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Excerpt

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## EDITORS' INTRODUCTION

## 1

The structure and content of the *Materialy*

The ultimate aim of *Materials for a Balance of the Soviet National Economy 1928-1930* was to produce an elaborate *tableau économique* for the whole Soviet economy. The work as completed in 1932 was, as the authors declare in their preface, ‘only a first attempt’. The methodology was not fully worked out. Data were often inadequate. The volume was produced in haste. While the authors seek to explain what they are doing quite fully, their explanations are often confused, and they are distributed more or less stochastically between Pervukhin’s article and the notes on pp. 256–311, 441–60. The tables themselves are presented in four bundles, reproduced in chapter 3 of *Materialy*: section I (Summary tables), section II (Constituent elements in the balance), section III (Integrated tables in the balance) and the four tabular appendixes of section V. This division has a certain logic, but the logic proves to be complicated and elusive.

We resisted the temptation to rearrange all the tables and the explanatory notes into a systematic order. *Materialy* is an important collection of documents in the history of Soviet planning, and in the circumstances of its time was an outstanding achievement. We have no right to tamper with it; the reader will wish to explore it in its original form.<sup>1</sup> But to spare you from some of the agonies we have suffered in trying to understand the interconnection between the tables and their statistical foundation, we have provided this summary guide to the tables and the explanatory notes.

## I. I GENERAL STRUCTURE OF THE ‘MATERIALY’

The process of reproduction in the Soviet economy is examined in a series of linked tables showing the flows of resources between sectors both in money terms (at current prices) and where possible also in real terms (at constant prices). The tables were constructed on the basis of a chess-board division of economic activity, which classified the data in five different ways:

- (1) By sector of origin (industry – large-scale and small-scale; building (construction); agriculture; forestry; domestic production; transport; trade).
- (2) By product-group (products of building work, or building products; industrial products; agricultural products).<sup>2</sup>
- (3) By ‘economic end-use’<sup>3</sup> corresponding to the major categories of the Marxist repro-

Table 1 *Main stages in preparation of balances in current prices*

Material used for estimation	Main sources of data	Tables in:	Tables appear on pp.	Notes appear on pp.
(1) Balances of products of industry and agriculture in physical and value terms	Industrial and agricultural statistics; family budget surveys	Appendices A and B	314-404	451-60
(2) Production-consumption data for products not available in physical terms	As above	Sections II.C II.D	179-91 192-220	284-309
(3) Trade and transport mark-ups	NKPS and trade data, etc.	Appendices A and B (partial only)	314-404	309-10
(4) Stocks	Various	-	-	285-7, 299-300, 308 (partial)
(5) List of product-groups by type of product-group and economic purpose	-	Appendix D	437-9	101-2
(6) Balance of production and consumption	Compiled from all balances listed above (1)-(5)	III.4 and III.2 (summary)	225-46	448-51
(7) Distribution of annual product	Mainly derived from Table III.4 (item (6) above)	III.3	227-8	450-1
(8) Balances of fixed capital	Industrial census of 1925; various agricultural surveys and censuses; depreciation allowances	II.B Appendix C	167-78 413-22	263-78

(9) Balance of production, consumption and accumulation	Derived from table III.4 (item (6) above) and balances of fixed capital (item (8) above)	III.1	222-4	100-5, 448-50
(10) National income by sector of origin	Derived from table III.4 (item (6) above) and table II.A.4	II.A.1	155	105-10
(11) Production by social sector	Only partially stated	II.A.5-6	160-1	293-8 (Agric.)
(12) National income by social sector	Derived from table II.A.1 (item (10) above) and item (11) above	II.A.2-3	156-8	260-3
(13) Accumulation	From table III.1 (item (9) above)	I.1	127	117-21
(14) 'Real accumulation'	From table III.1 (item (9) above)	I.3 I.4	131-4	121-2
(15) National income by classes and groups of the population	Labour statistics, urban family budgets, rural family budgets, insurance, data, state and local budgets (for social and cultural income in kind)	III.5 II.A.7	247-9 162	110-7, 260-3, 460
(16) Balance of principal indicators of reproduction by social sector	From other balances and national income table	I.2	129-30	122-4

- duction schemes (means of production, in turn divided into fixed and circulating means of production; objects of consumption).
- (4) By social ownership (the public sector, in turn divided into state and cooperative; and the private sector).
  - (5) Using this fourfold framework of classification, economic activity in each year was then 'unrolled' into the categories: stocks at beginning of year; production; imports; distribution (consumption) (a) in production, (b) final consumption by individuals and organisations, (c) losses, (d) exports; stocks at end of year; production entering into fixed capital.

