedly during the Second Five Year Plan (1933-37), but the gain was confined to the nonfarm population.

To establish these patterns, the consumption figures are calculated annually and disaggregated into farm and nonfarm components. The annual calculations present no new problems.<sup>15</sup>

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<sup>15</sup>The constituent series are available annually to compute all components of consumption except services. These components were, therefore, calculated by the same procedures previously described. Values for services are available for 1928, 1937, and 1940. Intermediate values were interpolated. I use the population estimates of Andreev, Darskii, and Kar'kova.

Difficulties arise, however, with the farm-nonfarm breakdown. This requires a consistent decomposition of both consumption and the population, and both divisions are problematic.

So far as the population breakdown is concerned, the problem is that many country people were active in both the agricultural and nonagricultural economies. There were four main groups: full time cultivators, part time cultivators who also earned money by logging, carting, building, or working in the cities, artisans like millers or handicraft producers who provided cultivators with goods and services often in exchange for food or other produce, and other handicraft producers who specialized in selling goods to the urban sector. Some of these individuals were compensated out of agricultural income and should be included in the denominator when average farm income is calculated. Other individuals were compensated by income earned directly from the urban/industrial sector and should be included in that sector. In practice, I proceed by defining the agricultural population to be full and part time cultivators and their families.<sup>16</sup> This treatment of part time cultivators as full timers implicitly allows some nonfarming rural residents to be included in the calculation of average income on a full time

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<sup>16</sup>I assume that there were 100 million full and part time farmers and family members in 1926 and 92 million in the late 1930s following Lorimer (1946, pp. 222-230) and Jasny (1949, pp. 710-14). Lorimer thought there was little change in the farm population between 1926 and 1928. I assume that the drop in the number of farmers occurred during collectivization and, mainly, during the famine of 1933.

equivalent basis. There is bound to be some error in this procedure, but the data do not allow for refinement.

I break down consumption by, first, calculating farm consumption and, then, by computing nonfarm consumption as a residual. Farm consumption equals farm income in kind (as measured in 1937 prices) plus purchases of manufactured consumer goods in shop. I assume that cultivators spent all of their cash incomes, so the value of shop purchases equals farm cash income less agricultural taxes.<sup>17</sup> I express the value of shop purchases in 1937 prices using Malafeyev's (1964, p. 407) consumer price index for state and cooperative shops.<sup>18</sup> This index is consistent with the rate of inflation implicit in Table 4 for 1928 to 1937.

Figure 1 shows the per capita income estimates for 1928-39. Two overall series (corresponding to measuring household purchases in retail markets with consumer spending and value added weights) are graphed as well as the two series for nonfarm consumption implied by subtracting farm consumption from the two

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<sup>17</sup>Unlike the previous tables where farm cash income was computed by valuing farm production at average realized prices, the figures in Table 5 are constructed from other information. For 1928, I use Hoeffding's (1954, p. 14) estimate of the cash income of the farm population. For 1932-40, I compute farm cash income as the sum of cash payments to collective farm members, sales by collective farm members to state agencies and to the urban population on the collective farm market, and wages paid by state farms, machine tractor stations, and other state agricultural organizations. (Zaleski 1984, pp. 280-1, 732-3, 736-7, 786-9.) Agricultural taxes are taken from Holzman (1955, p. 199).

<sup>18</sup>Malafeyev's index is not annual, so it was necessary to interpolate values for 1933-6, and 1938-9.

totals. The two weighting schemes for aggregating the production of consumer goods clearly point to similar histories of consumption, so I will restrict my detailed comments to the series computed with the consumer spending weights, which are also shown in Table 6.

These new consumption estimates accord with the usual view that living standards fell during the First Five year Plan (1928-32), recovered during the Second Plan (1933-37)--indeed, living standards surged forward at this time--and then fell with the approach of the Second World War. 1937 has always been regarded as an exceptionally prosperous year since the grain harvest was so large, and Table 6 confirms that view. Between 1928 and 1938, consumption per capita rose 22% in the Soviet Union--2.0% per year--and that is probably a fairer indicator of the pace of advance than the higher growth rates realized between 1928 and 1937.

