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ECONOMIC INTELLIGENCE REPORT

CONSTRUCTION OF SOVIET GROSS NATIONAL PRODUCT ACCOUNTS FOR 1950-55



CIA/RR 55

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CENTRAL INTELLIGENCE AGENCY

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FOREWORD

This report represents the first attempt in ORR to construct Soviet gross national product (GNP) accounts in current rubles. Heretofore, the chief product of the aggregative research effort has been an index of GNP; no absolute measures have been made. In addition, this report undertakes the conversion of the GNP from rubles into dollars, for purposes of intercountry comparison. It attempts to clarify the elementary technical questions raised in intercountry comparisons of GNP.

Requirements imposed by the intelligence community upon ORR have made it essential to construct monetary estimates of Soviet GNP. They are useful in several ways. (1) The intercountry comparisons requested in contributions to National Intelligence Estimates require monetary estimates as points of departure. (2) The aggregative magnitudes computed in structural studies should be checked by independently derived figures. The basic ruble GNP estimates serve this purpose. (3) The end-use origin breakdowns of GNP reveal useful information on economic policy intentions and changes. (4) Many of the components derived in the process of constructing GNP accounts have intelligence application within themselves. Among such useful magnitudes are the wage bill, agricultural income, retail trade expenditures, and gross investment outlays.

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CONSTRUCTION OF SOVIET GROSS NATIONAL PRODUCT ACCOUNTS
FOR 1950-55*

Summary of Estimates

In 1951 the gross national product (GNP) of the USSR approximated 1,076 billion rubles. Of this total, about 30 percent was originated in each of the two sectors, agriculture and industry; about 20 percent in service activities; and the remaining 20 percent in transportation, communications, construction, and trade. The total thus generated was spent so as to devote almost four-sevenths to consumption and almost two-sevenths to investment. Of the remaining one-seventh, all but a very small fraction was devoted to defense, and the rest to government administration. By 1955 the total will rise to over 1,400 billion rubles, an increase of nearly one-third. Soviet GNP in 1951 was less than one-third as large as US GNP (measured in comparable terms). By 1955 it will be somewhat greater than one-third the size of US GNP.

I. Introduction.

There exists no single measure capable of defining the economic potential of a nation, since the magnitude desired is dependent upon the purpose for which the measure is intended, as, for example, to estimate military strength, consumer welfare, or growth. The nearest approach to a general appraisal of the over-all productive ability of an economy is an estimate of the net value of total goods and services produced in a particular time period. In economists' jargon, this measure is termed GNP.

The first, basic part of the report is the detailed GNP accounts themselves, constructed so as to include all net income and outlays

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 31 December 1954.

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generated in the Soviet economy in 1951. The procedure used to construct the accounts represents an adaptation of that employed by the Department of Commerce in its presentation of US national accounts. 1/* The adjustment in US national accounting procedure required by the institutional peculiarities of the Soviet economy relies in large part on the work of Professor Abram Bergson. 2/ Many of the entries are based on prewar relationships and are therefore of questionable validity in the period under consideration. The margin of error of the major components is much lower, however, since postwar data are available. The allowance of a margin of error of 5 to 10 percent seems warranted.

In the second and third parts the GNP accounts are reclassified into significant origin and use categories. The chief dilemma at this stage involves the treatment of the turnover tax as a factor cost element. A tentative solution of this problem has been reached.

The fourth part of the report is the presentation of an attempt to move the 1951 total in both constant and current ruble terms back to 1950 and forward to 1955. The end-use breakdowns are similarly estimated for these years. A special discussion of alternative estimates of defense expenditures is also included.

The last part of this report deals with the conversion of the GNP estimates from rubles into dollars. In addition to developing dollar-ruble conversion ratios for GNP, it cautions against attempting to construct dollar estimates by aggregating converted sector magnitudes and restricts the usefulness of such conversion factors to direct sector or use comparisons.

II. Basic Gross National Product Accounts.

The GNP of the USSR is presented in this part from the point of view of both income and outlays, in terms of 1951 ruble market prices. Retail market prices are used initially because most available Soviet statistics are expressed in these terms.

The accounts presented in this part are intended as a balance sheet of the Soviet economy for the year 1951. On the left side of each account is entered all income, public and private, accruing to indi-

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viduals, organizations, and the state during the year. The entries are selected so as to avoid double counting while simultaneously taking care not to omit any sources of income. All income is initially included, irrespective of relationship to the performance of productive services. Transfer items, that income which does not represent payments for productive services -- for example, pensions and allowances and interest receipts -- have, however, been segregated and do not enter into the final calculation of GNP.

On the right side of each account are entered all expenditures in the economy for the year, again avoiding double counting and omissions. Total outlays, including transfer items, are, of course, equal to total income, since each transaction is entered on both sides of the accounts. Transfer payments are separated on the outlay side, as on the income side. They represent expenditures for which no goods or services are received. The private and socialized sectors of the economy have been entered separately.

A. Households.

Table 1* presents the income and outlays of individuals in the form of (1) wage and salary payments, (2) private farm plot receipts in money and in kind, (3) income in money and in kind from the distribution of collective farm earnings, (4) earnings of private artisans, (5) subsistence allowances for military personnel, and (6) the imputed rental income of home owners. In addition, the table lists transfer incomes accruing to individuals in the form of pensions and allowances, stipends to students, and interest receipts on government bond holding. The outlay side of Table 1 breaks down the spending pattern of individuals by major categories, including savings and direct taxes.

1. Income.

a. Agricultural Income.

(1) Wages of Farm Labor.

Wages of farm labor include wages paid to workers on state farms (sovkhozy) and machine tractor stations (MTS's) and the wages paid to hired workers on collective farms (kolkhozy).

* Table 1 follows on p. 4.

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Table 1

Income and Outlays of Households in the USSR
 1951

Billion Rubles

Income		Outlays	
a. Agricultural Income		a. Retail Sales	
(1) Wages of Farm Labor	18.1	(1) State and Co-operative Stores	337.8
(2) Money Payments to Collective Farmers (on Labor-Day Basis), Salaries, Premia	20.5	(2) Collective Farm Market	35.3
(3) Net Income from Sale of Farm Products	41.1	Total	<u>373.1</u>
(4) Net Farm Income in Kind	143.2	b. Housing (including Imputed Rent) and Services	53.6
Total	<u>222.9</u>	c. Trade Union Dues	3.7
b. Nonagricultural Income		d. Consumption of Farm Income in Kind and Military Subsistence	157.2
(1) Wage Fund	354.8	e. Statistical Discrepancy	12.9
(2) Artisan and Other Current Incomes	32.8	f. Total Outlay on Goods and Services	<u>600.5</u>
(3) Military Subsistence Allowances	14.0	g. Transfer Items	
Total	<u>401.6</u>	(1) Net Savings	
c. Imputed Rent of Owner-Occupied Dwellings	11.1	(a) Net Bond Purchases	31.2
d. Total Income Currently Earned	<u>635.6</u>	(b) Increment of Savings Deposits	4.0
e. Transfer Items		(c) Other	3.0
(1) Pensions and Allowances	36.9	Total	<u>38.2</u>
(2) Student Stipends	4.8	(2) Direct Taxes	44.3
(3) Interest Receipts	5.7	Total Transfers	<u>82.5</u>
Total Transfers	<u>47.4</u>	Total Outlays	<u>683.0</u>
Total Income	<u>683.0</u>		

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In 1941 the wages of farm labor comprised 4.86 percent of the total wage bill. The proportion of total workers and employees in the national economy employed in state agriculture was almost the same in 1951 as in 1941. Assuming no significant change in relative wage rates, the above wage bill proportion holds. The farm wage bill* equals 4.86 percent of 372.9 billion rubles, or 18.1 billion rubles.

(2) Money Payments to Collective Farmers.

Total money income of collective farms in 1951 amounted to 186 percent of the 1940 level ^{3/} of 20.9 billion rubles, or a total of 38.9 billion rubles. In prewar years, labor-day payments to members of the collectives amounted to about 50 percent of the total money income of the collective farms. Postwar literature lends support to the continued prevalence of this proportion. ^{4/} On this basis labor-day payments are estimated at about 19.4 billion rubles.

In addition to the payments for labor days worked, collective farms pay out salaries to officials and administrative personnel as well as premia to collective farm members. Again, on the basis of prewar Soviet statistics these are estimated to amount to about 3.0 percent of collective farm money income, or 1.1 billion rubles.

Thus total money payments to collective farmers in 1951 are estimated at about 20.5 billion rubles.

(3) Net Income from Sale of Farm Products.

The 41.1-billion ruble total of net income from the sale of farm products includes both money income of farm households (kolkhozniki) realized from sales on the open collective farm market (37.2 billion rubles) and sales to government procurement agencies (8.5 billion rubles), less an allowance for money costs of production, 4.6 billion rubles. The calculation is summarized as follows:

	<u>Billion Rubles</u>
Money income of collective farms from all sources	38.9
Portion realized from sale of farm products (85 percent of above)	33.1

* See Table 1, Income, a, (1), p. 4, above.

