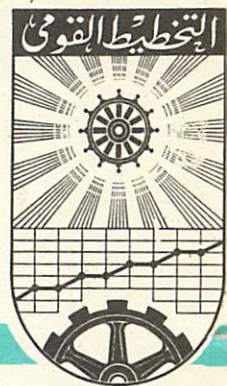


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Problems of the Analysis for
Inter-Branch Relationships in
the Planned Inter-Branch Balance

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Contents

Introduction

1. Analysis for the Hypothesis of the Volume and Structure of the National Income and Final Product. p. 5
 - a) Conditions of Expanded Reproduction p. 7
 - b) The Essence of the National Income, its Distribution and Utilization. p. 15
 - c) Analysis for the Correlation between the Fund of Accumulation and the Fund of Consumption. p. 22
 - d) Analysis for the Volume and Structure of the Most Significant Elements of the Final Product. p. 32
2. Analysis for the Plan of Industrial Production. p. 46
3. Analysis for the Plan of Agricultural Production. p. 60
4. Summary Tables of the Analysis for Inter-Branch Relations. p. 66

The aim of the analysis for inter-branch relations is the study of interrelationships among the branches of the national economy in the process of manufacturing and distributing products.

Subject to the character and purpose the products are directed along the two main channels: per the requirements of productive consumption and per the requirements of non-productive consumption, and this fact stipulates, to a considerable extent, the distinctive features of economic relations.

The interrelationships of branches in material production in the aspect of productive consumption constitute the inter-branch production relations, which in their turn can be divided into the relations of current production (the relations of current productive consumption of current funds and their elements) and the relations stipulated by the expansion of production and replacement of fixed production assets (basis production funds).

Quantitative characteristics for inter-branch relations make it possible to define a concrete magnitude of proportions among branches. Proportionality among branches in its turn represents the initial requisite for the elaboration of a unified plan. One of the most important functions of economic management and planning is the establishment of the most effective economic relationships with account taken of the development economic stage of a country.

An important instrument in studying inter-branch relationships in the planned period is the planned inter-branch balance of production and distribution of products in the national economy. This balance provides the opportunity to analyze basic indicators stipulating the progressiveness of relations among the branches of the national economy in the planned period, and also to obtain a number of important qualitative characteristics.

The search for the most efficient inter-branch relations with the aid of the inter-branch balance presupposes a comparative analysis and comparisons of a number of variants for the structure of social production, and, consequently, a multi-variant elaboration of the inter-branch balance. The economic-mathematical model of the planned inter-branch balance enables us to draw up a standard programme for the purpose of computing different variants of the plan on electronic computers.

In the vector-matrix form the system of linear equations of the planned inter-branch balance can be presented as follows

$$A \bar{X} + \bar{Y} = \bar{X}$$

wherein:

A is the matrix of the coefficients of direct inputs;

\bar{X} - the vector of the volumes of production;

\bar{Y} - the vector of the final product;

If transformed it comes to:

$$\bar{X} - A\bar{X} = \bar{Y}$$

$$\bar{X} / E - A / = \bar{Y}$$

$$\bar{X} = /E - A/^{-1} \bar{Y}$$

and hereby it should be noted, that in the computations of the planned inter-branch balances there may be different approaches.

First approach: the balanced levels of production by each branch or type of output are found according to the known data about the volume and structure of final consumption. In this case the computation for the variants of the final product ought to be made beforehand, prior to the

beginning of computations on the inter-branch balance. This scheme found the most comprehensive application under the method of inter-branch balances in the planning practice of the USSR.

Second approach: the amount and structure of final consumption are found according to the known levels of production.

Third approach: the inter co-ordinated indicators of the balanced plan are found according to the known production levels or types of products and according to the volumes of final consumption by the remaining branches having been calculated beforehand.

Different approaches to the computations of the planned inter-branch balances predetermine in many respects the difference in conducting the analysis. At the same time in the analysis for inter-branch relations it is also necessary to take into account the specific features of the planned inter-branch balances for the perspective and current plan. Generally the current plan makes it possible to conduct a more detailed analysis for inter-branch relations, whereas the perspective one sets limitations to these possibilities.

The present work deals with the problems of the analysis for inter-branch relationships with the static model of the planned inter-branch balance as the basis, and it should be noted therefore, that the analytical possibilities of the static scheme of the planned inter-branch balance are limited. It does not represent as interrelated all the factors of expanded reproduction -- subjects of labour, means of labour and labour forces. Nevertheless, the comparison for the variants of the obtained data of the planned inter-branch balance makes it possible to define general material and labour inputs, the basic inter-branch relationships and to draw conclusions about the extent of economy in each variant. As

a result of such an analysis choice can be made for the variant of social production, which most fully corresponds to the social and economic objective of the planned period and secures at the same time the appropriate proportionality in the national economy.

The direction and sequence in the elaboration of planned inter-branch balances predetermine in many respects the order of the analysis for their data.

This work treats of the problems in the analysis for inter-branch relations according to the succession in the elaboration of the static scheme in planned inter-branch balances as it is under the first approach, i.e. when the balanced levels of production by each branch or type of products are found according to the known data about the volume and structure of final consumption (Y_i) and the inter-branch relations are consequently investigated. It is also taken into consideration hereby, that the general problems of the analysis for Input-Output tables are available in a number of publications of the UN and namely in the UN periodic publication Studies in Methods, Ser. F, No. 14, 1966, "Problems of Input-Output Tables and analysis", and also in a number of other publications and works related to this problem. Therefore in the present work attention is concentrated upon a number of problems of the Inter-branch analysis, which are directly connected with the practice of planning work.

1. Analysis for the Hypothesis of the Volume and Structure of the National Income and Final Product.

In the construction of the static model for the planned inter-branch balance they stem from dividing the social product into 2 parts playing different role in the process of social reproduction -- intermediate and final product. The inter-mediate product is that part of the social product which is designed for the replacement of the subjects of labour consumed in the course of the year in the sphere of material production. The final product characterizes the volume and structure of those products of the branches of material production, which go beyond the limits of current productive consumption in the given year. Final product can comprise the fund of non-productive consumption, capital investments and capital repairs, difference between exports & imports, etc.

In case like this the volume of the final product can be defined according to the formula:

$$Y = (C - R_N) + (A + R_p + R_N) + (E - J).$$

wherein:

Y - the final product,

C - the fund of consumption;

R_N - replacement and capital repairs of the fixed non-productive assets;

A - the fund of accumulation;

R_p - replacement and capital repairs of the fixed productive assets (funds);

E - export;

J - import;

The basic elements of the final product are the fund of consumption and the fund of accumulation.

The fund of consumption (non-productive consumption) is composed of the fund of personal consumption and the material inputs of the non-productive sphere -- culture, education, public health, public utilities and housing, passenger transport and the communication in the part of services for the non-productive sphere, science and management.

The accumulation fund is represented by the accumulation of fixed productive and non-productive assets (basic productive and non-productive funds), the increase in stocks, reserves and other accumulation. The sum of the accumulation and consumption funds makes up the national income, that is the final product differs from the national income by the magnitude of replacement and capital repairs of fixed assets and by the magnitude of the difference between exports & imports.

Otherwise putting:

$$Y = Nu + Rp + (E-J).$$

Wherein :

Nu is the utilized national income.

Inasmuch as the national income is the basic part of the final product, the planning for the final product and consequently the study for the data of the planned inter-branch balance should start with the elaboration of the volume and structure of the national income. But in order to understand deeper the essence of the national income, its structure and relation with the gross social product, it is necessary to scrutinize it within the general process of expanded reproduction. It is still of greater significance in view of the fact that the process of expanded socialist reproduction has its distinctive features determining the purpose and ways of utilizing the national income. In this connection it is advantageous to examine the basic provisions of the socialist expanded reproduction and the conditions of the realization of the gross social product and national income.

a) Conditions of Expanded Reproduction

Continuous renewal of the process of manufacturing material goods is the objective requisite for the existence and development of the human society irrespective of the social form of the process of production. Continuous renewal and imitation of production represents the process of reproduction.

It comes forward as the unity of production, distribution, exchange and consumption. This process denotes uninterrupted supply of material goods indispensable in order to replace the consumed means of production, and also to provide for non-productive consumption and accumulation. All the processes connected with production and consumption are constantly stipulated by distribution and exchange.

In the process of reproduction material circumstances of the society's existence are continually renewed as well as the overall aggregate of social relations determining certain forms of the organization

of production, exchange and distribution. In other words, social reproduction represents the unity of productive forces and production relations.

The process of reproduction, on the one hand, comes forward as the process of production and utilization of material goods, and on the other hand, it is the process of formation, distribution and utilization of incomes.

Reproduction can be simple and expanded. Simple reproduction is the continuous renewal of the process of social production on an invariable scale. Expanded reproduction is the continuous renewal of the process of social production on a growing scale. Under expanded reproduction the society does not only makes up for the consumed material goods, but also produces additional means of production and consumer goods over and above. Under expanded reproduction the social product created in each successive production cycle is larger than that in each previous period.