The exercise of obtaining the data and classifying them in these five ways resulted in a complex series of balances. These are the heart of the *Materialy*, and will be described further below. The balances were used in turn to derive two series of tables showing national income classified by sector of origin and by end-use. The tables showing national income by end-use divided it into consumption (referred to as 'non-productive consumption') and net investment (referred to as 'accumulation'). Accumulation was in turn further divided into net increases in fixed capital ('funds') and in circulating capital ('funds'), each shown separately for the two sectors 'means of production' and 'objects of consumption'. One of the main aims, if not the main aim, of the whole study was to display accumulation and its sources in an economically meaningful way.

Finally, national income was also analysed in terms of the incomes received by different classes and groups of the population, and an attempt was made to tie these estimates in with the estimates of national income by sector of origin and by end-use.

The following account of the way in which these various sets of tables were compiled is summarised in Table 1.

## 1.2 THE BALANCES

The crucial table in the whole collection is the largest in the volume, table III.4, pp. 229–46, modestly entitled 'The balance of production and consumption'; a summary of this table appears as table III.2. It will be noted that the balance presents in a single table four of the five forms of data classification. The columns of the table unroll the economic activity in each year into stocks, production, consumption, etc. (classification (5) above), dividing each heading by sector of origin (classification (1)). The rows of the table divide economic activities in terms of both product-group (classification (2)) and economic purpose (classification (3)). A categorisation by social ownership (classification (4)) is not presented in this table.

The table in this extended form is presented in the *Materialy* only in current prices; only abbreviated versions of it, and particular sub-sections, are also available in constant prices. Two sets of current prices are used. Production is initially given in producers' prices. Transport and trading costs (as recorded in the transport and trade 'mark-ups' (*nakidki*) on producers' prices) (col. 26), and (where applicable) customs and other duties (col. 27) and excises (col. 28) are then added. Distribution (consumption) is therefore given in consumer prices (producers' prices *plus* cols. 26, 27, 28).

It should be noted that the 'outputs' of transport and trade appear in the table in the

form of these mark-ups on production cost, not as a direct measurement of the output of an independent sector.

Table III.4 was itself constructed on the basis of data which appear in *Materialy* in three other sets of tables: (i) the appendix tables grouped in Appendices A and B present balances for particular product groups; (ii) section II.C, Production; and (iii) section II.D, Consumption.

The most reliable core of the data is provided by the product balances in Appendices A and B (pp. 314–405). These show 79 products or product groups in kind as well as in value terms, covering over 50 per cent of total production. The coverage is much fuller for agriculture, where 35 products embrace 80 per cent of all production, than for industry, where 44 products embrace only 30–40 per cent of production (see pp. 101–2; and, for a list of the products, pp. 438–40). In industry the coverage of machinery and other complex producer goods is particularly thin: the only balance in kind for machinery is the tractor balance.

It will be seen from the balances that the data are displayed in a form which corresponds to the headings of the columns in table III.4. Each product balance is located in an appropriate product-group in accordance with classification (2) above, and in an appropriate ‘economic purpose’ group (classification (3)), both operations being carried out on the basis of the list of products in the classification table of Appendix D (pp. 438–40). In the case of industry the data for the balances came from the current industrial statistics supplied regularly to the statistical agencies of industry and Gosplan by enterprises on an annual standard form (Form B) and on monthly report-cards. These forms and report-cards were also used to provide the data in value terms for the large part of industrial output which was not reported both in kind and in value terms. Special procedures were adopted for the year 1930, for which data in appropriate detail were not available, and for small-scale industry. The data from these sources were checked against other data. The methods used are described in some detail in the notes on pp. 284–92, 304–6 and 308–9.<sup>4</sup>