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	<u>Billion Rubles</u>
Total sales by collective farms to all purchasers	33.1
Portion sold on collective farm market (30 per- cent of total)	9.9
Sales to procurement agencies (the balance)	<u>23.2</u>
Total sales on collective farm market	47.1
Portion sold by collective farms (see above)	9.9
Sales by collective farm households (the balance)	<u>37.2</u>
Household sales to procurement agencies (36.6 percent of procurement sales by collective farms)	8.5

(a) The total money income of collective farms has been estimated at 38.9 billion rubles. It is necessary to resort to prewar computations to determine the proportion derived from sales of farm products. If Bergson's calculation for 1937 is assumed to prevail, only 85 percent of collective farm income arises from the sale of agricultural products. In 1951, application of this proportion yields a total income estimate of 33.1 billion rubles ($38.9 \times 0.85 = 33.1$).

(b) A 1949 official estimate indicates that 30 percent of the total money income of collective farms derived from sales of farm products arises from sales in the collective farm market. ^{5/} If this proportion still holds for 1951, receipts of collective farms from farm market sales amounted to 9.9 billion rubles ($33.1 \times 0.3 = 9.9$), the remaining 23.2 billion rubles of farm income arising from sales to procurement agencies.

(c) Total sales in collective farm markets have been estimated elsewhere* at 47.1 billion rubles. Deducting the 9.9 billion rubles of collective farm sales leaves 37.2 billion rubles for sales by households.

(d) In order to estimate sales by households to procurement agencies, it will be assumed that they are in the same proportion to procurement sales by collective farms as the total output of farm households is to the total output of collective farms. The prewar proportion was 36.6 percent. If this ratio is still applicable, sales of farm households to procurement agencies are taken to be 8.5 billion rubles ($23.2 \times 36.6 = 8.5$).

* See p. 12, below.

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Total sales by households amount to 45.7 billion rubles (37.2 billion from farm market sales and 8.5 billion from sales to procurement agencies). Prewar calculations indicate that the monetary production expenditures of farm households amounted to 10 percent of their total money income. Assuming this proportion prevails in 1953, the net money income of farm households is set at 41.1 billion rubles ($45.7 \times 0.9 = 41.1$).

(4) Net Farm Income in Kind.

The estimate of net farm income in kind was derived by valuing at state store retail prices less the value added created in distribution, transportation, and processing of the estimated quantities of food crops consumed by farmer growers. The turnover tax has not been removed. State store prices less the excluded elements have been used as the basis of valuation, for both pragmatic and theoretical reasons. Retail prices approximate the opportunity cost to the farmer of consuming his own product instead of having to purchase its equivalent, if the higher and difficult-to-measure farm market price is excluded. It has been deemed desirable to retain the turnover tax, since the tax represents elements of both monopoly profit and land rent. Eliminating the tax entirely would exclude the rent component not institutionally included in farm compulsory delivery prices. Also, the turnover tax has been included in the estimate for retail sales,* so in the interest of commensurability the tax has been retained for estimates of income in kind. In Table 2** the commodities have been priced in the manner described above.

Net farm income in kind is thus estimated at 143.2 billion rubles. If the average rate of turnover tax prevailing for retail trade (64.3 percent) is assumed to apply to income in kind, a tax of 92.1 billion rubles would reduce the estimate to 51.1 billion.

b. Nonagricultural Income.

(1) Wage Fund.

According to a passage in an official Soviet publication on statistical terminology, the wage fund includes payments made not only to workers and employees but also to cooperative

* See Table 1, Outlays, a, (1), p. 4, above.

** Table 2 follows on p. 8.

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Table 2

Valuation of Agricultural Commodities in the USSR 6/
1951

<u>Commodity</u>	<u>Value of Production (Billion Rubles)</u>	<u>Percent Consumed by Producers</u>	<u>Value of Portion Consumed by Producers (Billion Rubles)</u>
Breadgrains	113.0	40	45.2
Coarse Grains	70.8	11	7.9
Meat	60.6	35	21.2
Vegetable Oil	25.2	15	3.8
Butter	14.4	11	1.6
Milk	44.9	49	22.0
Cheese	11.2	9	1.0
Vegetables	32.7	66	21.6
Potatoes	55.6	30	16.7
Rice	3.3	68	2.2
Total	<u>431.7</u>		<u>143.2</u>

craftsmen, military personnel, and involuntary labor. 7/ Apparently excluded from the general fund are earnings of noncooperative artisans and subsistence allowances for military personnel.

The postwar estimate rests on a statement by Molotov 8/ that the 1948 wage bill was almost double that of 1940, and on a report that the 1948 wage bill increased over that of 1947 by 10 percent. 9/ If the 1947 Plan had been fulfilled, the wage bill for 1948 would have been 308 billion rubles, closely consistent with the Molotov estimate.

The increase in the nonagricultural labor force amounted to 15.3 percent between 1948 and 1951. 10/ Applying this increase and allowing for a 5-percent rise in the level of wages due to a rise in the average level of skill and shifts in total employment in favor of the higher paying industries yields a 1951 wage fund estimate of 372.9 billion rubles. From this total the 18.1-billion wage bill

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for farm labor is deducted, leaving a general wage fund of 354.8 billion rubles.

(2) Artisan and Other Current Incomes.

This is a most tenuous measure. It is assumed that the proportion of noncooperative artisan incomes to the total wage bill remained constant from 1940 to 1951. The total wage bill rose from 161 billion to 373 billion rubles, an increase of 132 percent. Applying this multiple to the 1940 independent artisan income figure of 14.1 billion rubles yields an estimate of 32.8 billion for 1951.

(3) Military Subsistence Allowances.

The estimate of military subsistence allowances is taken directly from Hans Heymann. ^{11/} The 14-billion ruble total includes 10 billion for rations, 3.6 billion for clothing and personal equipment, and 0.4 billion for miscellaneous personnel costs.

c. Imputed Rent of Owner-Occupied Dwellings.

The estimate of 11.1 billion rubles is calculated as the product of (1) the total amount of floor space privately owned and occupied in both urban and rural areas of the USSR in 1951, estimated at 491 million square meters, and (2) the average rental per square meter of dwelling space paid by the urban population in 1951, amounting to 22.56 rubles per year.

(1) At the end of 1938, total privately owned urban housing amounted to 85 million square meters. ^{12/} The wartime destruction of all housing, public and private, amounted to 70 million square meters, of which 12 million square meters had been rebuilt by the end of 1945. ^{13/} If private urban housing was destroyed in proportion to its relationship to total housing, total availability at the end of 1945 approximated 63.5 million square meters. In the Fourth Five Year Plan the public urban housing construction goal was set at 75 million square meters. Reports during the first 2 years of the Plan period indicated fulfillment accomplishments of only 75 percent, ^{14/} yet the official claim of total construction for the entire period was 101 million square meters. ^{15/} In the absence of any claim of overfulfillment, it appears plausible to consider the entire overfulfillment of 26 million square meters as the increment in private urban dwelling

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space. After allowing for a 2-percent depreciation rate, private urban housing in 1950 is calculated at 83 million square meters. To this figure is added a net of 9 million rubles of estimated construction in 1951 after deducting the depreciation estimate. Available private urban housing, therefore, amounted to 92 million square meters in 1951.

According to Izvestiya, the total number of rural houses stood at 26.2 million in 1950. 16/ In 1951 an additional 0.4 million were constructed. 17/ Assuming 15 square meters as the average size of a rural dwelling, the total area of rural housing amounted to 399 million square meters in 1951.

(2) report calculated the average rental per 50X1-HUM square meter to be 22.56 rubles per year in 1948. 18/ Rental charges are believed to have been constant since 1948, so this average charge is assumed to be applicable for 1951.

For the total private dwelling space of 491 million square meters, this would yield an imputed rent of 11.1 billion rubles.

d. Total Income Currently Earned.

See Table 1, Income, d.*

e. Transfer Items.

(1) Pensions and Allowances.

The estimate of 36.9 billion rubles comprises (a) disability pensions and allowances paid to war invalids and victims of industrial accidents, 22.3 billion rubles; (b) pensions and sick benefits paid out to workers and their families, 10.5 billion rubles; and (c) aid to mothers of many children, 4.1 billion rubles.

(a) Outlays on social security (sotsial'noye obespecheniya) amounted to 22.3 billion rubles in 1951. 19/ All of this amount is presumed to represent pensions and allowances.

* P. 4, above.

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(b) The total budgetary allocation for social insurance was 13.5 billion rubles in 1951. 20/ Information for 1950 indicates that only 78 percent of actual social insurance outlays constitute pensions, the rest comprising maintenance of public convalescent and recreational activities. 21/ Therefore, the budgetary appropriation is reduced to 10.5 billion rubles.

(c) The 4.1-billion ruble appropriation for material aid is clearly a transfer payment, since benefits are based on need as indicated by number of children and incomes of parents without any regard to productivity considerations.

(2) Student Stipends.