To let the society grow progressively expanded reproduction must be put into reality. But for this purpose, it is necessary to maintain certain proportional correlations in social production and, first of all, between its two subdivisions: I-st - the production of means of production, and II-nd - the production of consumer goods; among different parts of the gross social product expressed in value and physical terms; among different branches within each subdivision; etc.

That is expanded reproduction is secured only in case if:

- a) a product in subdivision I is sufficient not only for the replacement of the means of production consumed in the process of production in both the subdivisions, but also for their accumulation;

- b) priority or faster development of subdivision I is ensured in comparison with subdivision II, which is necessary for the growth of productivity in social labour and technological progress;
- c) a product in subdivision II is sufficient not only for meeting the requirements of current personal consumption of the society members, but also for the accumulation of consumer goods;
- d) certain proportionality among the branches in subdivisions I and II is maintained, that which is dictated by the character and development level of production and consumption;
- e) the newly created value in the process of production which makes up the gross or national income of the society, comprises not only the value of the necessary product sufficient in order to meet personal requirements of productive workers, but also the value of the surplus product sufficient for the maintenance of the non-productive sphere and for the accumulation of means of production and consumer goods.

The necessity of certain proportions in the distribution of means of production and labourers among different branches of production is one of the most general economic laws of social development.

And if under the conditions of private capitalist ownership these proportions are temporary and spontaneous, under public ownership they are established in a planned way and maintained consciously and continually.

Thus, expanded socialist reproduction is the planned and continuous process of constant reproduction of material goods on ever increasing scale.

The material result of the process of social reproduction is the gross social product.

The gross social product is the gross product of the society or the overall amount of material goods manufactured during a certain period, usually a year.

The gross social product is created in the sphere of material production.

The value and the physical form of the gross social product are distinguished in planning practice.

The value of the gross social product (Pv) is equal to the sum of the transferred value (Ct) and the newly created value (Dn).

$$Pv = Ct + Dn.$$

In its turn, the value of the newly created product -- Dn (national income) is broken down into the sum of the primary incomes of population (Vp) and the primary incomes of enterprises (Me) -- $Dn = Vp + Me$.

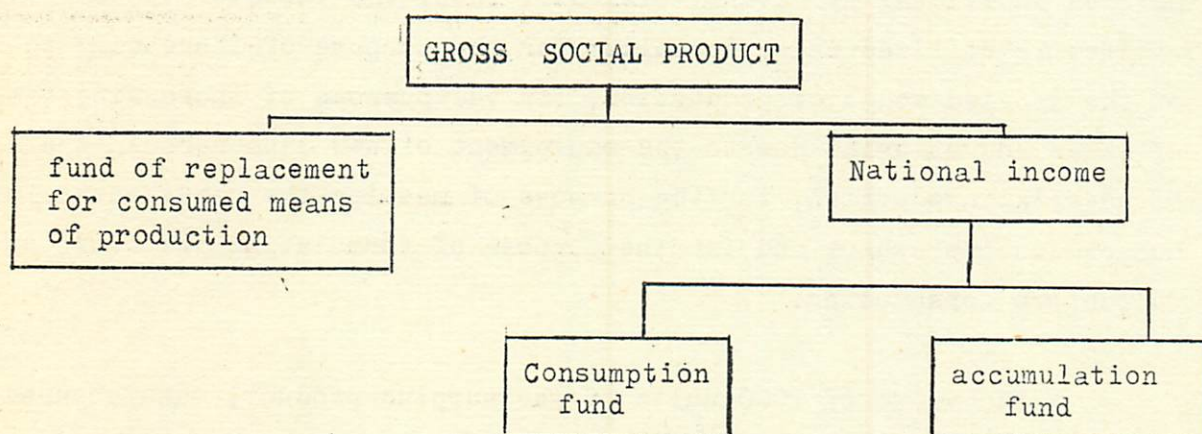
That is to say, the value of the gross social product (Pv) is equal to the sum of the transferred value (Ct) the primary incomes of population (Vp) and the primary incomes of enterprises (Me).

$$Pv = Ct + Vp + Me.$$

The composition of the social product in physical terms is determined by the double purpose of material goods created respectively in two subdivisions of social production. The gross social product consists of the means of production created in subdivision I (part of products of heavy industry, part of the products of light industry, food industry, agriculture and the construction of production purpose, etc.) and the consumer goods created in subdivision II.

Subdivision II combines the industrial (mainly the products of the light and food industries) and agricultural products designed for personal consumption as well as the housing construction and the construction of cultural and medical purpose (schools, hospitals, rest-homes, etc).

The economic structure of the gross social product and its distribution in the socialist society can be presented by the following scheme:



Stemming from the division of social production into two subdivisions and from the economic structure of the gross social product according to the purpose of its individual parts, it is possible to determine the conditions or proportions necessary for the continuous realization of expanded socialist reproduction.

The general scheme of the realization of the gross social product is the following: (the example is arbitrary)

$$I \quad 3000 \text{ mp} + 1000 \text{ np} + 1000 \text{ sp} = 5000 \quad \text{*)}$$

$$\qquad \qquad \qquad \underbrace{800 \text{ mp} + 200 \text{ w}}$$

$$II \quad 1000 \text{ mp} + 1000 \text{ np} + 1000 \text{ sp} = 3000$$

$$\qquad \qquad \qquad 200 \text{ mp} + 100 \text{ w} + 700 \text{ ns}$$

- *) mp - means of production
 np - necessary product or the primary incomes of population
 sp - surplus product or the primary incomes of enterprises
 w - wages and salaries
 ns - non-productive sphere.

Let us assume, that by the end of the year in subdivision I 5000 units of products were created, and in subdivision II -- 3000. The products of subdivision I of social production consist in terms of value of 3000 mp (means of production), 1000 np (necessary product) and 1000sp (surplus product). The composition of the funds in subdivision II is the following: 1000 mp, 1000 np and 1000sp.

Let us see how the output of subdivisions I and II will be realized, its individual structural elements. Thus, the value of the surplus product is utilized under socialism for the purpose of increasing the amount of the applied means of production, for the purpose of increasing the fund of wages and salaries due to the employment of new labourers in the sphere of material production, for the purpose of meeting the requirements of the non-productive sphere and for the purpose of formulating the funds of collective consumption.

The value of 1000 units of the surplus product, manufactured in subdivision I makes up the fund of accumulation and is divided into two parts: 800 units for the purchase of means of production and 200 units -- for the payment to the additionally employed labourers. And the value of 1000 units of the surplus product, manufactured in subdivision II is distributed as follows: 700 units are utilized for the requirements of the non-productive sphere, and 300 units are utilized as the fund of accumulation, and of which 200 units -- for the expansion of means of production, and 100 units -- for the payment to the additionally employed workers.

Under these conditions the output of the first year will be realized as follows:

out of 5000 units of the product in subdivision I 3800 units will be sold to the enterprises of subdivision I (for example a metallurgical plant will sell its steel to an engineering plant) and 1200 units will be sold to the enterprises of subdivision II for the reproduction and expansion

of the quantity of the applied means of production. Out of 3000 units of the product in subdivision II 700 units will be allocated to the requirements of the non-productive sphere and to the formulation of the funds of collective consumption; 1100 units -- to the personal consumption of the workers in subdivision II, and 1200 units -- to the personal consumption of the workers in subdivision I.

As a result of such distribution of the gross social product manufactured in the first year, the volume of the product in the second year of production and its structure will be the following:

$$\text{I. } 3800 \text{ mp} + 1200 \text{ np} + 1200 \text{ sp} = 6200$$

$$\text{II. } 1200 \text{ mp} + 1100 \text{ np} + 1100 \text{ sp} = 3400$$

The product created in the second year can be recalculated for the conditions of production in the third, fourth year and so on in the same sequence, but with account being taken of the technological progress.

These examples account for the necessity to follow up in the planned expanded reproduction the following conditions:

First condition: the national income created in the sphere of production must be higher than the material costs of the consumer goods production sphere, i.e.

$$\text{I (np + sp)} > \text{II mp}$$

Second condition: the value of the social product created in subdivision I must exceed the material costs in the sphere of producer goods production and those in the sphere of consumer goods production, i.e.

$$\text{I (mp + np + sp)} > \text{I mp} + \text{II mp}$$

Third condition : the national income created in the sphere of producer goods production and in that of consumer goods production must exceed the value of the social product created in subdivision II. i.e.

$$I (np + sp) + II(np + sp) > II (mp + np + sp)$$

This inequality is the necessary requisite of expanded reproduction. The possibilities of expanding production are terminated by the framework of this inequality.

