

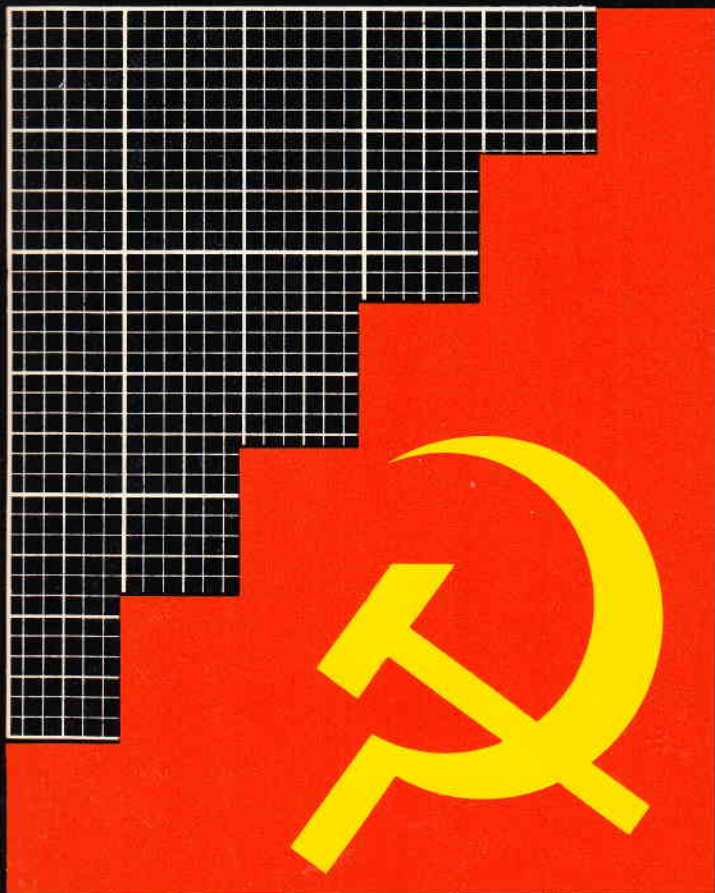
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Economic Methods and the Effectiveness of Production

E.G. Liberman

A Study of
Soviet
Economic
Reforms



**ECONOMIC METHODS
AND THE EFFECTIVENESS
OF PRODUCTION**



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OF PRODUCTION**

by E. G. Liberman

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FOREWORD

Even if *Economic Methods and the Effectiveness of Production* had been published anonymously, the book would be important and useful for those interested in current Soviet economic processes. It provides an unusual and happy amalgam of descriptive information as well as a general discussion of several issues which stand at the frontier of Soviet economic theory. The fact that Evsei Grigorievich Liberman is its author makes this book virtually required reading. While one may join Liberman in his long-standing attack on those Western journalists who attach the label of "Libermanism" to the economic

reforms initiated in the USSR during the mid-1960s, his apparent modesty leads him to understate the role he has played in this process. If not the "architect" of the reform announced by Premier Kosygin in 1965, Liberman can justly be regarded as its catalyst.

The association of Liberman's name with Soviet economic reform became firmly established with the 1962 publication of an article in *Pravda*. (1) Some previous work, now available in English (2), shows that the 1962 proposals were not something quickly developed because "the time seemed right." *Economic Methods and the Effectiveness of Production* is the most recent, and the only comprehensive, presentation of Liberman's approach, and it is the first full-length volume he has devoted to the subject.

The book should appeal to readers with various interests. Those who are familiar with the author's incisive and often colorful criticisms of the operation of the Soviet economy (3) will not be disappointed. Seldom does one find the shortcomings of Soviet planning described with the verve and detail that appears in the first portion of Chapter III. For those concerned with the nature of the economic reform, Chapter I provides a concise delineation of its major characteristics. In the concluding chapter, Liberman appears, once again, as the advocate of further reforms aimed at the simplification and rationalization of success criteria for Soviet enterprises.

The most unexpected parts of *Economic Methods and the Effectiveness of Production* are those sections devoted to the more rigorous and mathematical tendencies that have appeared in Soviet economic literature. Here Liberman demonstrates considerable knowledge and a gift for lucid presentation. For example, without attempting to settle the question, the section of Chapter III entitled "Con-

cerning the Optimality of Plan" is a concise exposition of conflicting views of the nature of the Soviet economy's "objective function," i.e., what national economic plans should attempt to maximize.

One caveat. The reader who is not familiar with Marxist economic categories and schemes of reproduction will find several portions of the book puzzling. (I have prepared a glossary that may be of some help.) For most Western readers, the section in Chapter III entitled "Concerning Capital Intensiveness" will probably prove to be the most difficult portion. The source of this difficulty is the juxtaposition in this section of three concepts of output: output measured in current prices; the "mass" of output (constant prices); and the Marxist "value" of output. The important issue here is a key element in previously accepted Stalinist economic doctrine, that is, the "law" that the output of producers' goods (Department I) must grow at a more rapid rate than the output of consumers' goods (Department II). The reader who never viewed the "law" as a meaningful economic postulate might choose to skip over this section. However, the "law" apparently continues to play a role in Soviet discussions of macro-economic dynamics, and Liberman's argument against its universal applicability is cogent.

In portions of the manuscript the reader may find that Liberman protests too much—e.g., with respect to the difference between the role of profit in the conduct of a socialist enterprise as compared to a Western corporation. However, his position has so often been oversimplified that his effort to restate his views is both useful and instructive.