The number of students in higher educational institutions has more than doubled since 1940, but the number of stipends has increased in smaller proportion, and the average size of payment has not kept pace with the rise in living costs. In the light of these qualifications the 2.4-billion ruble expenditure for 1940 has been doubled to obtain the 1951 estimate of 4.8 billion rubles. This estimate represents a balance between the upward effect of the rise in enrollment and downward effects of the decline in proportion of students aided and the decline in the real value of stipends.

(3) Interest Receipts.

The figure of 5.7 billion rubles includes (a) 0.7 billion rubles of interest on savings deposits, and (b) 5.0 billion rubles of lottery winnings on state loans.

(a) In 1951, total deposits in state savings banks amounted to 22.5 billion rubles. 22/ Applying to this total the 3-percent interest rate paid on savings deposits results in an interest receipts estimate of 0.7 billion.

(b) Total budgetary appropriations for loan service amounted to 7.0 billion rubles in 1951. Not all of this expenditure represented interest payments, 2 billion rubles being repayment of principal. Therefore, interest receipts from state loans amounted to 5.0 billion rubles. 23/

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2. Outlays.

a. Retail Sales.

(1) State and Cooperative Stores.

Retail trade sales in 1953 are estimated at 436.1 billion rubles, derived as follows: The revised Plan goal for 1953 was set at 312 billion rubles 24/ for the last 3 quarters. The first quarter estimate is obtained by applying the proportion of annual trade occurring in the first quarter for 1936-40 and 1948-49, about 22.7 percent. On this basis the annual goal for 1953 was 403.6 billion rubles. The 1953 Plan fulfillment report indicated the trade goal had been overfulfilled by 33 billion rubles, 25/ resulting in a total 1953 trade turnover of 436.1 billion rubles.

In volume terms, retail trade in 1951 stood at 75.1 percent* of the 1953 level, or at 327.6 billion rubles in 1953 prices. Between 1951 and 1953 the price level for consumer goods had fallen by 16.4 percent, yielding an estimate in current prices of 381.3 billion rubles.

Not all sales by state and cooperative stores are made to individuals. In prewar years, about 11.5 percent of total sales were made to institutions. Applying this corrective factor reduces trade turnover to private persons to 337.8 billion rubles.

(2) Collective Farm Market.

The most recent statement concerning the value of collective farm market trade is the official estimate that it comprised 12 percent of total trade in 1949. 26/ Since subsequent price reductions have the effect of reducing the relative share of collective farm market trade in subsequent years, it is assumed that its proportion had fallen to 11 percent by 1951. If the figure for state and cooperative retail trade, 381.3 billion rubles, is divided by the percentage of total trade carried on in state and cooperative stores, 89 percent, an over-all trade estimate of 428.4 billion rubles is obtained. Subtracting the state and cooperative retail trade figure

* A Plan fulfillment report for 1953 indicated a 21-percent increase in retail trade, and a report for 1952 indicated a 10-percent rise over the previous year.

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from the total leaves collective farm market trade as the remainder -- 47.1 billion rubles.

An increasingly large proportion of collective farm market sales is being made to the cooperative network for further processing and resale. By 1948, cooperatives were already buying 48 percent of the meat and 53 percent of the butter, though only 6 percent of the potatoes. 27/ Upon this basis it is assumed that only 75 percent of total sales, 35.3 billion rubles, are made to individuals.

b. Housing and Services.

In the absence of reliable postwar information it is necessary to use prewar experiences in estimating explicit housing expenditures. In 1940, housing and miscellaneous services amounted to 11.4 percent of household expenditures on goods. Assuming this ratio prevails in 1951, explicit housing and service outlays are estimated at 42.5 billion rubles $[42.5 = 11.4 (337.8 + 35.5)]$. To this is added the 11.1-billion ruble estimate for imputed rent of owner-occupied dwellings, for a total outlay of 53.6 billion rubles.

c. Trade Union Dues.

Prewar information discloses that membership dues paid to trade union, party, and other organizations comprised about 1 percent of the wage bill. Since the 1951 wage bill amounted to 373 billion rubles, dues payments are estimated at 3.7 billion rubles.

d. Consumption of Farm Income in Kind and Military Subsistence.

See Table 1, Income, a, (4), and b, (3).*

e. Statistical Discrepancy.

This is the difference between the sum of all income reported in Table 1,* and the sum of all other outlays reported in Table 1.

* P. 4, above.

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f. Total Outlay on Goods and Services.

See Table 1, Outlays, f.*

g. Transfer Items.

(1) Net Savings.

(a) Net bond purchases. The 1951 loan for sale to individuals which was originally set at 30 billion rubles was actually 33 billion rubles, due to oversubscription. From this total is deducted the proportion of the 2 billion rubles used for repayment of principal.** This is assumed to be identical with the proportion that individual subscriptions bear to the total, about 90 percent. Deducting 1.8 billion rubles from total individual purchases provides an estimate of 31.2 billion rubles for net bond purchases.

(b) Increment in savings deposits. In 1951 the increment in savings deposits is estimated to be 4 billion rubles. 28/

(c) Other increases in savings, including increments in each holding. No official statistics on the volume of currency in circulation have appeared since 1937. However, a rough approximation may be obtained for this magnitude as of 1 January 1951 by assuming that the 1937 figure can be moved in the same proportion as the wage fund.

The comprehensive wage fund was estimated at 102.7 billion rubles for 1937. 29/ The total wage fund as of 1 January 1951 may be taken as the average between the 1950 and 1951 figures (354.4 and 372.9 billion rubles, respectively), that is, 363.8 billion rubles. An increase of 3.54 times in the wage fund is therefore indicated from 1937 to 1 January 1951.

Total currency in circulation as of 1 January 1937 is given as 11.256 billion rubles. 30/ Multiplying this by the increase in the wage fund yields a figure of 39.85 billion rubles as a rough estimate of total currency in circulation as of 1 January 1951. Assuming a further increase in currency in circulation during 1951 by 5 percent (the same rate of increase as in the wage fund), 2.0 billion rubles is obtained as the increase in cash holdings in 1951.

* P. 4, above.

** See Table 1, Income, e, (3), p. 4, above.

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Voluntary insurance payments amounted to about 0.5 billion rubles in 1940. Assuming such purchases of insurance to bear a constant relationship to wage payments, the approximate doubling of the size of the wage fund would mean total voluntary insurance purchases amounted to 1.0 billion rubles in 1951. The total for other net savings is therefore 3.0 billion rubles for 1951.

(2) Direct Taxes.

Direct taxes on the population amounted to 44.3 billion rubles in 1951. 31/

B. Organizations.

Table 3* represents income and outlays of the public sector of the economy, defined to include economic organizations (subdivisions of ministries, consumer and producer cooperatives, and collective farms), social organizations (trade unions, the Communist Party, and so on), and the administrative units of government (the ministries, the Supreme Court, the Supreme Soviet and attached organs, the Council of Ministers and attached organs, and comparable organs in the republican and local governments). In this account only the proportion of collective farm income and outlays retained and expended by the farm as an organization is included; the portion of farm income distributed to members is entered as personal income in Table 1.** The retained incomes of economic organizations are net only in the sense that they remain after the expenses necessary to create them are deducted. The only other incomes of economic organizations entered are those which are transferred to the government in the form of taxes and special funds payments, or transferred to depreciation accounts. The inclusion of any other type of income of these organizations would involve double counting. The bulk of the income in Table 3 consists of state budget revenues.

1. Income.

a. Net Income Retained by Economic Organizations.

(1) Collective Farms.

Official sources disclose that 23.7 percent of collective farm investment was financed by long-term credit in 1951

* Table 3 follows on p. 16.

** P. 4, above.

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Table 3

Consolidated Net Income and Outlay Account
 of Government, Social, and Economic Organizations in the USSR
 1951

Billions Rubles

Income		Outlays	
a. Net Income Retained by Economic Organizations		a. Communal Services	
(1) Collective Farms	6.1	(1) Health Care	28.0
(2) State and Cooperative Organizations	26.9	(2) Education	63.1
Total	<u>33.0</u>	Total	<u>91.1</u>
b. Income of Economic Organizations Allocated to Special Funds		b. Government Administration	14.1
(1) Social Insurance Budget	21.4	c. MVD-MGB	17.5
(2) Funds for Worker Training and Education	8.7	d. Defense	93.4
Total	<u>30.1</u>	e. Gross Investment	236.0
c. Indirect Taxes and Other Payments by Enterprises to State Budget		f. Other Outlays	23.0
(1) Taxes on Income of Enterprises and Economic Organizations	7.6	g. Consolidated Total Value of Goods and Services Disposed of Exclusive of Sales to Households	<u>475.1</u>
		h. Transfer Outlays	
		(1) Pensions and Allowances	36.9
		(2) Student Stipends	4.8
		(3) Interest Payments to Households	5.7
		Total	<u>47.4</u>

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Table 3

Consolidated Net Income and Outlay Account
 of Government, Social, and Economic Organizations in the USSR
 1951
 (Continued)