Of course, the realization of these conditions in practice is by far more complicated, than when it is presented by purely theoretical calculations. In order to implement these conditions in planning and accountancy it is necessary to carry out tremendous work, to draw up a variety of additional tables, individual or general balances, to exercise the inter co-ordination in the development of all the national economy branches. At different stages of social development the quantitative correlations can be different. Nevertheless, their general regularities remain ever and always where there is expanded planned reproduction.

The analysis for social reproduction enables us to fix common features and differences between the social product and national income. This analysis shows, that the part of the gross social product which combines the inputs of past labour should be inevitably allocated to the replacement for the consumed means of production and cannot be turned into incomes. And the other part of the gross social product, which embodies in itself new inputs of labour comes forward as incomes or the national income. It is necessary therefore to consider as intergrated whole and interdependent the three stages in the flow of the national income:

- 1) the process of creating the national income as part of the gross social product;

- 2) the process of its primary distribution and redistribution;
- 3) the process of its utilization in the course of social reproduction.

b) The Essence of the National Income, Its Distribution and Utilization.

The national income in the socialist society represents part of the social product, which remains after the deduction of the consumed means of production and embodies in itself the newly created value (V+M).

The fund of replacement for the consumed means of production is intended for productive consumption. The national income serves as the source of expanding production and non-productive consumption. As distinct from the gross social product, the value of which includes the transferred value of the consumed means of production, the national income represents the newly created value. In 1959 in the composition of the gross social product of the USSR the quota of the replacement fund was 50,8% and the quota of the national income -- 49,2%.

The whole mass of consumer goods manufactured in the country during a year and that part of manufactured means of production which is utilized by the society for the purpose of expanding production and creating reserves constitute the natural (physical) form of the national income.

National income is created in all the branches of the sphere of material production. The role of different branches of material production in creating the national income of the USSR is characterized as follows (1960):

TOTAL NATIONAL INCOME,	-	100%
out of which in the branches of the national economy:		
IN INDUSTRY	-	52,1%
IN CONSTRUCTION	-	10,2%
IN AGRICULTURE	-	20,9%
IN TRANSPORT & COMMUNICATION	-	5,2%
IN TRADE, STATE PURCHASES & MATERIAL AND TECHNICAL SUPPLY, etc.	-	11,6%

More than half of the national income is created in the leading branch of the national economy -- in industry.

National income at different stages of reproduction can be determined and measured in a different way:

- a) as the sum of the net output in the branches of material production;
- b) as the sum of the primary incomes of the state, co-operative societies, collective farms and population participating in material production;
- c) as the sum of the funds of consumption, accumulation and reserves.

The national income measured as the sum of the net output in the branches of material production is called the produced national income. The national income measured as the sum of the final incomes is called the distributed national income.

The magnitude of the national income, its movement at all the stages of reproduction are measured in money terms in order to express in the calculations the whole process of socialist reproduction in its unity.

The magnitude of the national income expressed in money terms depends on the purchasing power of the currency and can undergo modifications irrespective of the value of goods, for example, in case if there is a change of the content of gold in a monetary unit. Therefore in the study for the national income it is very significant to distinguish not only its physical and value form, but also its monetary form. National income is annually calculated in both current and comparable prices.

Distribution of the National Income

The process of the distribution of the national income under socialism consists in the fact that the value of the output comprised in the national income is turned into concrete types of incomes. Primary distribution and redistribution of the national income is made hereby, as a result of which its final distribution is taken shape.

Primary distribution of the national income is carried out by way of converting it into concrete incomes gained within the branches of the productive sphere.

Primarily the national income takes the shape of the incomes of population, the state, co-operative and private enterprises.

The primary incomes of population combine:

a) workers' and employees' wages within the branches of material production; b) money incomes and incomes in kind of the peasants, incomes of the personal subsidiary plots of

peasants, workers and employees; c) incomes of individual peasants and unaffiliated handicraftsmen.

Primary incomes of the state and the socialist enterprises take the following form: profits, turnover tax, social insurance allocations, net incomes of collective farms.

Redistribution of the national income takes place coupled with its primary distribution. It becomes necessary in view of the fact, that, in the first place, the state budget ought to have means for real accumulation, i.e. for the expansion of production on the national economy scale; and, in the second place, the non-productive sphere ought to be supplied with the necessary means for the maintenance of the institutions of administration, science, education, public health, and for the requirements of defence.

Redistribution of the national income is made in two main ways: firstly, through the state budget and other links of the financial and credit system; and, secondly, through the payment to population for the cultural and public utility services (theatres, cinemas, museums, hairdressers, transport and communication, etc).

On the basis of its primary distribution and redistribution the national income is utilized in the process of expanded socialist reproduction for the purpose of accumulation and meeting the requirements of population.

Utilization of the National Income.

In the process of its utilization the national income is broken down into two principal funds: the fund of consumption and the fund of accumulation.

The accumulation fund represents the part of the national income, which is necessary for continuous expansion of production on the basis of the achievements of science and technology.

The basic component parts of the accumulation fund under socialism are:

- 1) The fund of expanding production, which represents additions to productive fixed assets and which is represented mainly by the construction of new enterprises and the expansion of the existing ones.
- 2) The fund of the capital construction, which represents additions to non-productive fixed assets.
- 3) The increase in the fund of social reserves and insurance, which is necessary for the continuous expanded reproduction and also in cases of natural calamities and other disasters.

The accumulation fund constitutes in socialist countries in recent years approximately $\frac{1}{4}$ of the national income. The source of the accumulation fund is the surplus product.

The principal form of accumulation is capital investments. High growth rates of the socialist accumulation find their reflection in the ever growing capital investments in the national economy. Hence, the all-round rise in the efficiency of capital investments, the prevention of irrational distribution of funds among numerous units, the liquidation of extravagances in construction and reduction of time periods are of primary significance for the rational utilization of the accumulative part of the national income.

The greater part of the national income is allocated to the fund of consumption. In the USSR it amounts to $\frac{3}{4}$ of the total national income.

The consumption fund combines:

1. The fund of personal consumption which comprises the consumption of consumer goods which are paid up from the final incomes of population.
2. The fund of collective consumption which is represented by the consumption of consumer goods by the non-productive institutions and which is paid up from the final incomes of society. The fund of collective consumption is subdivided within the framework of the Balance of National Economy into two basic parts:
 - a) material inputs of non-productive institutions rendering services to population; this component part of collective consumption is to be taken into account in calculating the increase of living standard of population.
 - b) material inputs of other non-productive institutions like administration, science which do not directly provide for the the increase in the living standard of population.

The utilization of the national income on consumption and accumulation in the USSR (1959) can be seen from the following data:

Allocation of the National Income to the Fund of Consumption and that of Accumulation in the National Economy of the USSR in 1959 (in percent to the total),

National Income total	- 100%
including:	
Consumption total	- 73,2
- personal consumption of population	- 66,2
- material inputs of the organizations catering for population	- 5,4
- material inputs of scientific institutions and management	- 1,6
Accumulation total	- 26,8
increment of fixed assets:	- 17,2
productive	- 10,3
non-productive	- 6,9
Increment of material current funds and reserves	- 9,6

The processes of accumulation and consumption under socialism do not stand in opposition to each other. Accumulation as the source of expanded reproduction is an indispensable condition for the growth of the material basis of national consumption.

The growth of the accumulation fund under socialism serves as the requisite for the growth of consumption and leads to a systematic rise in the material well-being of the people .

The socialist state establishes in a planned way the appropriate proportions between consumption and accumulation, trying to achieve their optimal combination.

C) Analysis for the Correlation between the Fund of Accumulation and that of Consumption.

In the process of distributing the national income it is necessary to provide for proper correlation between the fund of accumulation and the fund of consumption. If the amount of the accumulation fund, as a result of setting the amount of the consumption fund too high, is set too low if compared to real possibilities, the development of production will slow down as well as the rise in the people's consumption. Or if the amount of the accumulation fund is set too high (at the expense of reducing the consumption fund), this will also hamper the development of the national economy and will have a negative effect on the interests of the wide masses of population in the development of production. Therefore the socialist society strives for the optimum correlation between the accumulation fund, under which the growth rate of accumulation ensures the rise in the economic capacity of the country and in public consumption. Proper economic substantiation of planning for the proportions between accumulation and consumption exercises direct influence on production and consequently on the general volume of the national income.

In the USSR the growth rates of accumulation are always kept at a considerably high level: from year to year about 25 per cent of the national income is allocated to accumulation, the greater part of which goes to the construction of production units; the absolute sum of capital investments is increased annually.

But often the growth of accumulation does not lead to the respective growth of production and does not ensure the appropriate growth rates of reproduction. Not any growth of investments exercised due effect. Therefore the problem of efficiency in capital investments becomes more acute from year to year.

With ever increasing sums of capital investments there appears urgent necessity to reveal the most favourable correlations between accumulation and consumption. As investigations show, not any growth of the accumulation quota as against the consumption quota provides the maximum effect. At a certain stage of developing production, it becomes advantageous to stabilize the quota of productive accumulation and to increase production chiefly by raising the output-to-capital ratio of the created production assets (funds).