Table 6 shows that the nonagricultural population always had the higher income, so the shift of employment from farm to factory raised average consumption. With the farm and nonfarm incomes at their 1928 levels, the shift of population to the nonfarm group would have raised the averaged income from 1208 to 1289 rubles per year in 1938. The increase equals 30% of the overall rise in per capita consumption.

Very little of the gain in average consumption came from improvements in the rural living standards. On the farm,

consumption per head went up only 5.5% between 1928 and 1938. During the collectivization period, average farm consumption had dropped 22% below the 1928 level. Some agricultural producers had a far more difficult time than Table 6 indicates since the national averages confound important regional differences. Thus, farming districts close to cities and specializing in livestock products were well placed to take advantage of the exceptionally high prices on urban markets and experienced relative prosperity. Conversely, regions far from urban markets and dedicated to grain production were not well placed to take advantage of the rising demand on the collective farm market and so experienced income falls greater than the average. It was in those regions that famine occurred. These regional differences persisted throughout the 1930s, although with less catastrophic results.

Most of the gain in average living standards was due to improvements in nonfarm consumption per head, which grew at 1.9% per year from 1928 to 1938. This rise in consumption was achieved by working more rather than by a rise in consumption per worker. While the nonagricultural population expanded 42% between 1928 and 1937, nonagricultural employment (including nonagricultural work performed by the agricultural population) rose 73% from 17.5 million to 32.1 million.<sup>19</sup> Consumption per

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<sup>19</sup>This definition of nonagricultural employment includes nonagricultural workers employed by agricultural organizations, e.g. members of collective farms engaged in food processing. (Moorsteen and Powell 1966,

worker rose from 3531 rubles per year to 3788 rubles. This 7% increase was much less than the rise in consumption per nonagricultural resident. Thus, the rise in per capita nonagricultural consumption was purchased by a rise in labour expended.

The history of consumption per worker is related to the history of wages; however, the correspondence was not exact for three reasons: some wage income was saved or taxed, there was some nonwage income (interest, bourses, etc), and some nonagricultural labour was paid in kind rather than cash especially in collective farms and other cooperatives. The most encompassing measure of the real wage is the ratio of total nonagricultural wage payments (including the earnings of members of nonagricultural cooperatives) to nonagricultural employment excluding the nonagricultural labour performed by members of agricultural organizations. Between 1928 and 1937, total nonagricultural wage payments increased from 63.2 billion rubles to 113.3 billion expressed in 1937 prices while the corresponding labour force rose from 13.77 million to 26.53 million.<sup>20</sup> Consequently, real wages per worker fell 7% even though consumption per worker, on a

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p. 643). Including these workers as "nonfarm" is the counterpart of defining "farmers" as full and part time farmers.

<sup>20</sup>Nonagricultural wage payments are from (Zaleski 1971, 1984, series 201) plus other remuneration (Hoeffding 1954, p. 14, and Zaleski 1984, pp. 280-1) plus cooperative income (Zaleski 1984, pp. 280-1) minus the agricultural wage bill calculated as agricultural employment (Zaleski 1984, series 190) multiplied by the average agricultural wage (Zaleski 1984, series 225). The corresponding labour force is "civilian employment in nonagricultural organizations" from Moorsteen and Powell (1966, p. 643).

broader basis, was rising.