Billion Rubles

Income		Outlays	
(2) Payments from Profits of Enterprises into the State Budget	47.8		
(3) Turnover Tax	247.8		
(4) Miscellaneous	51.9		
Total	<u>355.1</u>		
d. Allowance to Cover Account- ing Losses of MTS's	-8.0		
e. Consolidated Total Charges against Current Product, Net of Depreciation	<u>410.2</u>		
f. Depreciation	29.8		
g. Consolidated Charges against Total Product	<u>440.0</u>		
h. Transfer Receipts			
(1) Net Savings of House- holds	38.2		
(2) Direct Taxes	44.3		
Total	<u>82.5</u>		
Consolidated Total Income	<u>522.5</u>	Consolidated Total Outlay Net of Sales to House- holds	<u>522.5</u>

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and 1952. ^{32/} Total loans amounted to 2.7 billion rubles in 1952. ^{33/} For 1951, only a planned figure of 3.5 billion rubles was cited. ^{34/} If the fulfillment experience of 1950 of 3.8 ^{35/} billion rubles of planned investment from loans as compared with 2.0 billion rubles of actual investment ^{36/} is used as a guide, actual investment from long-term credit in 1951 is assumed to be 1.9 billion rubles. On this basis, total collective farm investment in 1951 and 1952 is calculated at 19.4 billion rubles.* If total investment be distributed between the 2 years in the same proportion as that portion financed from loans, investment in 1951 is calculated at 8 billion rubles. Subtracting loan-financed investment from the total leaves 6.1 billion rubles to be financed from the indivisible fund of the collective farms. If it is further assumed that there was no net change in the size of the indivisible fund in 1951, the retained earnings of the collective farms, which are identical to deposits in the fund, are assumed to be 6.1 billion rubles.

(2) State and Cooperative Organizations.

The retained profits of state and cooperative organizations were reported at 26.9 billion rubles in 1951 ^{37/} in the budget presentation of Finance Minister Zverev.

b. Income of Economic Organizations Allocated to Special Funds.(1) Social Insurance Budget.

According to Soviet data, ^{38/} the total state social insurance budget amounted to 21.4 billion rubles in 1951.

(2) Funds for Worker Training and Education.

In the absence of specific postwar information on the subject, it is necessary to resort to prewar practices. The 1940 study made by Bergson and Heymann ^{39/} estimated training and education funds at 1.5 percent of the total wage bill. If this proportion still prevailed in 1951, the funds for that year are estimated at 8.7 billion rubles.

$$* \frac{1.9 + 2.7}{23.7} = 19.4.$$

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c. Indirect Taxes and Other Payments by Enterprises to State Budget.

(1) Taxes on Income of Enterprises and Economic Organizations.

This revenue category includes a tax on the money income and income in kind of collective farms, a tax on the income of cooperative organizations, a levy on noncommodity activities, and sundry payments by enterprises into the budget. In 1951 such receipts were officially estimated at 7.6 billion rubles. 40/

(2) Payments from Profits of Enterprises into the State Budget.

The 1952 budget message by Finance Minister Zverev estimated payments from the profits of state enterprises in 1951 at 47.8 billion rubles. 41/

(3) Turnover Tax.

The budget message indicated turnover tax collections in 1951 amounted to 247.8 billion rubles.

(4) Miscellaneous.

The estimate of 51.9 billion rubles includes (a) customs and reparations receipts, 24.9* billion rubles; (b) timber revenues, 1.3 billion rubles; (c) license and fee receipts, 13.5 billion rubles; (d) local taxes, 7.2 billion rubles; and (e) other revenues, 5.0 billion rubles. 44/ The other revenue item is the difference between total revenues, 470.3 billion rubles, and the sum of all budget revenues accounted for in the above calculations, 461.1 billion rubles; less an estimate of 4.2 billion rubles to account for revenues from capital transactions.

d. Allowance to Cover Accounting Losses of Machine Tractor Stations.

In 1951, revenues of the MTS were estimated at 5.2 billion rubles. 45/ These consist mostly of payments in kind by

* This figure represents an interpolation between the 1950 figure of 25.8 billion rubles 42/ and the 1952 figure of 26 billion rubles. 43/

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collective farms for tractor work performed by the MTS. Outlays for the MTS for both capital and operational expenses are estimated at 17.2 billion rubles in 1951, of which 4.0 billion consisted of capital investments. ^{46/} The 8.0-billion ruble excess of operational expenditures over revenues is deducted from the revenue side of our table as a budget subsidy.

e. Consolidated Total Charges against Current Product,
Net of Depreciation.

See Table 3, Income, e.*

f. Depreciation.

In the absence of comprehensive Soviet data on capital consumptions allowance for the economy as a whole,* it becomes necessary to use US experience in this regard. To make the analogy reasonably valid, the period 1869-1919 has been chosen. ^{47/} Depreciation rates of 8 percent for producer durables and 2 percent for construction result from US experience. Weighting these rates by the Soviet proportion of construction to producer durables, roughly 2.1, yields an annual depreciation rate of 4 percent.

[redacted] estimated capital consumption allowances by applying this 4 percent rate to the cumulative total of annual investments since 1923-24. A range is included to take account of varying estimates as to capital losses during the war. Utilizing [redacted] figures and moving his magnitudes to 1951 according to his methodology results in a 1951 capital consumption total of 28.4 to 31.2 billion rubles. The midpoint of the range, 29.8 billion rubles, is used as the figure for depreciation in this report.

50X1

50X1

g. Consolidated Charges against Total Product.

See Table 3, Income, g.**

h. Transfer Receipts.

See Table 3, Income, h.**

* P. 16, above.

** P. 17, above.

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2. Outlays.

a. Communal Services.

Public outlays are comprised mainly of expenditures from the state budget and capital investment of economic organizations. Transfer receipts and outlays are treated in the same manner as in the consolidated private account (Table 1*), except that receipts in the private account become outlays in the public account and vice versa.

(1) Health Care.

Budgetary outlays for health care were set at 21.7 billion rubles in 1951. 49/ On the basis of prewar information the budget appropriation represents only 69.8 percent of total outlays for health purposes. Total outlays are therefore $21.7 + 0.698 = 31.1$ billion rubles. Prewar information also discloses that 10 percent of these total expenditures are in the form of capital outlays, which are represented in Table 3, e.** Deducting this component leaves a net total of 28.0 billion rubles.

(2) Education.

Total budgetary outlays on education amounted to 57.2 billion rubles in 1951. 50/ In prewar years only 80 percent of total outlays came from the budget. Total expenditures are therefore 71.5 billion rubles. From prewar data is deducted the 7 percent of total outlays representing capital investment. Also deducted is the 4.8-billion ruble entry for stipends. The net outlay for education becomes 63.1 billion rubles.

b. Government Administration:

Budgetary outlays for government administration amounted to 14.1 billion rubles in 1951. 51/

c. MVD-MGB.

Outlays for internal security are estimated at 17.5 billion rubles in 1951. This figure represents continuance of the

* P. 4, above.

** P. 16, above.

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1949 figure 52/ with no change on the assumption of no increase in the size of the internal security establishment.

d. Defense.

The budgetary explicit realized expenditure for defense amounted to 93.4 billion rubles in 1951. 53/

e. Gross Investment.

The estimate of gross investment has been calculated in two ways which yield slightly differing results. As an approximation, gross investment has been derived as the residual between the sum of all incomes and the total of all outlays other than gross investment. This method provides an estimate of 236.0 billion rubles.

It is also possible to obtain a result by aggregating the components of gross investment. The breakdown is as follows:

	<u>Billion Rubles</u>
(1) Depreciation	29.8
(2) Fixed capital investment	132.0
(3) Working capital investment	11.3
(4) Collective farm investment	8.0
(5) Stockpiling	7.0
(6) Gold production	9.4
(7) Increase in loaned working capital	15.0
Total explicit breakdown	<u>212.5</u>
Residual calculation	236.0

The estimates are obtained as follows:

- (1) Depreciation.*
- (2) Fixed capital investment. 54/
- (3) Working capital investment. 55/

* See Table 3, Income, f, p. 17, above.

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(4) Collective farm investment.*

(5) Stockpiling. The ORR estimate of 7.0 billion rubles as the value of accretions to the government stockpiles is based on ORR calculations.

(6) Gold production. Total gold production in 1951 is estimated at 14.7 million troy ounces. Valued at 77 rubles per troy ounce, gold production in 1951 approximated 11.4 billion rubles. Total Soviet gold sales in the West in 1951 are estimated at 2.6 billion rubles. 56/ Assuming no change in domestic gold requirements, accretions to the gold reserve in 1951 are therefore 9.4 billion rubles.

(7) Increase in loaned working capital. It has been the general belief of scholars in the Soviet field, confirmed by official statements, 57/ that the state budget surplus is a major source of working capital loans by the banking system. It is assumed that 15.0 billion rubles of the entire 25.0-billion ruble surplus for 1951 was used to this end.

The 23.5-billion ruble gap between investment calculated as residual and that obtained by cumulating known components requires some attempt at explanation. It is possible that some of the residual outlays represent governmental expenditures for goods and services rather than for capital investment purposes. The explained residual items in the national economy and "other" components in the budget may well pertain to current expenditures. It is also possible that certain investment items have been omitted or understated. However, it seems highly significant that only about 10 percent of investment derived by the residual method cannot be assigned to some specific activity.

f. Other Outlays.