It is especially significant to master to the best advantage the productive capacities under construction and continually increase their output-to-capital ratio of assets. Then, under the decreasing norm of accumulation there can be achieved some appreciable increase of the final product in the course of a long period of time.

In this connection it is possible to say that at the present-day stage of production development the level of growth rates depends to a still greater extent on the methods of planning, scientific research for the rational economic structure and on the improvement of management.

In planning practice the estimation of the optimal magnitude of the funds of accumulation and consumption is made by many-variant calculations, determining the relative and absolute quantities of accumulation and consumption, the efficiency of their utilization. These variant calculations can be recorded in the following table:

Hypothesis of the Level and Structure of the National Income. (correlation between accumulation and consumption)

Table 1.

	1960	1965	(Variants)			
Consumption fund							
Accumulation fund out of which:							
accumulation of fixed production assets							

But the calculation of these variants requires a preliminary deep study for the objectives and conditions of the national economic development at every given development stage.

Within the national income the accumulation fund is countervailed by the fund of productive accumulation, *on* the amount of which depends, first of all, the increase in employment and the increase of labour productivity, which determine the growthrates of the gross social product and national income. The problem of the efficiency of expanded reproduction from the standpoint of meeting the requirements of population under socialism is solved, first of all, in the course of finding the national economic optimum between productive accumulation and consumption. Under socialism productive accumulation should provide the basis for the rise in the people's well-being, and the optimum of productive accumulation and consumption ought to provide within a short period of time not only for the high growthrates of the social product and national income, but also for the largest fund of consumption.

Stemming from these conditions it is possible to calculate, by way of an example, several variants for the optimum correlation between accumulation and consumption.

The problem of calculated time of maximization, which has not yet been fully solved, is very significant for fixing the optimum. A scientific solution to the problem, as it seems, can be achieved by way of discovering the time of material reproduction period for the national economy as a whole -- from the moment of extracting raw materials and fuel up to turning out consumer goods.

Under the circumstances of modern technique and organization of construction and production, under the circumstances of planned character of developing the economy this time-period approximately amounts to 9 - 10 years. It can be naturally reduced in the future due to technological progress and intensification of production.

Stemming from the length of material reproduction period as 10 years, it is possible to construct a number of variants for economic development in which the connection between accumulation and consumption appears to be rather distinct. To fix this dependence one may confine himself to three simplest variants of economic development:

- 1) Variant I, based upon the norm for productive accumulation growing from year to year. (20%, 21%, 22%, etc);
- 2) Variant II, based upon the invariable norm for accumulation (20%);
- 3) Variant III, based upon the decreasing norm for accumulation (20%, 19%, 18%, etc).

Wherein, the coefficient of productive accumulation (the quota of the national income accumulated in order to get 1 per cent increase in the national income) which is equal to 2,5 is invariable during the whole reproduction period.

The analysis for these variants shows, that for the sake of deriving the maximum volume of the consumption fund in the nearest period (first 5 years) the most effective appears to be the economic development based on the decreasing norm for productive accumulation (variant III); variant I -- with the growing norm for productive accumulation is obviously unfavourable. But during the calculated period taken as a whole (10 years) the highest growth of consumption per capita is provided for under systematic and gradual increase of the norm for productive accumulation (Variant I). Here reveals itself the well-known contradiction between long-term and current interests of the socialist society which should be permanently overcome with account being taken of concrete historical conditions of the society's development at every given stage.

With a view to finding in the national economic optimum the most favourable combination (relationship) for not only the productive accumulation and consumption, but also for long-term and current (short-term) interest, a developed socialist society should apparently **stop** at variant II with an invariable norm for productive accumulation. The advantages of this variant consist in the fact, that, on the one hand, it does not create such strained situation in the national economy as variant I, which requires involvement in the turnover of considerable additional natural and labour resources; on the other hand, it does not stipulate losses in the national economy connected with the reduction of the norm for accumulation in variant III (underutilization capacities, formation of excess manpower, and so on).

However, the conditions for the transition to the invariable norm for productive accumulation do not arise all at once. Meanwhile the technico-economic underdevelopment of a country is being overcome, the rise in the norm for productive accumulation is inevitable,

which, subject to concrete historical conditions, can be either severe or gradual. But when a high norm for productive accumulation is achieved and more or less highly developed industrial structure of the national economy is created, it becomes possible to switch the process of expanded reproduction to the invariable norm for accumulation. At the same time, there arises the question: under the achievement of which norm for productive accumulation does this transition correspond to the optimum of accumulation and consumption.

The calculations of arbitrary variants with the norm for accumulation 25, 20 and 15 % show, that the maximization of consumption is reached under the 25% norm for accumulation.

The possibility to systematically realize economic development on the basis of this norm depends on the availability of corresponding natural, material, labour and financial resources, on whether it (the norm) will cause overexertion in all the economic power of the country and disproportion in the national economy; or whether it will be carried on without hindrance. National planning in every country is to fix in good time the moment when any further increase in the norm for productive accumulation might come into conflict with the actual possibilities of productive accumulation, and when the transition to the invariable norm yields the most favourable results;

But the increase in the fund of accumulation considerably depends not only on the optimum fund of accumulation, but also on the extent of its utilization, on the efficiency of capital investments. The growth rates of reproduction, the absolute amount of consumer goods depend on the extent of utilizing the created production funds. It is especially significant for successful economic development to master to the best advantage the created production capacities and to incessantly increase their output-to-capital ratio. Then, even

under the decreasing norm for accumulation there can be reached a noticeable increase in the final product in the course of a long period. That is why, the problem of the efficiency of capital investments becomes more actual from year to year.

The efficiency of the accumulation process can be fixed with the aid of different indicators and, first of all, on the national economy scale.

As experience shows, at certain stages of socialist development the norm for productive accumulation is raised, chiefly, for the sake of achieving higher growth rates in expanded reproduction, and at other stages this rise is often brought about by the necessity to stop the decrease in the output-to-capital ratio of production assets and in the efficiency of accumulation. In the latter case, the rise in the norm for productive accumulation may, under certain quantitative correlations, restrict (limit) the growth of consumption. It absorbs, at the expense of consumption, material labour and financial resources necessary for higher inputs of the productive accumulation fund per unit of output and its increment.

The absolute economic efficiency of the capital investments in production funds (assets) is measured as the ratio of the national income increment to these investments during one and the same period.

This indicator accumulates in itself the output-to-capital ratio, improvement in the utilization of production assets, modification in the material capacity of social production.

The ways to raise the effectiveness of productive accumulation are numerous, the most significant of them are the following:

- the fullest utilization of the available production assets, rise in the coefficient for work-shifts and that for running the equipment;
- priority development of progressive productive branches, esp. chemical industry and engineering;
- intensification of agriculture;
- rational utilization of natural resources;
- replacement of obsolescent equipment for new technique;
- improvement in designing and techniques of construction;
- increase in the active share of production assets;
- maintenance of rational proportions in capital construction and the national economy as a whole corresponding to the economic development stage, etc.

The all-round use of the factors, raising the efficiency of production and accumulation contributes to a higher growth of the consumption fund, both in the nearest period and the whole material reproduction period.

If part of the national income increment is gained due to the increase in the output-to-capital ratio of the functioning production assets, it reduces the norm for accumulation and the same growth-rates of production may be achieved under the lesser norm. The rise in the output-to-capital ratio of the available production assets also reduces the length of the material reproduction period. This fact is obviously to be taken into account while searching for the

optimum solutions in economic development.

Economic development is more complicated, than its ideal schemes. In drawing up national economic plans the whole aggregate of concrete historical conditions is to be taken into consideration.

In certain cases, in order to make the technical progress and the growthrate of labour productivity higher one has to increase the norm for productive accumulation. In other cases, when it is necessary to raise, within a short period of time, the material standards of population, and there is no possibility to achieve this target through the rise in the efficiency of accumulation, one has to temporarily resort to the reduction of the norm for productive accumulation. Nevertheless, the conditions considered above provide a certain orientation in choosing the optimum solutions.

Stemming from the variants for the volumes and structure of the national income the indicators for the volume and structure of the final product are calculated in conformity with the following approximate scheme:

Table No. 2

	Variants					
Final product						
Consumption fund -						
including:						
personal consumption						
collective consumption...						
Replacement and capital repairs of fixed productive and non-productive assets						
Increase of current funds & reserves						
Increase in stocks in the sphere of circulation						
Other increase						
Export						
Import						

The next stage in the substantiation and analysis for the structure of social production is the analysis for the volumes and branch structure of the final product.

- d) The analysis for the Volume and structure of the Most Significant Elements of the Final Product.

The Fund of Consumption

The advantage in planning for the fund of consumption in the system of the planned inter-branch Balance is that it enables us to study and determine (in the capacity as plan indicators) the real quantitative proportions of the process of formulating the fund of consumption starting from production up to final utilization.