All measurements of real wages in the Soviet Union between 1928 and 1937 show a decline, but most investigators find a much larger decline than reported here. For instance, Chapman (1963, p. 144) found that real wages fell 15%-42% depending on whether a Paasche or Laspeyres price index was used,<sup>21</sup> and Zaleski (1971, p. 392) calculated a decline of 44%. There are two reasons for the difference. First, Chapman and Zaleski overestimated the rate of inflation for reasons discussed earlier in this paper. Second, they underestimated the growth in money wages. Both use TSUNKHU wage series<sup>22</sup>--Chapman used the earnings of "all" wage and salary workers, while Zaleski used the earnings of industrial workers. In fact, however, the TSUNKHU series did not include all workers; for instance, members of cooperatives were excluded. My real wage index is more inclusive in this regard. Moreover, the TSUNKHU data do not include all wage payments. (Hoeffding 1954, p. 14, 102-108, Bergson 1947.) Again my earnings figures are more comprehensive since they are the ratio of total wage payments and cooperative earnings divided by all civilian nonagricultural employees. Ignoring the cooperative

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<sup>21</sup>These are the figures for "real wages, gross" in lines 4a and 4b.

<sup>22</sup>TSUNKHU is the acronym for Tsentral'noe Upravlenie Narodno-khoziaistvennogo Ucheta (Central Administration of National Economic Accounting).

sector, for instance, biases down the measured growth in real labour earnings.

In summary, the annual estimates imply slower growth of per capita consumption than was indicated by the 1928-1937 benchmark comparisons since 1937 was such an exceptionally prosperous year, especially for the farm population. However, the record of strong consumption growth at the rate of 2.0% per annum from 1928 to the late 1930s remains. The gains occurred during the boom of the Second Five Year Plan and were confined largely to the nonfarm sector. The agricultural population participated in this development only by moving to the cities. Staying on the farm brought no economic progress.

#### V. The Growth of Consumption, Industrial Output, and National Income

One virtue of the consumption estimates presented in this paper is that they agree better with most recent western estimates of Soviet growth than do Bergson's original figures. The reason is simple--western estimates made since the 1950s are aggregates of industrial and agricultural output statistics. As we have seen, those figures imply a higher rate of growth of consumption than did Bergson's original estimates. Bergson estimated GDP by adding estimates of the other components of gross national expenditure to his consumption estimates. Since consumption was a large fraction of national output, Bergson's

low estimate of consumption growth translated immediately into a low estimate of GDP growth. Since the consumption figures present here are calculated from much the same data as most post-1960--and post-Bergson--GDP estimates, my consumption estimates agree better with those than do Bergson's.

So far as industry is concerned, there is no question that Bergson's figures imply a growth rate much less than that computed by any other investigator. If we use Bergson's preferred (Paasche) measure of the growth in retail sales given in Table 1, first column, and subtract my estimates of sales of fresh food on farmers' markets, we obtain implicit estimates of the volume of manufactured consumer goods in 1928 and 1937--namely 101.6 and 110 billion rubles. These give a growth rate of only 0.9% per year. Kaplan and Moorsteen calculate a corresponding figure of 5.7% using 1950 weights. Nutter's figures imply a growth rate of 7.6% per year using 1928 weights and 5.8% using 1955 weights, thus leading to the rate of 6.7% per year used in this paper. Hunter and Szyrmer (1992, p. 34) give a figure of 5.5% per year.

If we calculate overall industrial growth (including mining and quarrying) by adding estimates of military production, capital equipment, and construction materials to the estimates of manufactured consumer goods, we find--again--that Bergson's figures underestimate growth. Thus, his figures imply that industrial output grew at the rate of 5.7% per year from 1928 to

1937, while my figures imply a rate of 11.2% per year. Various investigators have calculated different figures for this rate (Davies, Harrison, and Wheatcroft 1994, p. 292), but Gregory and Stuart quote a figure of 11.3% per year, which is as near a consensus value as possible. Nutter (1962, p. 326) gives a figure of 12.1%, and even the Russian economist Khanin (1991, p. 146), many of whose estimates seem implausibly low, reports an industrial growth rate of 10.9% for 1928-42. Bergson's estimates are clearly out of line with these figures, while mine are of the same order of magnitude.