The procedures for assembling data on agricultural production and consumption were more complicated. Production data often had to be estimated indirectly: grain production was estimated by multiplying estimated productive sown area by estimated yield (see pp. 294–50), livestock production by multiplying number of animals by standard coefficients of production per animal (pp. 295–80). Sown area and number of animals were in turn obtained from the data of sample surveys. Consumption of agricultural production and of industrial consumer goods was evaluated by using the data of family budget surveys. Evaluating production and consumption was more difficult for agriculture than for industry: most industrial production was sold at fixed prices, all agricultural production was either sold at a variety of prices, or not sold at all. In the case of agriculture, the practice followed for estimates in current prices such as those in table III.4 was to use the procurement prices paid by official agencies both for that part of production which was sold to official agencies and for all ‘on-farm’ production; this included not only production consumed within agriculture but also production consumed by the individual or collective-farm household. Only production actually sold on the market was evaluated at the much higher market prices. For details,

see pp. 294–8 (agricultural production), 297–300 (evaluation), 301–7 (consumption), 446–8 (agricultural product balances).

The data on production in industry, construction and agriculture are set out in section II.C (pp. 179–91); the data on the consumption of consumer goods and agricultural products are set out in section II.D (pp. 192–219).

The remaining major items in table III.4 not yet described are the trade and transport mark-ups and the changes in stocks. Trade and transport mark-ups are shown in the product balances for particular products in Appendices A and B, but not in the production tables of section II. Their derivation is described on pp. 309–10. For the economy as a whole the aggregate mark-up was obtained from data on transport incomes, and the trade mark-up by aggregating the trade mark-ups received at various levels of the trading network. Various rather crude devices were used to obtain estimates of the approximate mark-up on a particular product-group. For stocks, the statistical agencies had made increasingly strenuous efforts to record accurate data in the latter half of the 1920s: the procedure and data used in the case of stocks in the trade network are described on pp. 308–9.

We now proceed from table III.4 to the other balances. Table III.3 shows a minor variation on table III.4. It tries to estimate what happens to the annual production of each sector of origin in the course of the year, excluding from the calculations both imports and the stocks at the beginning of the year.

Table III.1, 'Balance of production, consumption and accumulation', is perhaps the most important of the balances. It shows production and consumption by sector of origin (classification (1)) in the rows, and divides economic activity into the three product groups of classification (2) (products of building work, industrial products and agricultural products) in the columns. On the input side, the data on stocks at the beginning of the year, production, imports, trade and transport mark-ups, customs-duties and excises (rows B–G) are taken from table III.4, and on the expenditure side most of the data on 'consumption by the population and institutions', and the data on exports and stocks at the end of the year (rows B, D, E) also come from table III.4. But the table also includes an estimate of the stock of fixed capital at the beginning and end of the year. 'Consumed in production' therefore includes an estimate of the amount of production expended on compensation for depreciation of capital stock during the year, and 'losses' includes an estimate of losses of fixed capital.

The fixed capital tables used for the appropriate rows of table III.1 are set out in Section II.B (pp. 167–78) and Appendix C (pp. 406–37). They are discussed in the notes on pp. 263–78, and the procedures by which they are incorporated in table III.1 are described in Pervukhin's article (pp. 104–5) and in the notes on pp. 449–50. Fixed capital stock in industry as at 1 January 1928, was estimated by applying a standard depreciation allowance (as a percentage) to the estimated value of fixed capital 'at restoration cost' shown in the census of industrial capital of 1 October 1925. Agricultural capital at the same date was estimated on the basis of various sample surveys and censuses described in the text. Similar procedures were used for the other sectors of origin. Then annual data were assembled on capital investment, capital entering into capital stock, and on changes in the amount of incomplete construction in progress at the