The planned inter-branch balance makes it possible to elaborate different variants for the optimum structure of production, under which the complete satisfaction of the requirements of population is coordinated with the minimum input of social labour. This is still of greater significance owing to fact that by many types of consumption a comprehensive substitution of certain material goods for others, which require less inputs can be possible .

In this connection the analysis for the structure of the fund of consumption in the inter-branch balance combines the following interrelated problems:

- a) the changes in the relationships of two main forms of consumption -- personal consumption at the expense of the personal incomes of population, and collective consumption within the establishments in the non-productive sphere;

b) the changes in the composition of the branches, where consumer goods are produced, and in the physical structure of the consumption fund.

The division of the fund of consumption into personal consumption and into the inputs of the establishments catering for population is of great economic significance, for it enables us to define the quota and physical composition of the material goods received by the members of the society through social and cultural organizations, which serve for the requirements of population. A table, as it is given beneath, can be compiled in order to analyze these problems.

The structure of the Consumption Fund by the channels of Utilizing Material Goods.

Table 3

	Base (statistical) period	Planned Period					
		Variants					
Consumption total including:							
Personal consumption							
Material inputs of the establishments serving to population							
Material inputs of scientific institutions and other non-productive institutions							

As a rule, the overwhelming part of the fund of consumption is made up by the personal consumption of population, nevertheless the extension of the network of schools, higher and secondary institutions, better medical and cultural services bring about the growth of collective consumption.

The division of the consumption fund into the fund of personal consumption and the material inputs of the establishments serving to population also plays an important part with regard to different methods of planning and analysis for these elements of the fund of consumption. The structure of personal consumption is, as a rule, determined indirectly: through the analysis for the shifts in the requirements and demands of population, through studying the changes in the traditions of consumers, and so on. The material inputs of the establishments and institutions of the non-productive sphere yield to direct methods of apportionment on the basis of normative and actual indicators.

A significant position in the studies in question is taken by the role of various economic branches in formulating the fund of consumption. The following table can be drawn up for the purpose of studying this process by different branches.

The Structure of Personal Consumption by branches.

Table No. 4.

	Statistical periods			Planned period
	the year of ...	the year of....	the year of...	
A) Foodstuffs.				
Products of the Food Industry including:				
Meat				
Milk, butter and cheese production				
Fish				
Sugar				
Fruits & Vegetables				
Flour & Cereals				
Bread				
Confectionery				
Wines				
Strong and Soft Drinks				
Products of agriculture				
Livestock				
Crops and plants				
B) Manufactured Goods				
Products of the Light Industry including:				
Textiles				
Knitted Wear				
Garments				
Leather and shoe wear				

	Statistical periods			planned period
	the year of ...	the year of ...	the year of...	
Products of Engineering and Metal Processing: electric appliances radio receivers Watches, photo & cine- cameras Products of the Auto- mobile Industry Metallic wares Chemical products Products of the Wood & paper industries Including Furniture Products of the glass and porcelain industry Electric and thermo power Products of the fuel industry Building materials, metals and metal wares Products of other in- dustries				

On the basis of the given table it is possible to obtain the necessary data about the changes in the physical material structure of the personal consumption fund for a certain period.

A study in the structure of the fund of consumption as a whole can be made with the aid of the following table:

Table No. 5.

[illegible]

Plan calculations of the consumption fund in the system of the planned inter-branch balance are of great theoretical and practical interest, because they make it possible to take into account and analyze within the indicators of the state development plan the regularities in the development of consumers' demand, and offer vast opportunities to outline the development ways of production for the sake of fuller satisfaction of the society's requirements. The methodological scheme of the computation and analysis for the fund of consumption within the system of the planned inter-branch balance can be presented in the form of the following table:

SCHEME OF THE ANALYSIS FOR THE CALCULATION OF THE FUND OF CONSUMPTION
WITHIN THE SYSTEM OF THE PLANNED INTER-BRANCH BALANCE OF PRODUCTION AND DISTRIBUTION OF THE SOCIAL PRODUCT

Table No. 6.

BRANCHES OF MATERIAL PRODUCTION	CONSUMPTION											FUND OF CON- SUMP- TION TOTAL
	FUND OF PERSONAL CONSUMPTION					MATERIAL INPUTS OF THE INSTITUTIONS OF THE NON-PRODUCTIVE SPHERE						
	PURCHASES IN TRADE	PURCHASES ON THE AGRICUL- TURAL MARKET	CON- SUMP- TION IN KIND	SERVICES OF WORKMAN SHIP	PERSO- NAL CONSU- MPTION FUND TOTAL	PUBLIC UTILI- TIES AND HOUS- ING	COM- MUNI- CATION FOR THE USE OF PO- PULA- TION	EDUCA- TION, PUB- LIC HEALTH SERVI- CES AND CULTU- RE	SCIE- NCE AND RE- SEARCH	ADMI- NISTRA- TION	PASSE- NGER TRA- NSPORT	

The elaboration and analysis for the branch structure of the consumption fund in the planned inter-branch balance at the initial stage of planning are of paramount economic significance, for the balance consistency in the perspective indicators of consumption with the whole system of plan indicators provides an idea about the real possibilities, time-periods and stages in reaching the planned level of material wealth of population.

Fund of Accumulation.

Estimation of the volume and branch structure of the fund of accumulation, replacement and capital repairs of fixed assets is an important problem in planning and analyzing the final product.

Planning for the volume and branch structure of capital investments represents a decisive link in the system of the state development plan, because it chiefly determines the growth rates and proportions of expanded socialist reproduction. In its turn the distribution of capital investments by the branches of industry and national economy depends on the extent of scientific grounding of the plan, on the extent of exposing the tendencies in economic development.

Capital investments in the open static model of the planned inter-branch balance represent one of the basic elements of the final product and are reflected in the section "Accumulation, replacement and capital repairs of fixed assets". The principles of constructing the planned inter-branch balance impose specific requirements on the planning and analysis for capital investments.

As it was pointed out earlier, the break down of the output of each branch, distinguished in the inter-branch balance, into current productive consumption and final utilization is reflected in the corresponding row of the I-st and II-nd quadrants. Starting from this

principle the notion "the primary distribution of capital investments by branches" acquires a different meaning in the planned inter-branch balance if compared to the practice of planning for capital investments.

Traditional practice of planning determines the volumes and technological structure of the capital investments allocated to the development of individual branches of industry and national economy, i.e. it determines the total sum of deliveries necessary for expanded reproduction. The volume of capital investments in the planned inter-branch balance is reflected in the column of the final product "Accumulation, replacement and capital repairs of fixed assets", where each row characterizes the output quotas of individual branches allocated to accumulation and replacement.

Thus, the primary distribution of capital investments by branches in the planned inter-branch balance is understood as the material structure of that sum of deliveries, which is designed for expanded reproduction, i.e. the material composition of capital investments in the national economy is determined in value terms according to the delivering branches.

The fund of accumulation, replacement and capital repairs of fixed assets according to its material form consists of the products of the following national economic branches: 1) engineering --- installation and capital repairs of equipment; 2) construction --- installation; and capital repairs of buildings and structures and the remaining building work; 3) agriculture --- increase and replacement of livestock and perennial plantation. In the compilation of the planned inter-branch balance for the last year of a long-term period it is necessary, first of all, to determine and analyze general resources of capital investments and the amount of depreciation allowance for capital repairs.

The resources of capital investments depend on the expected accumulation of fixed assets, which is estimated stemming from the planned dynamics and structure of the national income and the amount of the depreciation allowance for the fixed assets consumed. The replacement volume of fixed assets is assumed to equal to the depreciation allowance for reinnovation, i.e. for complete replacement, and can be calculated as follows.

On the basis of study and analysis for statistical data, the growth rates and the volumes of the utilized national income are determined for the planned period by each year, starting from the base year and including the planned year, for which the inter-branch balance is being drawn up.

In accordance with the structure of the national income and the specific weight of the accumulation of fixed assets in each of the variants of the national income the average annual volumes and increments of fixed assets are calculated and analyzed by each year, taking into account their replacement. The fixed assets of the base year and their total increase will show the fixed assets of the planned year.

The increment and volume of fixed assets for the planned year are calculated according to the productive and non-productive spheres due to the fact that the norm for the depreciation allowance of the fixed assets in the productive sphere exceeds considerably that of the non-productive sphere. On the basis of the analysis for the dynamics of the volumes of fixed assets and their respective sum of depreciation allowance, with its breaking down into the components--reinnovation and capital repairs, the magnitude of depreciation allowance in terms of productive and non-productive sphere is found for the planned year, that which corresponds to the volume of fixed assets in this year.

Having defined thus the sum of depreciation allowance for the planned year, we obtain the two unknown magnitudes --- the fund of replacement of fixed assets, consisting of the sum of the depreciation allowance designed for reinnovation in the productive and non-productive spheres, and the volume of capital repairs, which is determined as the sum of depreciation allowance to capital repairs .