We can perform the same tests with GDP estimates--with the same result--but the issue is complicated because national income can be defined in various ways. My final estimates of consumption (Table 5) followed Bergson's lead in valuing farm income in kind at collective farm market prices and sales from shops at prices paid by consumers--i.e. inclusive of the turnover tax. This measure of consumption corresponds to measuring GDP at purchasers' prices (rather than at factor cost where the turnover tax would be netted out). Bergson did not actually compute an estimate of GDP at purchasers' prices, but one can do so by adding to his estimate of consumption at "adjusted market prices" (where farm income in kind is valued at collective farm market prices) his estimates of the other components of gross national expenditure at prevailing prices (Bergson 1961, pp. 48, 165). The result is that GDP rises from 248.4 billion 1937 rubles in

1928 to 341.7 billion in 1937--i.e. by only 3.6% per year. In contrast, my estimate of GDP at purchasers' prices--which differs from Bergson's mainly in the treatment of consumption--grows at the rate of 6.3% per year over the same period. Moorsteen and Powell (1966, pp. 622) have computed a widely used (e.g. Davies, Harrison, and Wheatcroft 1994, p. 269) estimate of GDP growth at factor cost. I have recomputed their index on a purchasers' price basis, and it grows at 6.1% per year from 1928 to 1937.<sup>23</sup> Hunter and Szyrmer (1992, p. 34) have computed GDP at 1928 purchasers' prices, and it grew at an average annual rate of 8.3% between 1928 and 1937. Among these estimates, Bergson's is clearly the lowest.<sup>24</sup>

If this analysis of the post-Bergson national income estimates is correct, then we should be able to reverse the

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<sup>23</sup>Moorsteen and Powell (1966, p. 622) give, for each sector, indices of the volume of output and income originating in the sector in 1937. The latter are derived from earlier calculations of Bergson and sum to GDP at factor cost. To recompute the index, I used Bergson's (1953, p. 124) estimates of net national product by economic sector (with some minor additions from Moorsteen and Powell's figures) but otherwise followed Moorsteen and Powell's procedure.

<sup>24</sup>The only economist to have produced an estimate on the order of Bergson's is the Russian Khanin (1988). He calculated that net material product grew at the rate of 3.2% per year from 1928 to 1941. Unfortunately, Khanin has never explained how he arrived at this figure. Since, as noted, he estimated that industry grew much more rapidly than Bergson's figures imply and since, for some other important sectors, he has used output series that, in other hands, lead to a much more rapid rate of GDP growth, it is not clear how he reached his conclusion. By default, it appears to be a question of weighting, but the weight put on agriculture must have been even larger than that implied by using collective farm market prices for farm income in kind. (Harrison 1993, Davies, Harrison, and Wheatcroft 1994, pp. 36-7.) How larger weights could be justified is not obvious. Without an explanation of the procedure, Khanin's national income accounting cannot be relied on.

procedure and extract from them consumption series that increase as rapidly as the series developed here. And indeed we can. Hunter and Szyrmer's (1992) work is the most ambitious analysis to date of the sources of Soviet growth. As base-line data for their simulations, they developed a new set of national income accounts. While consumption was not their major concern, their breakdown of final demand includes series of rural and urban consumption whose total corresponds to the consumption series developed in this paper. As noted, Hunter and Szyrmer's series are based on many of the same industrial output series as my own. They use value added weights to aggregate the individual manufactured commodities, but they use "balanced" 1928 prices to combine manufactured goods, agricultural goods, housing, etc. The "balanced" prices were produced by an input-output algorithm intended, principally, to eliminate the negative entry in their input-output table due to the subsidy of urban housing, a problem dealt with in section III of this paper. The effect of this procedure is to shift the prices of housing, agricultural products, etc., in the direction of the adjustments made in section III. Consequently, estimates of consumption move very similarly to the estimates developed in this paper. Figure 2 compares my estimates of consumption per head (using value added weights) to Hunter and Szyrmer's calculations. The similarity is striking. If anything, the Hunter and Szyrmer figures point to an even more favourable view of living standards than that

proposed here.<sup>25</sup> This correspondence is useful confirmation for the consumption estimates developed here.