The figure of 23.0 billion rubles for other expenditures is comprised of (1) 10.0 billion rubles to represent expenditures to compensate for this portion of the budget surplus, and (2) 13.0 billion rubles unexplained expenditures in the national economy portion of the budget.

* See p. 18, above.

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(1) It was assumed in Table 3, Outlays, e,* that 15.0 billion rubles of the 25.0-billion ruble surplus had been used to increase the loaned working capital of the long-term investment banks. The remaining 10.0 billion rubles is assumed to be used for general purposes.

(2) All but 13.0 billion rubles of the total national economy expenditure of 179.4 billion rubles has been accounted for elsewhere in the accounts.

g. Consolidated Total Value of Goods and Services
Disposed of Exclusive of Sales to Households.

See Table 3, Outlays, g.*

h. Transfer Outlays.

See Table 3, Outlays, h.*

C. Consolidation.

In Table 4** the private and public sector accounts have been consolidated into the GNP account. It will be noted that the transfer payment entries have been dropped at this stage of aggregation. A balance can be achieved without their inclusion, since they cancel in the combination process. The GNP estimate satisfies the conceptual requirement that it be net of transfer payments.

III. Division of Gross National Product by End Use.

Division of Soviet GNP by use is presented in Table 5.** Allocation of GNP by use requires that a closer approximation to real cost be attempted. In technical jargon, factor price rather than market price becomes the new standard of measurement. Essentially, the transition to factor price measurement involves the

* P. 16, above.

** Tables 4 and 5 follow on p. 25.

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Table 4

Gross National Product Account of the USSR
1951

		Billion Rubles	
Income		Outlays	
a. Total Income of Households Currently Earned	635.6	a. Total Outlays of Households on Goods and Services	600.5
b. Consolidated Charges of Government, Social, and Economic Organizations Against Current Product, Net of Depreciation	410.2	b. Consolidated Total Value of Goods and Services Disposed of by Government, Social, and Economic Organizations, Exclusive of Sales to Households	475.1
c. Net National Product	<u>1,045.8</u>	c. Gross National Product	<u>1,075.6</u>
d. Depreciation	29.8		
e. Gross National Product	<u>1,075.6</u>		

Table 5

Division of Gross National Product of the USSR
by Use before Adjustment
1951

Use	<u>Value at Established Prices</u>	
	(Billion Rubles)	(Percent)
Consumption	691.6	65.7
Administration	31.6	3.0
Defense	93.4	8.9
Gross Investment	236.0	22.4
Allocated GNP	<u>1,052.6</u>	<u>100.0</u>
Unallocated	23.0	
Total GNP	<u>1,075.6</u>	

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removal of those elements of market price which are not compensated by factor services -- that is, by labor, capital, and rental contribution to production. The principal omission required for the adjustment is the elimination of that portion of indirect or excise taxes (turnover tax) which may not be imputed to payment for production services.

A. Basic Classification.

The accounts in Tables 1, 3, and 4* show GNP by factor origin and by expenditures on a rather detailed basis. It is now desired to recast the outlay side of the accounts in terms of the large aggregates -- consumption, administration, defense, and gross investment.

In the reclassification, consumption includes retail sales to households, housing, trade union dues, income in kind, military subsistence,** and the statistical discrepancy from Table 1, and communal services from Table 3.*** Administration encompasses the government administration and MVD-MGB entries in Table 3. Defense and gross investment are taken directly from the respective entries in Table 3. The unallocated item is the "other" entry in Table 3.

B. Adjustment for Implicit Defense Expenditures.

The breakdown in Table 5 has been derived directly or through the use of historic relationships from official statistics. In order to achieve comparability with the procedure used by the US Department of Commerce, it is necessary to transfer to the defense category outlays that have been entered under the other headings. From consumption are taken 3.0 billion rubles spent for military education. From administration are removed 5.0 billion rubles, which approximates the annual expenditures on maintenance and equipment of the 400,000 paramilitary component of the MVD-MGB. The 6.0 billion rubles transferred out of investment and the 3.0 billion rubles transferred out of the un-

* Pp. 4, 16, and 25, respectively, above.

** In accordance with Department of Commerce procedure, military subsistence has been included twice, both as consumption and as defense expenditure. In determining turnover tax incidence, only the portion included under defense is assumed to be taxed, since the defense ministry actually pays the tax when it is purchasing food and petroleum products. To assume tax is levied on military subsistence under both headings would overestimate the tax burden.

*** P. 16, above.

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allocated item represent the noninvestment portion of the 11.0 billion rubles estimated outlay for special weapons research and development. The breakdown in established prices in Table 6* reflects this transfer process.

C. Need for Adjustment.

All entries in Tables 1, 3, and 4** are gross of turnover taxes. If a breakdown of gross national product is to be accurately reflective of resource allocation, the prices used to value the component aggregates should closely approximate alternative costs (the relative economic effort expended to channel resources in a particular direction). As has been reiterated in previous reports, the inclusion of turnover tax adds a noncost element to price. To this degree the tax vitiates the sensitivity of the unadjusted aggregates as indicators of the real division of GNP. Comparison of the two breakdowns of GNP by use in 1951 in Table 6 provides a graphic indication of the degree to which the turnover tax, if not corrected, can distort the distribution of the national product. Particularly apparent is the overemphasis given to consumption and the understatement of defense and investment.

D. Method of Adjustment.

Two questions must be answered to adjust the components for turnover tax: what are the taxable portions of each component, and what rate of turnover tax should be deducted?

1. It is assumed that the turnover tax is applicable to the following entries in Tables 1 and 3***:

a. Household retail purchases in their entirety at the rate of taxation.

b. Income in kind in its entirety at the general rate of taxation.

c. Housing in its entirety at a rate of 1 percent.

* Table 6 follows on p. 28.

** Pp. 4, 16, and 25, respectively, above.

*** See Table 6, p. 28, below.

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Table 6

Division of Gross National Product of the USSR
by Use after Adjustment
1951

Use	Value at Established Prices		Value Net of Deducted Turnover Tax	
	(Billion Rubles)	(Percent)	(Billion Rubles)	(Percent)
Consumption	688.6	65.2	462.6	56.9
Administration	26.6	2.5	21.3	2.6
Defense	110.4	10.5	104.7	12.9
Investment	230.0	21.8	225.0	27.6
Allocated GNP	<u>1,055.6</u>	<u>100.0</u>	<u>813.6</u>	<u>100.0</u>
Unallocated	20.0			
Total GNP	<u>1,075.6</u>			

d. Communal services to one-tenth of their value at the general rate. It is assumed that the outlays for communal services are evenly divided between commodities and services and that one-fifth of commodities purchased are taxable (consumer goods and petroleum products).

e. Government administration to one-half its value at the general rate. This item is assumed to be evenly divided between services and taxable commodities.

f. Civilian MVD-MGB expenditures, taxed in the same way as government administration.

g. The food portion of military subsistence, taxed at the general rate. References to official publications indicate that the armed services and internal security agencies pay turnover taxes on food products purchased by them. 58/ They are tax-exempt on manufactured consumer goods.

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h. Petroleum product purchases by the armed forces, taxed similarly to food procurement. 59/

i. Of the total investment in stockpiles of 7.0 billion rubles, approximately 2.0 billion rubles, a maximum figure for consumer goods subject to the general rate of taxation.

j. Half of total working capital accretions amounting to 9.5 billion rubles, taxed in full at the general tax rate.

2. To compute the general rate of taxation, total turnover tax collections for the year, 247.8 billion rubles, must first be divided by the total turnover upon which the tax was assessed, 385.3 billion rubles. It is necessary to deduct income in kind and farm market sales from taxed turnover for the purpose of making this computation, as no explicit tax is levied on these consumption components. Housing expenditures are also excluded, since a much lower rate of taxation is assumed for this category. The result of the above computation is a rate of 64.3 percent.

It is generally recognized that the turnover tax represents an element in retail prices not entirely compensated by an identifiable cost. Much less easy to decide is the proportion of the tax which is cost element. The very low prices* at which the state takes a delivery of agricultural crops lead one to suspect that no allowance is made for land rent in the price paid. Official admissions by Soviet leaders that for certain crops procurement prices have not even covered production costs 60/ lend further support to this hypothesis.

In a positive way, Soviet economists have confirmed the relationship between land rent and the turnover tax. In the words of Allakhverdian: "In this way it follows that in agriculture a portion of the surplus value product takes the form of rent. In the USSR, in connection with the nationalization of land, absolute rent has been abolished forever, but in the reformed situation there exists differential rent, which appears as the most important source of socialist accumulation." 61/

* Low in the sense of the dollar-ruble relationship as compared with the ratio for processed food and textiles and producer goods.