The volume of capital repairs should be distributed according to the nomenclature of the balance between the capital repairs of equipment and the capital repairs of buildings and structures. This relationship for the planned period is determined as a result of the analysis for the dynamics of the actual data.

Hence, by way of summing the accumulation fund of the fixed productive and non-productive assets, calculated on the basis of the structure and volume of the national income in the planned year, with the fund of replacement of fixed assets in the productive and non-productive spheres, one gets the volume of the fixed assets to be installed (to be put into operation)

Within the volume of fixed assets to be installed it is necessary to single out the part (quota) of equipment, representing the output of engineering, and the construction and installation work being the output of construction. Owing to the fact that under traditional methods of planning the part of equipment and the part of construction and installation work are usually determined in the total volume of capital investments, but not within the volume of the fixed assets to be installed (put into operation), it is necessary to proceed from the volume of the fixed assets to be installed to the general volume of capitals investments.

The volume of capital investments differs from the volume of the fixed assets to be put into operation by the changes in quantity of unfinished construction, by the quantity of capital investments, which does not increase the value of fixed assets, by the amount of losses, etc.

The data necessary for the analysis for the ratio of the fixed assets to be installed to the volume of capital investments are obtained according to their dynamics in a number of years. And with all this it is necessary to take into account a number of influencing factors, viz. concentration of capital investments, organizational changes in construction, etc.

In the determination of the specific weight of equipment they study and analyze the tendencies of the change in the technological structure of capital investments by each branch available in the nomenclature of the planned inter-branch balance and the structure of capital investments in each branch is to be found and analyzed for the planned period.

The estimation of the volume of export and import should be based on the analysis for the indicators in plans for foreign trade with account taken of the targets to raise the efficiency of foreign trade.

The necessary output volumes for the planned period are calculated on the basis of the elaborated variants for the volume and structure of the national income and final product and the system of coefficients of direct and indirect requirements per unit of final demand.

The data obtained are used in the analysis for the volumes, growthrates and structure of the gross social product.

The average annual growthrates of the gross social product can be analyzed with the aid of the following table:

Table No. 7.

	VARIANTS					
National Income						
Gross Social Product						
Gross output in industry						
including						
Group "A"						
Group "B"						
Gross output in						
agriculture						

The analysis for the data given in the above table must provide, according to different variants, the basic relationships in the growth of the social product and national income, the relationships of groups "A" and "B" in industry, the relationships between industry and agriculture. These data are direct components of the overall table of the analysis for inter-branch relationships.

For the purpose of a deeper study, the analysis can be carried out by individual branches of the national economy and industry.

2. Analysis for the Plan of Industrial Production

Taking the leading position in the sphere of material production, industry possesses ~~es~~ the most developed relations with the other branches of the national economy. Industry is a powerful lever of social transformation in all the national economy branches. The leading role of industry in the socialist economy is stipulated first of all by the fact that it is based upon the public form of ownership for all the means of production, and that it provides all the branches of the national economy with subjects of labour and new materials and serves as the most efficient factor of technological progress and expanded reproduction as a whole.

Such a specific position of industry objectively requires, that in the analysis for inter-branch relations, their treatment be commenced with the growth rates, proportions and shifts in the branch structure of industry. On the basis of the planned inter-branch balance's data it is possible to make up a number of tables characterizing all these changes under different variants.

Growth rates, proportions and shifts in the branch structure of industry.

Table No. 8

	STATISTICAL PERIOD	VARIANTS					
GROSS OUTPUT OF INDUSTRY INCLUDING:							
Group "A"							
Group "B"							

The given table characterizes, together with the growth of the volume of gross output, one of the most significant proportions in the development of industry -- the relationship between the production of group "A" and that of group "B" .

Group "A" comprises the branches of heavy industry manufacturing means of production.

Group "B" combines the branches of industry manufacturing consumer goods.

As practice testifies, the extent of higher growth rates of means of production (group A) if compared to those of consumer goods (group B) is different at different stages of economic development. The difference in the extent of higher growth rates of means of production (group A) if compared to consumer goods (group B) depends on concrete circumstances of economic development at different stages, viz. on the scope

of social production, on the level of technological progress and extent of its intensification, on the productivity of labour, and the extent of the norm for accumulation, etc.

The shifts in the branch structure of industry taking shape as a result of the change in the society's requirements and technological progress exercise direct influence over the production relations among branches. These shifts , on the basis of the planned inter-branch balance's data can be presented in the form of the following table:

(Average annual) Growth rates in the Increase of Gross Output according to the Branches of Industry

Table No. 9.

	STATI- STICAL PERIOD	VARIANTS					
INDUSTRY (AS A WHOLE) INCLUDING: BY BRANCHES							

This table ought to show the growth rates for the development of the branches, which stipulate the solution of the main economic and political objectives of the planned period and to reflect the relationships in the growth rates of development among the industrial branches.

For the purpose of a more detailed analysis for the changes in the structure of gross industrial production one can make use of another table:

The Structures of Gross Industrial Ought (in per cent to the total)

Table No. 10.

	STATI- STICAL PERIOD	VARIANTS					
BRANCHES OF INDUSTRY							

This table characterizes the changes in the specific weight of different branches.

The change in the branch structure of industry and the inter-branch production relations can be characterized by way of comparing the structure of material inputs in different periods, i.e. the specific weight of branches within the material inputs can be shown.

The tendencies in the structural changes of industrial production for the planned period can be traced through the change in the planned coefficients of direct material inputs.

On the basis of the planned inter-branch balance there can be found the volumes of production for the most significant types of industrial products in physical terms.

The analysis for these data can be conducted with the aid of the following table:

Volumes of production for the most significant types of industrial products in physical terms.

Table No. 11.

No.	NAME OF INDUSTRIAL PRODUCTS	UNIT OF MEASURE	STATISTICAL PERIOD	VARIANTS					GROWTH IN PER CENT				

The above table enables us to obtain the data characterizing the volumes of production for the most significant types of products in physical terms. It also makes it possible to analyze the modifications in the magnitude of each product by different variants and to compare the growth of the volumes of production with regard to different products.

On the basis of the data about the flows of material resources within the planned inter-branch balances it is possible, according to each variant, to present a table of production relations in industry

(and other branches of material production) within the framework of the national economy.

PRODUCTION RELATIONS WITHIN THE NATIONAL ECONOMY FOR ... YEAR.

in value terms.

VARIANTS No.

Table No. 12.

CONSUMING BRANCHES DELI- VERING BRANCHES	METALLURGY	FUEL	ELECTRIC POWER	ENGINEER- ING AND METAL PROCESSING	CHEMISTRY								TOTAL
METALLURGY													
FUEL													
ELECTRIC POWER													
ENGINEERING AND													
METAL PROCESS-													
ING													
CHEMISTRY													
.....													
TOTAL													

The relationships of individual industrial branches are studied together with the general analysis for inter-branch relations. The most general are the production relationships in industry with regard to metal and fuel.

In the practice of constructing planned inter-branch balances in the USSR the ferrous metal industry is usually subdivided into the following sub-branches: 1) ores of ferrous metals, 2) non-ore raw

materials for the ferrous metal industry, 3) ferrous metals, 4) electroferroalloys, 5) products of coke chemical industry 6) fireproofs, 7) metal wares of industrial purposes, 8) secondary processing of ferrous metals.

Such a nomenclature of the sub-branches secures the unification of homogeneous types of the ferrous metal industry products according to their purpose and the structure of material inputs per their production.

The types of products incorporated into these sub-branches have a comparatively homogeneous technology and organization of production and combine almost fully the nomenclature of the planned output of the ferrous metal industry.

The planned inter-branch balance makes it possible to get a rather complete idea about the inter-branch production relations of the ferrous metal industry and the direction of their development, about the distribution of the products of this industry in the national economy and about the structure of the inputs of their production. The major consumers (users) of the ferrous metal industry are, as a rule, engineering and metal processing, construction, internal (intramural) consumption within the ferrous metal industry, transport and communication, agriculture, etc.

The analysis for the inter-branch relationships of the ferrous metal industry is carried out in conformity with the chosen variants.

The greatest influence over the relationships of the ferrous metal industry is exercised by the development of engineering and construction. Therefore the analysis is made in respect to the comparison

between the output growth of the ferrous metal industry and that of engineering and construction.

Comparison in the output growth of the ferrous metal industry with the output growth of engineering and construction.

Table No. 13.

VARIANTS	OUTPUT IN THE PLANNED PERIOD IN PER CENT TO THE STATISTICAL PERIOD		
	FERROUS METAL INDUSTRY	ENGINEERING AND METAL PROCESSING	CONSTRUCTION
1.			
2.			
3.			
4.			
5.			
6.			

The appropriate conclusions are drawn and proposal made on the basis of the interrelationships obtained according to each of the variants.