Compared to the reliable western estimates of industrial output and GDP growth, Bergson's figures are extremely low. These other investigators, of course, do not agree entirely among themselves. Anyone with first hand experience of national income accounting can appreciate the many judgments that must be made along the way and the resulting latitude for variation. Nevertheless, Bergson's accounts are distinctly below the normal range. The explanation is not hard to find. All of the recent investigators of Soviet national income have written since much information on industrial and agricultural output has become

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<sup>25</sup>My estimates can also be compared to those of Hunter and Szyrmer's in terms of a rural/urban breakdown. This breakdown is not the same as the farm/nonfarm breakdown since there were many rural, nonagricultural residents especially early in the period. In the event, the evolution of rural and urban income per head is similar with my estimates and those of Hunter and Szyrmer. With both sets of figures, the gap between per capita rural and urban incomes is greater than the gap between farm and nonfarm incomes. There is a much smaller gain in per capita urban income and a small rise in per capita rural income over the 1930s.. The absence (or limited) growth of income within each sector may explain why Hunter and Szyrmer did not reach more optimistic conclusions on the standard of living. The overall average, however, still rises by almost 30%. With a rural/urban partition, most of this gain is due to people moving from country to city. I believe the farm/nonfarm breakdown gives the better accounting of the rise in the average income since many rural, nonagricultural residents were drawing income from the urban economy in 1928. Hence, the rural/urban division overstates the true gap between the sectors and assigns too much of the income growth to intersectoral shifts. For that reason, I have emphasized the farm/nonfarm partition in the text.

available, and it is the basis of their work. These investigators can, therefore, avoid the difficult deflation problems that bedevilled Bergson's efforts. My consumption estimates are consistent with the post-Bergson research on Soviet national income, and, in the case of Hunter's and Szyrmer's inquiry, that work implies a rate of consumption growth like that reported here.

## VI. Conclusion

The dominant interpretation of Soviet industrialization maintains that the average standard of living fell in the 1930s. However, when the most recent evidence and theory are used to measure per capita consumption, they show that it increased 22% between 1928 and 1938. This was exceptionally rapid growth--not abject failure.

This optimistic conclusion is subject to three qualifications. First, the rise in consumption required an increase in total hours worked, and no discount has been made for that factor. Second, forced collectivization and political terror may have lowered the quality of life more than enough to offset the rise in material consumption. Third, the gains were confined to only a fraction of the population. On average, farmers, who comprised over half of the citizenry, did not experience any rise in consumption, although some agricultural groups located near cities and specializing in livestock may have realized gains. Furthermore, inequality increased among the nonfarm population.

Skilled workers benefitted disproportionately as skill differentials increased. (Bergson 1944.) The Stankhanovites certainly did well, while the gains of the unskilled and unproductive were less pronounced. The party and administrative elite benefitted, while the convict population, of course, suffered a substantial drop.

The rise in inequality blurs an assessment of living standards during the First Five Year Plans. On the one hand, it is impressive that per capita consumption increased substantially even as investment levels were pushed ever higher. It is also impressive that a large part--perhaps a majority--of the nonagricultural workforce shared in these gains. Achieving rising living standards while investment is rising is the challenge of economic development. On the other hand, only a minority of the population shared in this advance. The peasants realized no advance, and the convicts certainly lost. While the administrative elite and the industrial workforce probably did well, "trickle down" did not spread much further.