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In addition to representing land rent payments, the turnover tax also serves as one of the sources for financing state services to agriculture, particularly the operations of the MTS's. Expenditures incurred by the MTS's are partially covered by payments in kind from kolkhozes, but their receipts have been inadequate and the MTS's have chronically had deficits which must be paid by budget subsidies. Available official sources do not draw a direct connection between turnover tax payments and budget subsidies but do observe that "kolkhozy receive large material-technical and financial aid from the state. The Soviet state annually spends billions of rubles to supply agriculture with machines, fertilizers, and other means of production." 62/

Known references in official literature do not help in determining the actual breakdown of turnover tax between specific factor compensated and economic rent elements. Principal reliance is placed, therefore, on the examination of analogies between the Soviet and US economies. In each country the retail prices of rye bread, beef, and cotton cloth have been distributed by factor shares (the proportion of final product) according to the categories of farmer's incomes and processor's and other middleman's receipts for both countries, to which must be added, for the USSR, taxes and MTS income in kind. If inter-country comparisons are made for each of the three representative products, it will be noted that the farmer's and middleman's shares are universally smaller in the USSR. In the USSR the equivalent of the US farmer's share is the explicit farmer's receipts plus the income in kind of the MTS plus an unspecified proportion of the turnover tax share. The equivalent of the US middleman's share is the explicit Soviet middleman's receipts plus the portion of the turnover tax which is not allocated to the farmer.

By assuming that the US distribution of factor choices would prevail in the USSR in the absence of turnover taxes and that agricultural machinery were owned by the farmer, instead of by the state, it becomes possible to reallocate turnover taxes between the two remaining factors of production. The difference in the farmer's share in the two countries plus the explicit MTS share divided by the turnover tax share gives the proportion of the turnover tax compensated by factor services symbolically, as follows:

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$$\frac{F_{us} - (F_r + M_r)}{T_r} = T_{fc}$$

Where F_{us} = US farmer's share in percent
 F_r = Soviet farmer's share in percent
 M_r = Explicit MTS share in percent
 T_r = Turnover tax share in percent
 T_{fc} = Proportion of turnover tax compensated by
factor services.

The remaining share of turnover tax is a monopoly profit which is a function of official resource allocation policy. It will be regarded as economic rent because the same level of production would presumably be forthcoming if the profit were eliminated.

On the basis of the foregoing calculations, 37 percent of the tax assessed on agricultural products represents payments to productive factors. In order to apply this result to the turnover tax as a whole, it is necessary to make allowances for the portion of tax levied on nonagricultural items. In the 1941 plan, approximately 89 percent of total turnover tax receipts were to originate in organizations marketing farm products. 63/ Applying this relationship yields 33 percent as the factor compensated proportion of turnover tax. The tax deduction calculation in Table 7* utilizes this 33-percent proportion.

The ratio between the portion of indirect taxes that cannot be allocated as compensation for specific factor services and GNP is not conspicuously higher in the USSR than in many other advanced economies. If only explicit indirect taxes are taken into account -- since measurements are in this frame of reference in Western economies -- 17.2 percent of Soviet GNP in 1951 was comprised of indirect taxes. In the same year the proportion was 15.3 percent in France, 15.1 percent in West Germany, and 16 percent in the UK. 64/

The turnover tax adjustment reduces the share of consumption in GNP to 56.9 percent of GNP** and that of administration to 2.6 percent. The allocation to defense rises to 12.9 percent and that of investment to 27.6 percent.

* Table 7 follows on p. 32.

** See Table 6, p. 28, above.

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Table 7

Deduction of Turnover in the USSR
1951

Billion Rubles			
Sector	Taxable Amount	Tax Liability	Tax Deducted
Consumption			
Household Retail			
Purchases	373.1	239.9	160.7
Income in Kind	143.2	92.1	61.7
Housing	53.6	0.5	0.3
Communal Services	9.1	5.9	4.0
Total	<u>579.0</u>	<u>338.4</u>	<u>226.0</u>
Administration			
Government Administration	7.0	4.5	3.0
MGB-MVD	5.5	3.5	2.3
Total	<u>12.5</u>	<u>8.0</u>	<u>5.3</u>
Defense			
Military Subsistence	11.0	7.1	4.8
Purchase of Petroleum Products	2.2	1.4	0.9
Total	<u>13.2</u>	<u>8.5</u>	<u>5.7</u>
Investment			
Stockpiles	2.0	1.3	0.9
Inventories	9.5	6.1	4.1
Total	<u>11.5</u>	<u>7.4</u>	<u>5.0</u>

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S-E-C-R-E-TIV. Division of Gross National Product by Sector of Origin.A. Derivation of Components.

The division of gross national product by end use in III, above, attempted to recast the outlay side of the accounts in terms of the large aggregates. Similarly, the present portion of the report seeks to recast the income side of the accounts in terms of the major aggregates of origin of GNP -- industry, agriculture, construction, transportation, communication, trade, and services.

Except in the case of agriculture, the classification of the income accounts does not facilitate the direct estimates of the income by origin aggregates. Instead, a different approach must be adopted. What is derived is an approximation to a value-added* measure of contribution to GNP. Ideally, this can be approximated by combining wage and salary payments, profits, and depreciation charges incurred in a particular sector. In Tables 1 and 3** this procedure has been followed for the economy as a whole. The requirement becomes one of developing the same compilation for the several origin sectors.

The principal ingredient in the value-added computation is the payment to labor engaged in production. The pertinent magnitudes for the Soviet economy are obtained by multiplying the 1951 labor force estimates 65/ for industrial branches and economic sectors by the average annual wage for the respective branch or sector, as revealed in the 1941 Plan. 66/ The profit component cannot be supplied from Soviet profit data, since profits in the Soviet institutional framework are principally a function of resource allocation policy rather than a criterion of managerial activity. The depreciation component of value added can also be supplied from 1941 Plan information. 67/ The official depreciation charges have been doubled to adjust for the understatement of capital consumption in Soviet practice. Except for agriculture, the weight for each sector has been determined by the ratio of its combined payroll and depreciation deductions to that for the economy as a whole.

* Defined as the additional value imparted to a good at a particular stage of production. It corresponds to the difference between sales receipts and materials and fuel costs, or is equal to wages + profits + depreciation charges.

** Pp. 4 and 16, respectively, above.

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B. Special Calculation of Agricultural Weight.

The outlined procedure cannot be used for computing the agricultural weight, because of the peculiarities of available farm income data. The seasonality of the rural work year and the hidden unemployment alleged to prevail in agriculture make it necessary to readjust manpower figures to a full-time equivalent basis. Much more difficult of solution is the derivation of an average annual wage. Even in the USSR, agricultural incomes still contain a large proprietary element. The bulk of the earnings of the rural population arises not from money payments for labor on the collective, but from income both in kind and in cash obtained from the consumption or sale of produce grown on the farmers' household plots. Therefore, the agricultural contribution to GNP has been computed from income statistics of this type.

The basic data for determining agricultural income are contained in Table 1, Income, a,* and in Table 3, Income, c, (3).** All income from farming can be found here except for a considerable portion of the rental return from land. The question of equivalence between land rent and the turnover tax discussed in III, above, again assumes prominence with regard to the size of agricultural incomes. Depending on the assumption as to the percentage of turnover tax which is representative of factor cost, equivalent percentage adjustments are made in Table 1, Income, a, (3), and a, (4),* and in Table 3, Income, c, (3).** In other words, those incomes which contain rental elements have been adjusted to suit the premises relating to land rent and MTS service payments. Using the same alternatives as in III, above, in regard to the turnover tax-factor cost relationship, agriculture originates 29.4 percent of GNP.

Arithmetically the weights are obtained by summing the combined labor payments and depreciation charges of the nonagricultural sectors. The computed total is then divided by 1 less the agricultural weight to obtain total value added in the economy. The weights for the other sectors are then obtained by dividing value added in the respective sector by the value-added total.

* P. 4, above.

** P. 16, above.

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The breakdown in Table 8 includes as GNP for purposes of division of product by origin only that portion of the total shown in Table 4 that is assumed to reflect factor cost. If the entire figure of 1,075.6 billion rubles be used, the difference between it and the totals indicated in the right-hand side of Table 6 should be proportionately distributed among all seven sectors.

Table 8

Gross National Product of the USSR by Sector of Origin
1951

Sector	Adjusted GNP		Unadjusted GNP (Billion Rubles)
	(Percent)	(Billion Rubles)	
Industry	31.8	258.7	342.1
Agriculture	29.4	239.2	316.2
Construction	7.0	57.0	75.3
Transportation	7.6	61.8	81.7
Communication	0.9	7.3	9.7
Trade	4.1	33.4	44.1
Services	19.2	156.2	206.5
Total	<u>100.0</u>	<u>813.6</u>	<u>1,075.6</u>

V. Derivation of Gross National Product Estimates for 1950 and 1952-55.

In order to obtain breakdowns of Soviet GNP for 1950 and 1952-55 on as detailed a basis as that constructed for 1951, it would be necessary to proceed in the manner indicated in Tables 1, 3, 4, 5, and 6.* It is possible, however, to derive GNP totals and divisions by use by moving 1951 totals and components by appropriate production indexes.

* Pp. 4, 16, 25, and 28, respectively, above.

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A. Projection of Totals.