The inter-branch relations of the ferrous metal industry in the planned inter-branch balance are also characterized by the production and distribution of the output in its sub-branches. The structural shifts in the gross output of the ferrous metal industry are analyzed in the first place according to the sub-branches adopted in the computations of the planned inter-branch balance.

The structure of gross output of the ferrous metal industry according to the sub-branches of the planned inter-branch balance.

Table No. 14.
VARIANTS No.....

SUB-BRANCHES OF THE FERROUS METAL INDUSTRY	SPECIFIC WEIGHT IN THE GROSS OUTPUT OF THE FERROUS METAL INDUSTRY		INCREASE OR DECREASE
	STATISTICAL PERIOD	PLANNED PERIOD	
FERROUS METAL INDUSTRY AS A WHOLE INCLUDING: ORES OF FERROUS METALS NON-ORE RAW MATERIALS FOR THE FERROUS METAL INDUSTRY FERROUS METALS ELECTROFERROALLOYS PRODUCTS OF COKE CHE- MISTRY FIREPROOFS METALWARES OF IN- DUCTRIAL PURPOSE SECONDARY PROCESSING OF FERROUS METALS			

The changes in the structure of gross output in the ferrous metal industry according to the sub-branches are studied on the basis of the data of this table together with the reasons that caused the changes in the structure.

For the purpose of a deeper study for structural shifts in the gross output they are considered together with the changes in the quota of fixed assets.

STRUCTURAL SHIFTS IN THE GROSS OUTPUT AND FIXED ASSETS OF THE FERROUS METAL INDUSTRY

VARIANT No. ...

table No. 15

SUB-BRANCHES OF THE FERROUS METAL INDUSTRY	GROSS OUTPUT QUOTA IN PER CENT			FIXED ASSETS QUOTA IN PER CENT		
	STATISTICAL PERIOD	PLANNED PERIOD	PLANNED TO STA- TISTICAL PERIOD RATIO	STATISTICAL PERIOD	PLANNED PERIOD	PLANNED TO STATIS- TICAL PERIOD RATIO

The output of individual sub-branches of the ferrous metal industry is mainly consumed by the following branches: the ores of ferrous metal are almost fully consumed by the ferrous metal industry; ferrous metals are consumed by engineering, construction and the ferrous metal industry; the products of coke-chemistry -- by the ferrous metal industry, chemical industry and engineering; and so on.

The inter-branch relationships of the ferrous metal industry are more completely characterized by the structure of consuming (using) its output, which can be presented with the aid of the following table:

The Structure of Consumption for the Output of the Sub-Branches in the Ferrous Metal Industry

(IN PER CENT TO THE GRAND TOTAL).

VARIANT

Table No. 16

CONSUMING BRANCHES TYPES OF PRODUCTS	INDUSTRY							CONSTRUCTION	TRANSPORT AND COMMUNICA- TION	OTHER BRAN- CHES OF MA- TERIAL PRO- DUCTION
		FERROUS METAL AND NON-FER- ROUS METAL INDUSTRIES	ENGINEER- ING	BUILDING MATERIALS	CHEMICAL INDUSTRY	OTHER BRANCHES OF INDU- STRY				

On the basis of the gross output volumes of a sub-branch, e.g. "ferrous metals", and its structure it is possible to find the output volumes of the most significant types of products in physical terms. Stemming from the volume of gross commodity output, the quota of commodity rolled metals, and the average wholesale price they estimate the output of commodity rolled metals in physical terms.

Rolled stock (rolled metals) is the basic type of final production in the ferrous metal industry, its value combines about 40 per cent of the whole gross output of this industry (in the USSR) and about 65 per cent of the gross output of the sub-branch "ferrous metals". The greatest specific weight in the consumption of rolled stock (rolled metals) is taken up by engineering. A considerable part of rolled stock is consumed within the ferrous metal industry for the purpose of further remakes.

The output of steel and cast iron are determined according to the general volume of rolled stock with the aid of the corresponding coefficients.

The data obtained are combined for the sake of comparison in a table with the aid of which they characterize the average annual increment of the ferrous metal industry and analyze the intramural relations and qualitative shifts

AVERAGE ANNUAL INCREMENT OF THE FERROUS METAL OUTPUT IN THE
PLANNED PERIOD

Table No. 17.

TYPES OF PRODU- CTS	AVERAGE ANNUAL "ABSOLUTE" INCREASE IN MLN. TONS							AVERAGE ANNUAL INCREASE IN PER CENT						
	STATISTI- CAL PERIOD	PLAN- NED PERIOD	VARIANTS					STATISTI- CAL PERIOD	PLAN- NED PERIOD	VARIANTS				

Under simultaneous elaboration of planned inter-branch balances in value and physical terms the obtained data are compared and analyzed. These same data are also compared with the respective material balances calculated for the same planned period.

The planned inter-branch balance presupposes the interrelationship and inter dependence of the distribution of products within the national economy and the inputs of their production. The structure of material inputs of production according to the variants can be analyzed with the aid of the following table:

THE STRUCTURE OF MATERIAL INPUTS OF THE FERROUS METAL INDUSTRY
FOR THE YEAR OF
(in per cent)

VARIANT No. ...

Table No. 18.

ITEMS OF THE NOMENCLATURE OF THE PLANNED INTER-BRANCH BALANCE	ORES OF FER- ROUS METALS	NON-ORE RAW MATERIALS FOR THE FER- ROUS METAL INDUSTRY	FERROUS METALS	ELECTROFER- ROALLOYS	PRODUCTS OF COKE-CHEMI- STRY	FIREPROOFS	INDUSTRIAL METALWARES	SECONDARY PROCESSING OF FERROUS METALS	GRAND TOTAL OF THE SUB- BRANCHES OF THE FERROUS METAL INDUS- TRY
MATERIAL INPUTS TOTAL	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Significant inter-branch production relations of the ferrous metal industry are the relations with the fuel industry, electric power, and the non-ferrous metal industry. The inter-branch relations are maintained on a large scale with iron ores, coke-chemistry, fireproofs and other types of production.

Technological progress in the production of ferrous metals essentially modifies the inter- and intra-branch relationships of the

ferrous metal industry, modifies the structure of material inputs of production within this branch. Therefore the analysis for the modifications of the coefficients of direct inputs is of a considerable interest.

MODIFICATIONS IN THE COEFFICIENTS OF DIRECT INPUTS

Table No. 19

	COEFFICIENTS		MODIFICATION IN PER CENT VERSUS THE STATISTICAL PERIOD
	STATISTICAL PERIOD	PLANNED PERIOD	
ORES OF FERROUS METALS NON-ORE RAW MATERIALS FOR THE FERROUS METAL INDUSTRY FERROUS METALS ELECTROFERROALLOYS PRODUCTS OF COKING CHEMISTRY FIREPROOFS INDUSTRIAL METAL- WARES SECONDARY PROCESSING OF FERROUS METAL			

Such are the general methodical provisions on the analysis for the inter- and intra-branch relationships on the basis of the planned inter-branch balance's data for the ferrous metal industry. It goes without saying that due to technical, technological and organization distinctions each industrial branch has its specific features, which should be reflected in the analyses for its relationships. Nevertheless, the basic directions of the analysis for inter- and intra-branch relations according

to the data of the planned inter-branch balance can be, in many respects, considered as general in principle.

3. Analysis for the Plan of Agricultural Production.

Agriculture is one of the most significant spheres of material production, which provides industrial branches -- with raw materials .

Agriculture combines two comprehensive branches: plant - growing and animal husbandry. Plant -growing comprises field - crop cultivation, vegetable -growing, horticulture, viticulture, and cultivation of meadows.

Animal husbandry is broken down into the branches: cattle - breeding, pig - breeding, poultry farming, apiculture, silkworm breeding and fish-farming.

The perfection of the production relations of agriculture with the other branches of the national economy and first of all, with industry is one of the objective requisites of agricultural successful development.

The planned inter-branch balance ought to make it possible to reveal the requirements of the national economy for agricultural products and to co-ordinate them with the planned volume of agricultural resources. The estimation of the requirement for agricultural products and the analysis of this requirement can be carried out according to the following approximate scheme:

The Requirement for Agricultural Products According to the...th
Variant of the Planned Inter-Branch Balance.

Table No. 20

	TOTAL	INCLUDING:	
		PLANT- GROWING	ANIMAL HUSBANDRY
GENERAL REQUIREMENT INCLUDING:			
FINAL PRODUCE OUT OF WHICH ARE:			
PERSONAL CONSUMPTION			
COLLECTIVE CONSUMP- TION			
CONSUMPTION FUND TOTAL			
INCREASE OF PERENNIAL PLANTATIONS AND THE FIXED LIVESTOCK			
INCREASE OF THE CIRCU- LATING FUNDS AND RE- SERVES			
INCREASE OF OTHER COMMODITY STOCKS			
EXPORT			
IMPORT			
PRODUCTIVE CONSUMPTION			

The analysis of this table must show the modifications in the structural shifts of the national economic requirements for agricultural products in the planned period under different variants.