Table 1

Bergson's Calculations of Real per Capita Consumption  
in 1937 and 1928 prices

	Bergson's preferred Paasche price index <u>(1937 base)</u>		the alternative Laspeyres price index <u>(1937 base)</u>	
	<u>1928</u>	<u>1937</u>	<u>1928</u>	<u>1937</u>
household purchases in retail markets	105.0	126.0	72.0	126.0
farm income in kind	35.6	25.0	35.6	25.0
services	<u>11.1</u>	<u>19.9</u>	<u>11.1</u>	<u>19.9</u>
total	151.7	170.9	118.7	170.9
population index	1.00	1.09	1.00	1.09
indices of real per capita consumption	1.00	1.03	1.00	1.32

Table 2

## Revisions to Bergson's Calculations of Real per Capita Consumption

	Fisher Ideal price index		Fisher Ideal price index & no rural <u>adjustment</u>	
	<u>1928</u>	<u>1937</u>	<u>1928</u>	<u>1937</u>
household purchases in retail markets	87.1	126.0	79.1	126.0
farm income in kind	35.6	25.0	35.6	25.0
services	<u>11.1</u>	<u>19.9</u>	<u>11.1</u>	<u>19.9</u>
total	133.8	170.9	125.8	170.9
population index	1.00	1.09	1.00	1.09
indices of real per capita consumption	1.00	1.17	1.00	1.25

Table 3

Estimates of Real per Capita Consumption Using Indices  
of the Output of Consumer Goods to Measure  
Household Purchases in Retail Markets

	using consumer expenditure weights		using value added weights	
	<u>1928</u>	<u>1937</u>	<u>1928</u>	<u>1937</u>
shops & restaurants	--	--	61.5	110.0
farmers' markets	--	--	3.4	16.0
household purchases in retail markets	69.6	126.0	64.9	126.0
farm income in kind	35.6	25.0	35.6	25.0
services	<u>11.1</u>	<u>19.9</u>	<u>11.1</u>	<u>19.9</u>
total	116.3	170.9	111.6	170.9
population index	1.00	1.09	1.00	1.09
indices of real per capita consumption	1.00	1.35	1.00	1.40

Table 4

Additional Revisions to Estimates of Real per Capita Consumption  
Using Value Added Weights to Measure  
Household Purchases in Retail Markets

	Revaluing Farm income in kind at average prices		Revaluing Services	
	<u>1928</u>	<u>1937</u>	<u>1928</u>	<u>1937</u>
shops & restaurants	61.5	110.0	61.5	110.0
farmers' markets	3.4	16.0	3.4	16.0
household purchases in retail markets	64.9	126.0	64.9	126.0
farm income in kind	39.8	34.7	39.8	34.7
services	<u>11.1</u>	<u>19.9</u>	<u>26.3</u>	<u>42.9</u>
total	115.8	180.6	131.0	203.6
population index	1.00	1.09	1.00	1.09
indices of real per capita consumption	1.00	1.43	1.00	1.43

Table 5

Final Estimates of Real Per Capita Consumption  
Using Final Revisions of Farm Income in Kind  
Household Purchases in Retail Markets Computed  
with Both Consumer and Producer Weights

	consumer expenditure weights		value added weights	
	<u>1928</u>	<u>1937</u>	<u>1928</u>	<u>1937</u>
shops & restaurants	--	--	61.5	110.0
farmers' markets	--	--	3.4	16.0
household purchases in retail markets	69.6	126.0	64.9	126.0
farm income in kind				
--food	78.2	81.3	78.2	81.3
--manufactures	7.3	.4	7.3	.4
services	<u>26.3</u>	<u>42.9</u>	<u>26.3</u>	<u>42.9</u>
total	181.4	250.6	176.7	250.6
population index	1.00	1.09	1.00	1.09
indices of real per capita consumption	1.00	1.27	1.00	1.30

Table 6

Farm and Nonfarm Consumption per Head, 1928-39

	overall	farm	nonfarm
1928	1208	940	1727
1929	1225	--	--
1930	1225	--	--
1931	1122	--	--
1932	1052	737	1601
1933	1118	806	1615
1934	1233	840	1855
1935	1334	964	1875
1936	1287	745	2020
1937	1546	1154	2058
1938	1475	992	2079
1939	1450	967	2030