end of the year. Fairly reliable data were available for industry and transport; in the case of agriculture, particularly in the private sector, various rough guesses had to be made which are described in the notes. A depreciation allowance was then applied to the value of capital stock (in industry this varied between 7.3 and 8.3 per cent). In the case of agriculture, losses of livestock were estimated separately. With these data, the change in capital stock during the year could then be estimated. The procedures are shown in Appendix table C.4 (pp. 414–7) which shows for 1928 (capital stock on 1 January 1928) + (unfinished construction in progress on 1 January 1928) + (capital investment in 1928) – (depreciation and capital worn-out during 1928) – (unfinished construction on 1 January 1929) = (capital stock on 1 January 1929). The estimates for 1929–31 follow the same pattern.

The annual figures for capital stock, with various minor adjustments, are then incorporated in table III.4 to give table III.1.<sup>5</sup> Table III.1 thus in effect includes in the row ‘consumed in production’ an estimate of the production which was consumed to compensate for the annual depreciation of fixed capital, as well as the production which was consumed in the course of current production.

### I.3 NATIONAL INCOME

The table on national income by sector of origin in current prices (table II.A.1) was directly derived from table III.1. Production consumed in production (output, row A) was deducted from production at producers’ prices (input, row C) to obtain the net production of each sector (see pp. 222–3). To obtain total national income, transport and trade mark-ups and customs duties were added to the net production of the sectors (in 1928, for example, 51,517.5 – 30,527.9 + 5,181.2 + 271.5 = 26,442.3).

At this stage it may be useful to follow the data through the various tables to demonstrate how a particular set of figures is derived. Let us take census industry in 1928 as an example.

- (1) In table III.4 gross production appears in col. 16, p. 230 (19,245.0). Consumption in production by census industry is in col. 31: 12,981.0 (p. 231), consisting of fixed capital 183.2 (p. 237), circulating capital (11,302.2) (p. 243) and consumer goods 1,495.6 (also p. 243). This reappears in table III.2 (p. 225), where circulating capital is now referred to in col. 4 as ‘raw material, materials and fuel’.
- (2) In table II.A.4, p. 159, gross production and productive consumption are set out again in row 2, but with ‘unfinished production’ shown separately both on the production side and on the consumption side. A depreciation allowance (435.5, col. 6) is also added to productive consumption and deducted from gross production, so as to give net production for the national income series, from which national income used to cover depreciation has already been deducted.
- (3) It is worth noting that the figure for consumption in production which appears in the master table III.1, col. 4 (p. 223) is the same as in table II.A.4, 13,416.5 million rubles in the case of census industry in 1928, as it includes a depreciation allowance in the component product groups (see p. 159, col. 7).
- (4) Net production of census industry in the national income table (table II.A.1, p. 155) is 5,828.5, i.e. gross production of 19,245.0 less consumption in production of 13,416.5,



including unfinished production both in production and in consumption in production, and also including a depreciation allowance in consumption in production.

The next step in preparing the national income tables was to obtain a breakdown of table II.A.1 by social sector. The details of the procedure by which this was done are not described in the text. Agriculture was of course the most important sector of the economy which was predominantly privately owned. The procedure by which net production of agriculture by social sector was estimated is displayed in tables II.A.5 and II.A.6. Consumption in production of materials and fuel, and unfinished production at the end of the year, and a depreciation allowance (see table II.A.6) were deducted from gross production for the three separate sectors 'state farms', 'collective farms', and 'private'. Separate statistical series were used to obtain production in each social sector, as explained in the notes (pp. 293–7), so no special procedure was required to obtain this breakdown. It should be noted that the production of the individual collective-farm household was included not with collective-farm production but in the private sector. Some of the data required for the breakdown of the other sectors of the economy by social sector are scattered about the *Materialy* (e.g. figures for housing-construction in the socialist and private sectors) and the raw data used by the compilers almost invariably collected the data for socialist enterprises and the private sector separately.