The production consumption of agricultural products by individual branches of industry and agriculture is especially carefully analyzed, and this analysis may come to the indicators of the following table:

PRODUCTIVE CONSUMPTION OF AGRICULTURAL PRODUCTS BY INDIVIDUAL
BRANCHES OF INDUSTRY AND AGRICULTURE.

Table No. 21.

	TOTAL REQUIRE- MENT FOR AGRICULTURAL PRODUCTS	INCLUDING:	
		PLANT-GROWING PRODUCTS	ANIMAL HUSBANDRY PRODUCTS
LIGHT INDUSTRY INCLUDING: COTTON RERINERY PRIMARY PROCESSING OF FLAX WOOL-WASHING SILK - REELING LEATHER, FURS AND FOOTWEAR FOODSTUFFS: INCLUDING: MEET CREAMERY, CHEESE MAKING AND DAIRY PRODUCTS SUGAR FLOUR AND CEREALS CONFECTIONERY BUTTER AND FATS SPIRITUOUS LIQUORS WINES BEER AND SOFT DRINKS FRUITS AND VEGETABLES OTHER BRANCHES OF THE FOOD INDUSTRY AGRICULTURE PLANT-GROWING ANIMAL-HUSBANDRY			

The analysis for the data of this table must show the modifications in the specific weight of the agricultural raw materials processing, including the output of plant-growing and animal husbandry.

It is also necessary to analyze the modifications in the branch structure of agricultural production in the planned period, for which purpose the following table ought to be drawn up:

Modifications in the Branch structure of Agricultural Production

Table No. 22.

	STATISTICAL DATA	PLANNED DATA					
		VARIANTS					
AGRICULTURE TOTAL							
PLANT-GROWING:							
OUT OF WHICH ARE:							
GRAIN CROPS							
COTTON							
SUGAR BEET							
etc.							
LIVESTOCK							
OUT OF WHICH ARE:							
MEAT							
MILK							
EGGS							
WOOL							
etc.							

On the basis of the data of this table an analysis should be conducted for the reasons causing the modifications in the structure and their direction.

According to the combined data of the tables thus presented the general analysis ought to be given for the directions in the development of agriculture in the planned period and of its main components -- plant growing and animal husbandry, inclusive of different categories of units and territories of the country.

Special attention is drawn to the analysis for the inter-branch relations between industry and agriculture. The quantitative expression of these relationships can be characterized by the amounts of industrial products utilized in agricultural production. It can be presented by the table:

Amounts of Industrial Products to be Utilized in Agriculture in the Planned Period.

Table No. 23.

BRANCHES OF INDUSTRY	STATISTICAL PERIOD	PLANNED PERIOD					
		VARIANTS					

The evaluation of the development level of the relations between industry and agriculture for the planned period must be given on the basis of the data of the above table.

The specific weight of the inputs of industrial products in the general sum of inputs per the gross agricultural output can serve as a synthetic indicator offering the possibility to give a quantitative expression to the development level of the production relations between industry and agriculture.

At the same time the tendencies in the development and perfection of the production relations between industry and agriculture ought to be analyzed in the light of solving the main economic tasks of the period. Specifically, in raising the level of intensification in agriculture the most significant measures will be -- the all-round chemicalization of agriculture, the implementation of complex mechanization of production and the realization of a comprehensive programme of electrification in agriculture, the development of irrigated cultivation, wide implementation of the achievements of science and progressive experience into production.

The solution of these targets can become possible only on the basis of steady development and improvement of the material and technical basis of agriculture, and all this requires uninterrupted development and perfection of the productive relations between industry and agriculture and it, in the first place, requires a rapid consumption growth of industrial products per the production requirements in agriculture. It refers, first of all, to the chemical industry.

A most significant role in solving the problems of intensification in agriculture belongs to the fast development and improvement of the production relations between engineering and agriculture. The development of these productive relations must ensure the mechanization and electrification of agriculture.

The analysis for production relationships ought to be also carried out with regard to other branches of the national economy. Thus, the production relations with the oil-processing industry must develop in order to fully meet the requirements of agriculture for fuel and lubricants.

The relationships with the food industry ought to develop with a view to organizing the mass industrial production of protein, fodder yeast, with a view to expanding the production of mixed feed,

asseous flour and also of antibiotics, vitamins and other products promoting the productivity of livestock.

The production relations between agriculture and the industry of building materials should develop in the direction of creating a powerful construction basis in agriculture, capable to provide for the mass productive, cultural and housing construction.

The most general and well grounded analysis for the development level of productive relationships of agriculture with other national economic branches can be attained by way of analyzing the coefficients of direct inputs. Thus, it is possible, with the aid of the coefficients of direct inputs of industrial products per unit of agricultural output to analyze the quantitative shifts in the industrial produce directed for the purpose of manufacturing the planned volume of agricultural output.

4. Summary Tables of the Analysis for the Inter-Branch Relationships.

The summary (over-all) tables in question comprise:

The table of basic indicators for the national economic development;

The table of the volume and structure of the utilized national income;

Gross output of the branches of industry and the national economy; and some other tables, subject to the analyzed problems.

These tables contain the most significant total data of the planned inter-branch balance. The system of over-all tables provides basic characteristics for the process of reproduction. These tables comprise the indicators characterizing the basic circumstances, under which the

reproduction process takes place in the planned period. They also reflect final results of the process of reproduction and the conditions, which are created in order to realize reproduction in the forthcoming period.

BASIC INDICATORS OF THE NATIONAL ECONOMIC DEVELOPMENT

Table No. 24

	STATISTICAL PERIOD	PLANNED PERIOD						PLANNED TO STATISTICAL RATIO OF DATA						AVERAGE ANNUAL INCREASE IN PER CENT					
		VARIANTS						VARIANTS											
NATIONAL INCOME																			
FUND OF CONSUMPTION																			
FUND OF ACCUMULATION																			
SPECIFIC WEIGHT IN THE NATIONAL INCOME:																			
OF THE CONSUMPTION FUND																			
OF THE ACCUMULATION FUND																			
INCLUSIVE OF THE ACCUMULATION OF THE FIXED PRODUCTION ASSETS																			
CONSUMPTION FUND PER CAPITA																			
GROSS INDUSTRIAL OUTPUT INCLUDING:																			
GROUP A																			
GROUP B																			
GROSS AGRICULTURAL OUTPUT																			
CAPITAL INVESTMENTS TOTAL INCLUDING:																			
PRODUCTIVE																			
NON-PRODUCTIVE																			

	VOLUME OF THE UTILIZED NATIONAL INCOME						STRUCTURE OF THE NATIONAL INCOME IN PER CENT							
	STATISTICAL PERIOD	PLANNED PERIOD, VARIANTS						STATISTICAL PERIOD	PLANNED PERIOD, VARIANTS					
NATIONAL INCOME														
CONSUMPTION														
INCLUDING:														
PERSONAL CONSUMPTION														
OUT OF WHICH:														
COMMODITY CIRCULATION														
CONSUMPTION IN KIND														
ELECTRIC POWER, WATER, GAS														
PURCHASES FROM WORKMEN														
HOUSING WEAR AND TEAR														
COLLECTIVE CONSUMPTION														
ACCUMULATION FUND														
INCLUDING:														
ACCUMULATION OF THE FIXED PRODUCTIVE ASSETS														
ACCUMULATION OF THE FIXED NON-PRODUCTIVE ASSETS														
OTHER ACCUMULATION														
INCREASE IN THE CURRENT FUNDS														
INCREASE IN STOCKS IN THE SPHERE OF CIRCULATION														
INCREASE IN THE RESERVES														
OTHER OUTLAYS														

GROSS OUTPUT OF THE BRANCHES OF INDUSTRY AND THE NATIONAL ECONOMY

Table No.26

TABLE NO. 20

	GROSS OUTPUT						GROWTHRATES						GROWTHRATES OF THE INCREASE					
	STATI- STICAL PERIOD	PLANNED PERIOD, VARIANTS					STATI- STICAL PERIOD	PLANNED PERIOD VARIANTS					STATI- STICAL PERIOD	PLANNED PERIOD, VARIANTS				

Hence, the computations of the planned inter-branch balances represent the analytical material of great value. These computations enable us to carry out a deep economic analysis for the most significant inter-branch and inter-branch relationships, for the structure of material production. In the process of the analysis an opportunity offers to determine the modifications of this structure in the planned period in terms of different variants of the balance. The returns of the analysis for the planned inter-branch balance can be practically utilized in various directions: in order to determine the appropriate volume of production and of the most significant products in branches; in order to check the equilibrium of the plan, etc. On the basis of the analysis for the data of the planned inter-branch balance it is possible within a comparatively short period of time to calculate several balanced variants of the plan and to choose among them the one most suitably corresponding to the objectives and possibilities of development in the national economy at the given stage.