Appendix Table 1  
Consumer Goods Output--Expenditure Weights

	weights 1928	weights 1937	series
I. Manufactured Goods			
textiles	0.064	0.049	see notes
garments	0.078	0.043	same as textiles
knitwear	0.021	0.014	N1612, N1613
shoes	0.078	0.030	N1601
haberdashery	0.007	0.013	
soap, drugs	0.014	0.017	N1508
housewares	0.032	0.015	
reading mat	0.013	0.009	
cultural/sport	0.003	0.007	
kerosene/matches	0.008	0.006	N1517
tobacco	0.016	0.022	N1515, N1516
consumer durables	0.006	0.013	see notes
	0.340	0.238	
II. Foods			
grain	0.123	0.247	see notes
meat/poultry	0.103	0.075	see notes
fish	0.016	0.022	N1507
sugar/confect	0.045	0.088	N1510
fats&butter	0.035	0.048	N1503, N1504
milkexcbutter	0.064	0.017	see notes
eggs	0.014	0.009	see notes
veg	0.064	0.048	see notes
salt	0.001	0.002	N1509
tea/coff	0.006	0.006	
alcoholic	0.036	0.080	N1514, N1518
	0.507	0.642	
III. Services	0.155	0.120	

## sources:

1928 weights--Chapman (1963, p. 70) except for consumer durables. I estimated their weight as the value of output computed from quantities and prices of bicycles, cameras, electric light bulbs, phonographs, radios, household sewing machines, clocks and watches, and motorcycles in Nutter (1962, pp.458-9, 536) and Chapman (1963, pp. 194-5). The weight of "cultural and sports" was reduced accordingly.

1937 weights--Sales of principal products on the collective farm

market were estimated from average price and quantity data for sales in calendar year 1937 from Karcz (1957, p. 300, 1979, pp. 105-8). I subtracted the total sales of these products from 126.0 billion rubles to obtain sales to which Chapman's weights were applied. Her weights were adjusted as in 1928 to incorporate consumer durables and then multiplied by the corresponding retail sales figure to obtain retail purchases in state and cooperative shops for each item. Collective farm market sales were added to the appropriate categories and the weights shown in this table were computed from these spending totals.

data series--Except as noted, these are indicated in the table. Series beginning with "N" refer to Nutter's (1962, pp. 449-FF9). A blank indicates there is no corresponding series.

textiles--unweighted sum of output of cotton, linen, silk and rayon, and wool cloth: (N1604, N1606, N1609, N1611).

hosiery and knitwear--the indicated series were aggregated with weights computed from (Kaplan and Moorsteen 1960, Vol. II, p. 209).

tobacco--quantity series aggregated with prices of cigarette and low grade tobacco prices from Nutter, (1962, p. 546).

consumer durables--quantities are N1701, N1702, N1703, N1704, N1705, N1707, N1708, N1709. Prices from Nutter (1962, pp.458-9, 536) and Chapman (1963, pp. 194-5).

grain--The figure is extravillage sales (marketings less repurchases) less nonbread uses of grain in the extravillage economy. Extravillage sales for 1928 from Barsov (1969, p. 103). For 1937, I estimated extravillage sales as grain collections (from Davies, Harrison, Wheatcroft 1994, p. 290) less 3 million tons, the difference between extravillage sales and grain collections in 1928. Nonbread uses included exports (from Davies, Harrison, Wheatcroft 1994, p. 316), urban and army horses (assumed to have been 1.5 million tons in 1928 from Wheatcroft 1990, p. 269 and Davies 1980, p. 432 and assumed to have been zero in 1937), industrial use (from Davies, 1980, p. 432 and extrapolated forward using industrial output series N1502, N1511, N1514, N1518 and weights from Davies 1980, p. 434), seed (1928 from Davies 1980, p. 432, and assumed to have been .5 million in 1937), storage losses (assumed to be 10% of collections, a proportion which reconciles grain collections and allocations as shown in Davies 1980, pp. 427 and 432), and carryover (assumed to have been zero in 1928 per Davies 1980, p. 432, and 10 million tons in 1937 per Jasny 1949, p. 758).