The GNP totals in 1951 terms have been obtained by multiplying the 1,076-billion ruble 1951 estimate by the GNP index for the pertinent years. 68/ In order to convert these to current rubles, a rough price index has been introduced, as shown in Table 9. The price index combines an index of producer goods prices and one of consumer goods prices weighted in the proportion of 1.7:1. This ratio represents the relative shares that the two groups of goods comprised of total production in 1951.

Table 9
 Gross National Product of the USSR
 1950-55

	Billion Rubles					
	1950	1951	1952	1953	1954	1955
1951 Ruble Value <u>a/</u>	1,008	1,076	1,193	1,228	1,308	1,413
Price Index <u>b/</u>	104.0	100.0	96.4	91.0	88.1	85.3
Current Ruble Value <u>c/</u>	1,048	1,076	1,150	1,117	1,152	1,205

a. The 1951 total in Table 4, p. 25, above, is moved by the following GNP index: 1950, 92.9; 1951, 100; 1952, 110.8; 1953, 114.8; 1954, 122.5; and 1955, 132.2. 69/

b. The price index is a weighted average of a consumer and a producer price index.

Indexes	1950	1951	1952	1953	1954	1955
Consumer Goods Price Index*	106.0	100.0	95.4	85.9	83.3	80.8
Producer Goods Price Index**	103.0	100.0	97.0	94.0	91.0	88.0

c. 1951 Ruble Value x Price Index = Current Ruble Value.

* 70/. Price reduction for 1955 assumed to be equal to that of 1954.

** 71/. Estimates for 1954 and 1955 assumed to be identical to 1953.

S-E-C-R-E-TB. Projection of Division by Use.

Each of the use categories in Table 6* is moved by pertinent production indexes in order to derive breakdowns for 1950 and 1952-55. The ruble value estimate for consumption is moved by an index incorporating consumption estimates of the principal components of the Soviet consumer's market basket.** The administration ruble figures are moved by the services index; and the investment figures, by a combined index comprised 63 percent of the producer goods, 25 percent of the construction, and 11 percent of the transportation indexes.*** The defense figure is moved by a deflated index of defense expenditures. The resulting ruble values for any one year are added, and the sum is divided into the ruble value of any component in order to express that component as a share of GNP. This procedure is chiefly useful as a basis for making comparisons with the US economy in terms of 1951 prices. The disposition of GNP by use in the USSR during 1950-55 is shown in Table 10.

Table 10

Disposition of Gross National Product of the USSR by Use
1950-55

Use	Percent					
	1950	1951	1952	1953	1954	1955
Consumption	59.4	56.9	55.0	55.0	55.1	55.3
Administration	2.8	2.6	2.5	2.5	2.4	2.4
Defense	11.8	12.9	13.6	13.0	12.2	11.5
Investment	26.0	27.6	28.9	29.5	30.3	30.8

The percentage figures in Table 10 cannot be directly converted to rubles by multiplying them by the respective GNP figures in the third

* P. 28, above.

** The series mentioned 72/ runs only through 1953. The 1953 value estimates have been extrapolated to 1954 and 1955 by application of production estimates. For derivation of the indicated production indexes see 73/.

*** This division is based on the relative weights of those components in the GNP index (see 74/). One-half of transportation is assumed to be allocated to investment.

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row of Table 9,* because these current GNP figures were obtained by using an over-all GNP price index. If current ruble estimates for each end-use component were desired, each component would have to be converted to current terms by a price index especially constructed for that end use.**

C. Calculation of Defense Expenditures in Terms of Unadjusted Rubles.

For the special problem of calculating ruble defense expenditures for other years than 1951, two procedures may be used, the choice depending on the purpose to be served. If the aim is one of making international comparisons of defense efforts, the technique used to derive Table 10*** is recommended.**** The resulting estimates in terms of 1951 rubles may be converted to a current basis by use of a price index reflecting changes in the cost of the defense bill of goods. If, however, a monetary expression of defense outlays is desired, the same technique with a different base should be employed. In Table 6,***** instead of the adjusted ruble figures, the defense magnitude expressed in established prices serves as the base for movement of the series. Again, the conversion of the magnitude from 1951 to current ruble terms necessitates the use of a special price index. The process should yield approximately the same result as a direct computation utilizing current explicit and implicit budgetary data. Defense expenditures at established prices in the USSR during 1950-55 are shown in Table 11.*****

VI. Conversion of Ruble Estimates into Dollar Terms.

A. Methodology for Computing 1951 Ruble-Dollar Conversion Ratios.

1. General Procedure.

The procedure adopted for deriving the ruble-dollar conversion ratios shown below in Table 12***** makes use of the scarcity

* P. 36, above.

** The price indexes should be net of turnover tax.

*** P. 37, above.

**** Implied in the use of the index of deflated explicit budgetary expenditures is the assumption that these outlays are a constant proportion of the total. Over the 5-year period under discussion the actual proportion does not vary significantly.

***** P. 28, above.

***** Table 11 follows on p. 39.

***** Table 12 follows on p. 41.

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Table 11
Defense Expenditures in the USSR
at Established Prices
1950-55

	Billion Rubles					
<u>Rubles</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>
1951	90	110	131	131	131	131
Current	95	110	128	125	123	121

relationships prevailing in both the Soviet and the US economies. Essentially the technique involves the valuing of a weighted, representative list of Soviet commodity outputs and service activities in both dollars and rubles. The calculation is also performed for US production of the same commodities and services. Conversion ratios can be derived at any stage of aggregation by comparing value of production or activity in the two currencies. By including the US as well as the Soviet production mix, prices can reflect the scarcity relationships prevailing in both economies.

2. Calculation of Sector Ratios.

a. Industry, Agriculture, Transportation, and Communications.

The calculations of industrial sector conversion ratios involve two levels of aggregation. The procedure employed closely resembles that used to obtain ORR production indexes.* The computation of the construction materials conversion ratio typifies the method used at the lowest level of aggregation.**

* Actually the similarity is that of a price index, since the parameter is the conversion (price) ratio and the variable is output.

** See conversion ratio, p. 40, below.

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Commodity	Price per Metric Ton		Production		Production USSR		Production US	
	USSR	US	USSR	US	(Million	(Million	(Million	(Million
	(Rubles)	(Dollars)	(Thousand Metric Tons)	(Thousand Metric Tons)	Rubles)	Dollars)	Rubles)	Dollars)
Cement	185	12	12,400	41,960	2,294	152	7,762	514
Bricks	305	27	12,300	6,471	3,752	327	1,974	172
Totals					<u>6,046</u>	<u>479</u>	<u>9,736</u>	<u>686</u>
Conversion Ratios					12.6:1		14.2:1	

In the construction materials sample the conversion ratio based on US production is higher than that based on Soviet production, since the US produces relatively more of the commodity (cement) with the higher ruble-dollar ratio. In effect, at this stage in the aggregation process, the conversion ratios for each product are weighted by output.

In moving to the next level of aggregation, the combining of industrial branch ratios into an over-all industry ratio, the branch ratios are multiplied by value-added weights. The arithmetic products obtained are summed, and the total is divided by the sum of the weights. The quotient is the industrial sector conversion ratio for each economy. These weights represent the proportions of GNP generated by the respective industrial branches in 1951. A different set of weights has been derived for each economy. Two useful results are obtained by using the value-added weights. Since the product list is not exhaustive, a distorted sector ratio would result if the total derived production values for each branch were merely added together. By using value-added proportions the relative importance of the branch is reflected in spite of numerous omissions of component products. In addition, the direct use of production values would contain the distortions of gross value weights. Value-added weights eliminate this deficiency.

Neither output nor price statistics are available for the defense industry, yet the large size of this branch, particularly in the USSR, compels its inclusion. Scattered analysis indicates that a 7.5:1 ratio may be applicable for this branch.

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Table 12

Ruble-Dollar Ratios for Soviet and US Product Mixes
1951

	Soviet Product Mix	US Product Mix
Major Sectors		
Industry		
	(Defense excluded)	13.0-1
	(Defense included)	13.8-1
Agriculture	12.3-1	13.7-1
Transportation a/	16.6-1	23.3-1
Communications	4.9-1	3.9-1
Construction	5.8-1	5.4-1
Trade	10.0-1	10.0-1
Services	4.0-1	4.0-1
	5.5-1	5.4-1
Industry		
Energy	12.3-1	12.3-1
Electric Power	13.6-1	13.6-1
Solid Fuels	11.9-1	12.4-1
POL	11.4-1	11.5-1
Metals	9.9-1	10.0-1
Nonferrous	15.9-1	16.6-1
Ferrous	9.4-1	9.5-1
Fabricated Metals	8.9-1	9.5-1
Shipbuilding	8.0-1	4.8-1
Automotive Equipment	9.7-1	9.9-1
Electrical Machinery	8.1-1	9.6-1
Electronic Equipment	7.5-1	9.0-1
Chemicals	14.1-1	16.0-1
Construction Materials	12.6-1	14.2-1
Forest Products	6.9-1	10.3-1
Food Products	23.4-1	19.6-1
Manufactured Consumer Goods	15.5-1	16.1-1
Defense Industry	7.5-1	7.5-1

a. Includes motor and rail freight only.