All the series were now assembled on the basis of which accumulation (i.e. net investment) could be estimated. The procedures are discussed on pp. 117–21 and the results are shown in table I.1, p. 127. The accumulation fund in each year was obtained simply by deducting consumption net of excises from total national income. The data used for consumption were obtained from the figures for 'consumption by the population and institutions' as given in table III.1, in turn derived from the tables in the Consumption section; but excises were deducted from the totals in rows B 1–4, in order to make them compatible with the national income figure.

The accumulation fund was now adjusted in order to obtain 'real accumulation'. First, losses were deducted: this figure, also obtained from table III.1 (row C) consisted mainly of losses due to premature deaths of animals. The difference was substantial, especially in 1929 and 1930, when accumulation was reduced by over 17 per cent as a result of losses, when measured in current prices. Secondly, the net excess or deficit of imports over exports was also added in. Thus, in table I.1 (p. 127) for 1928, 26,442.3 – 21,305.7 gives accumulation fund of 5,136.6. Now deduct losses (800.9) and add excess of imports over exports (153.6) to obtain real accumulation (4,489.3).

'Real accumulation' was also estimated separately as the sum of the net increase in fixed capital (including the net increase in unfinished construction in progress) and the net increase in stocks. The breakdown of real accumulation into these categories and into social sectors is shown in table I.3 (p. 131) and in more detail in table I.4 (p. 133). The data for this table were all obtained from table III.1 (pp. 222–4), with a slight rearrangement, using other sources to break down the data by social sector.

These various estimates thus provided, in broad categories, a breakdown of national income by end-use as well as by sector of origin. A third and more or less independent set of estimates of national income was made by aggregating the personal income of the various classes and groups of the population, adding in 'income in the socialist sector'

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not otherwise accounted for. How this was done, and the sources used, are explained in three separate places: pp. 110–7, 260–3 and 460. The basic table is table III.5, ‘Balance of distribution and redistribution of the national income, by classes and groups of the population’, pp. 247–9; this table is then summarised in table II.A.7 on p. 162. As the definition of national income used throughout is the Marxist definition in terms of material production, incomes have to be handled in two stages. Incomes received by participants in the production process are treated as basic incomes, assumed to be received at the stage of the ‘primary distribution’ of the national income. These are taken in practice to include all the incomes received in the ‘productive’ sectors of the economy, including incomes received by non-productive personnel (clerks, accountants, etc.) working in the productive sectors. The total of these basic incomes equals the national income as derived by other methods: thus in table II.A.7 for 1928 the total of col. 1, 26,442.3 equals the total obtained by summing national income by sector of origin in table II.A.1, p. 155, col. 1. To obtain total incomes, ‘derivative incomes’ received in the non-productive sphere have to be estimated separately (i.e. incomes received in the health, education, defence and administration sectors, etc.): these are summarised in col. 2 of table II.A.7. These two columns are made up of a number of separate items – they include not only wages, but also pensions, the estimated value of education and health services, etc. received without payment, interest on loans, etc. The details are shown in table III.5, cols. 1–17, pp. 247–8. The various forms in which incomes are expended are then also estimated, including purchase of goods, value of education and health services (a self-balancing item), taxes, purchase of loans etc: see table III.5, cols. 20–33. The item ‘income of the socialist sector’ is not explained: we do not know if it corresponds to the costs of defence and central administration and of persons maintained at the state expense?

In these tables, the income of the agricultural population includes an estimate of the value of farm production consumed by households (at procurement prices). In these tables, unlike the production tables, the income of collective farmers includes both their income as cooperative producers and their income from their household plots, etc., and they are thus comparable with the incomes of individual peasants. In 1930, for example, the incomes of collective farmers were estimated at:

2,656.9	From cooperative production (table III.5(b) p. 253, col. 5)
1,079.9	As independent producer (col. 6)
321.0	As wages in productive sphere (col. 1)
<u>4,057.8</u>	Basic incomes from ‘distribution’ of national income
10.0	From wages in non-productive sphere (col. 10)
34.0	From insurance (col. 12)
20.0	From pensions etc. (col. 13)
155.4	Estimated value of free social and cultural services (col. 14)
<u>219.4</u>	Derived from ‘redistribution’ of national income
4,277.2	Total income