meat--meat marketed from Karcz (1979, pp. 102-3) divided by 1.3 to allow for intrarural sales. See Karcz (1979, p. 98). A parallel adjustment was made for milk and eggs as noted.

fats and butter--prices to weight output series from Nutter (1962, p. 545).

milk not including butter--milk marketed from Karcz (1979, pp. 102-3) (divided by 1.15 to allow for intrarural sales) minus

butter production (N1503).

eggs--eggs marketed from Karcz (1979, 102-3) divided by 1.1 to account for intrarural sales

vegetables--weighted sum of marketings of potatoes and vegetables (from Karcz 1979, pp. 102-3) where weights are prices from Kontrol'nye Tsifry, 1929/30, pp. 582.

alcohol--prices to weight output series from Nutter (1962, p. 546).

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Figure 1

### Consumption per Head, 1928-40

value added and consumption weights

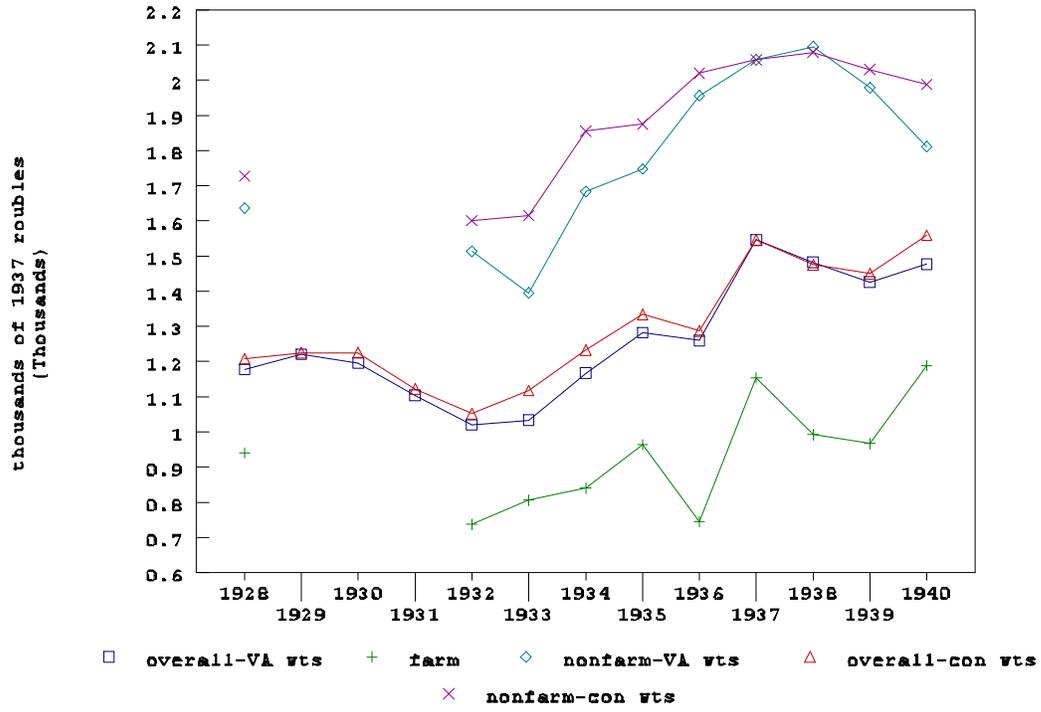


Figure 2

### Consumption per Head, 1928-40

whole population, comparison of methods