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Table 12

Ruble-Dollar Ratios for Soviet and US Product Mixes
1951
(Continued)

	<u>Soviet Product Mix</u>	<u>US Product Mix</u>
Agriculture	16.6	23.3-1
Food Crops and Livestock	16.8-1	24.4-1
Industrial Crops	13.9-1	11.8-1
GNP	11.1-1	9.8-1

The agriculture, transportation, and communications ratios are obtained in a manner similar to that employed for obtaining the industry ratio. Only one level of aggregation, however, is required. Since coverage is more complete and gross values more nearly equal to value added than in the industrial sector, there is little validity sacrificed by summing ruble and dollar values of the components and deriving sector ratios directly from the sums. The procedure is comparable to the first level of aggregation used to calculate the conversion ratios for industry.

b. Construction, Trade, and Services.

The ambiguities involved in attempting to define and price units of activity in the trade and services sectors dictate the need for some substitute basis of comparison. Since these sectors furnish services almost entirely personal in nature, it appears suitable to measure "output" in terms of the full-time labor force employed in each sector. The price per unit of output -- the average annual wage -- is obtained by dividing the total value added in each sector by the labor force. For the services sector the two largest components, medical and educational services, are specifically included. For trade, an over-all sector measure is used. The construction conversion ratio represents the best estimate of the responsible analysts. It is based on a weighted sample of comparative construction costs in the two economies. Even less than in the case of goods can qualitative differences be minimized in the inter-country comparison of services. In fact, much of the difference in cost may be explained by lack of similarity in the services rendered.

S-E-C-R-E-T3. Problems of Pricing.

The validity of Soviet prices as measures of real cost has been discussed in previous reports and need not be reiterated here, except for one aspect. Consumer goods prices are retail prices, so they include US excise and Soviet turnover taxes. Soviet agricultural prices have been synthesized from consumer goods prices by deducting added values created in marketing, processing, and transportation. Turnover taxes are included to the extent that they represent identifiable land rent and MTS service factor payments. As derived above in III, C, 37 percent of turnover taxes are so included. In addition, 10 percent of the monopoly profit element of the tax also has been included. This proportion is about equal to the share of collective farm market trade in total trade and represents the economic rent accruing directly to farmers. The entire tax is left in the prices of food products, manufactured consumer goods, and petroleum products. This procedure is required for comparison purposes, since GNP calculations for Western economies do not exclude indirect taxes.

B. Conclusions.

The conversion ratio for GNP is arrived at by weighting the individual sector ratios by their value-added weights. The result is an over-all ratio of 9.8 to 11.1 rubles to the dollar (US and Soviet production mixes, respectively). For conversion purposes the average of the two ratios, 10.5 rubles to the dollar, is used. There is considerable dispersion of individual sector ratios about this weighted average. The highest ratios prevail for agriculture and food products, reflecting both the effects of the turnover tax and "underallocation" of capital resources to these activities relative to the shares they would receive in a market economy. The high ratio for manufactured consumer goods largely reflects the incidence of the turnover tax. The considerably higher than average ratios for chemicals and nonferrous metals can be explained in terms of comparative technological and resource endowments. The lower than average ratio for most machinery items reflects the priority the Russians have given to machinery industries in their investment programs. The significantly lower than average ruble-dollar ratio for services reflects in part the lack of those refinements which characterize personal service in the US. Indeed, it must be admitted that a comparison of the prices of services in the two economies without any allowance for qualitative differences means that unlike activities are assumed to be comparable.

S-E-C-R-E-TVII. Dollar Estimates of GNP and Its Components.A. Limitations in Conversion Procedure.

There are limitations which must be observed in applying the computed conversion ratios to selected ruble magnitudes, or the results will be invalid. The purpose of the ratios is to facilitate intercountry comparisons of particular economic activities. It is legitimate to compare the Soviet with the US GNP or to compare any GNP component individually. One cannot, however, construct a dollar estimate of Soviet GNP by first converting each sector to dollars at its own exchange rate and then summing the dollar magnitudes. This procedure inextricably scrambles the Soviet and US scales of values into a meaningless jumble. It involves adjusting ruble sector totals, which are a function of Soviet resource allocation (pricing) policy by the introduction of prices which reflect US resource allocation preference. Unless the Soviet scale of preferences is preserved in the comparison, the application of conversion ratios is invalid. The distribution of GNP by sector of origin in Table 13* illustrates the deficiencies of the foregoing technique. The absurdly small size of the agricultural sector and the inflated proportion of GNP originated in transportation, trade, and services are direct effects of interposing US values on Soviet bases. Another error involved in this procedure is the implied conversion ratio of 9.1 rubles to the dollar -- which results in an overstatement of Soviet relative to US GNP. A similar distortion appears if the ruble values and uses of GNP are converted to dollars and then summed to obtain GNP, as in Table 14.** Defense has been inflated to the point at which it commands more than one-fifth of total resources, whereas consumption has been deflated until it uses only slightly more than two-fifths percent of GNP. It is unrealistic to think that a peacetime economy would devote well over half of its resources to nonconsumption purposes.

B. Application of Conversion Ratios.

There is no interposing of one economy's scale of values upon another in intercountry comparisons of GNP which utilize conversion ratios representing weighted averages of each country's respective

* Table 13 follows on p. 45.

** Table 14 follows on p. 46.

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Table 13

Effect of the Summation of Converted Sector Dollar Values
on Dollar Estimates of the 1951 Gross National Product
of the USSR by Sector of Origin

Sector	Value <u>a/</u> (Billion Rubles)	Conversion Ratio <u>b/</u>	Converted Value	
			(Billion Dollars)	(Percent of Total)
Industry	342.1	13.0-1	26.3	22.2
Agriculture	316.2	19.9-1	15.8	13.4
Construction	75.3	10.0-1	7.5	6.3
Transportation	81.7	4.4-1	18.6	15.7
Communications	9.7	5.6-1	1.7	1.4
Trade	44.1	4.0-1	11.1	9.4
Services	206.5	5.5-1	37.5	31.6
GNP	<u>1,075.6 c/</u>	<u>9.1-1</u>	<u>118.5</u>	<u>100.1</u>

a. See Table 8, p. 35, above.

b. See pp. 41 and 42, above. The figures are arithmetic averages of sector ratios for the USSR and the US.

c. The unadjusted ruble total used here implies that the portion of turnover tax not compensated by factor cost (monopoly profit) can be proportionately distributed among the sectors. Such an assumption has been introduced in order to assure comparability with similar measures in Western economies.

sector ratios. This procedure has been followed in the derivation of GNP ratios presented in VI, above, which result in an over-all average of 10.5 rubles to the dollar. Applying the 10.5-rubles-to-the-dollar relationships, 1951 dollar estimates of Soviet GNP emerge which may be considered comparable with US figures. Comparative figures for the years 1950-55 are presented in Table 15.*

* Table 15 follows on p. 47.

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Table 14

Effect of the Summation of Converted Component Dollar Values
on Dollar Estimates of the 1951 Gross National Product
of the USSR by Use

Use	Value a/ (Billion Rubles)	Conversion Ratio b/	Converted Value	
			(Billion Dollars)	(Percent of Total)
Consumption	688.6	20.0-1	34.4	42.4
Administration	26.6	4.7-1	5.7	7.0
Defense	110.4	6.3-1	17.5	21.6
Investment	230.0	9.8-1	23.5	29.0
GNP	<u>1,055.6</u>	<u>13.0-1</u>	<u>81.1</u>	<u>100.0</u>

a. See left-hand column in Table 6, p. 28, above. The unadjusted division of GNP by use is employed in this derivation because the conversion ratios for the end uses are based on Soviet prices inclusive of all of the turnover tax. If the breakdown after adjustment were used instead, it would be necessary to introduce conversion ratios which reflected the new prices.

b. The conversion ratios for end uses are based on the weighted averages of the ratios of the origin sectors which serve as indicators for moving the end-use proportions (see V, B, above).

The conversion ratios may also be used to make intercountry comparison of specific uses or origin of GNP. The process cannot, however, be continued to the stage of aggregating the separately converted sectors, if scales of preference are not to be inextricably scrambled. Dollar estimates of Soviet GNP by sector of origin are shown above in the third column of Table 13 and those by end use in the third column of Table 14.

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Table 15

Dollar Estimates of Gross National Product
of the USSR and the US
1950-55

Billion 1951 Dollars

<u>Year</u>	<u>USSR a/</u>	<u>US b/</u>
1950	96.0	307.2
1951	102.5	329.8
1952	113.6	339.9
1953	117.0	350.2
1954	124.6	360.4
1955	134.6	370.9

a. Derived by dividing figures in top row of Table 9, p. 36, above, by 10.5, the GNP conversion ratio.

[redacted] 1954 and 1955 extrapolated at historical growth rate of 2.9 percent a year, which shows that in the years 1950-53 the GNP of the USSR has ranged from about 30 percent to one-third of that of the US. By 1955, the ratio will rise to about 36 percent.

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