In *Economic Methods and the Effectiveness of Production*, Liberman has provided us, at least for the present, with the definitive and most detailed presentation of "Libermanism" that we have. (4)

Notes

1) "Plan, Profits, Bonuses," translated in *Problems of Economics*, Vol. VIII, No. 3.

2) See *Problems of Economics*, Vol. VIII, No. 2, for translations of "Cost Accounting and Material Encouragement of Industrial Personnel," "Planning Industrial Production and Material Stimuli for Its Development," and "Economic Levers for Fulfilling the Plan for Soviet Industry." These articles originally appeared in 1955, 1956, and 1959 respectively.

3) A superb example is "The Queue: Anamnesis, Diagnosis, Therapy (Concerning the Dubious 'Full Utilization' Theory)," translated in *Problems of Economics*, Vol. XI, No. 5.

4) In addition to those already cited, a number of other articles by Liberman have been translated in *Problems of Economics* and reprinted in the two-volume collection *Planning, Profit, and Incentives in the USSR*, edited by Myron E. Sharpe (White Plains, New York: International Arts and Sciences Press, 1966). The collection also contains many of the important contributions by other Soviet economists who participated in the discussion of the economic reforms, as well as the major documentary material that resulted from the discussion and set the guidelines for the reforms.

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PREFACE

TO AMERICAN EDITION

I consented to the republication of my book in the USA in the belief that such republication is an act of useful scholarly exchange. In my work, I clarify my position with respect to the role played by profit in a socialist economy. Profit is one of the most important indices of the operation of socialist enterprises. But profit is not the goal of planned socialist production. For this reason, profit is not the only yardstick for assessing the effectiveness of socialist production. Increased output, improved quality, higher labor productivity and rate of technological progress—all these

factors, like other economic indices, must be taken into account along with the profitability of production.

As clearly evidenced by the decisions of the 24th Congress of the CPSU, the goal of socialist production is to satisfy the growing material and nonmaterial needs of the Soviet people.

In this book I attempt to show why the concept of so-called "market socialism" is incompatible with technological progress and is unacceptable for socialism.

However, informed American readers themselves see that major oligopolies (monopolies) in the USA and in other capitalist countries are trying to rid themselves of the power of the market and to restrain the notorious "free private enterprise" which hinders the introduction of technological advances. To be sure, in the West this process is in no way aimed at social interests but merely at strengthening the economic potential of the major monopolies. Under socialist conditions, as I try to show in my work, increased effectiveness of social production is aimed entirely at satisfying the needs of the working people. In this process, extensive use is made of the mechanism of commodity-monetary relations and of the personal interests of participants in production, and moral and material incentives are combined and reinforce one another. Ways of solving this problem are discussed in the present work.

Under socialism, both the absolute and relative (i.e., per capita) increase in national income constitute the criterion of optimality of social production. Moreover, the increase must be such that the growth rate of the consumption fund is not lower than the growth rate of the total national income (and sometimes even surpasses it). This is entirely in keeping with the decisions of the 24th Congress of the CPSU on the tasks in developing the USSR national economy for the next five years (1971-1975) and for the future.

I hope that the American reader will find something of use in the materials and ideas presented in my book.

EVSEI G. LIBERMAN
Kharkov, September 1971

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**ECONOMIC METHODS
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OF PRODUCTION**

INTRODUCTION

It can be said without any exaggeration that, as a sphere of human scholarly and practical activity, economics is becoming one of the main objects of public attention in the second half of the twentieth century. This is especially true in socialist countries, where the people's efforts are resolving problems concerned with the creation of materially and morally flourishing societies.

Ultimately, the victory in the historic competition between the two worlds will be won with the unquestionable economic supremacy and the high standard of living of people in socialist countries. However, the problem of raising the standard of living is solved by the effectiveness of the production system, by its ability not only to satisfy historically formed needs but also to influence actively the structure of consumption.

The high degree of effectiveness of the socialist produc-

tion system is in large measure due to (1) the public ownership of all means of production, which, as is shown by the history of the USSR for more than 50 years, guarantees the continuous, rapid, and planned development of production, and (2) the management of the entire ramified production apparatus based on the conscious utilization of the economic laws of socialism.

The economic measures that are being implemented in our country and in other socialist nations are specifically and chiefly aimed at increasing the effectiveness of social production through improvements in the system of centralized planning and management, through the intensification of economic incentives both for individual workers and for entire production collectives, and through the deeper understanding and utilization of economic laws in the management of the national economy.

During the implementation of the economic reform in the USSR, the bourgeois press and radio have distorted, and continue to distort, the scientific views of a number of Soviet economists (the views of the author of the present book in particular), even though in their writings Soviet economists have repeatedly emphasized the necessity of improving the system of planned, centralized management through the more complete use of the objective laws of socialism, of economic incentives and of management methods, and through the application of Leninist principles, inherent in socialism, of arousing the material interest of the working people. Western critics claim that the USSR is adopting the capitalist motive for the development of production—profit. This has been and is now persistently repeated, even though any person with the slightest knowledge of economics realizes that profit which goes not to the private entrepreneur but to all society and to the needs required for the development of society has nothing in common with capitalist profit.

In the course of implementing the reform, many problems requiring obligatory resolution arise. The author confines his task to the examination of certain important economic methods of increasing the effectiveness of socialist production.

The methods of managing social production are based on the all-around utilization of the potential stemming from the socioeconomic nature of the socialist system. The economic reform became necessary because of vital demands to make production relations correspond to the existing high level of development of the productive forces.

As indicated in the Directives of the Twenty-Third Congress of the CPSU on the Five-Year Plan for the Development of the National Economy for 1966–1970, centralized planned management of the economy must be concentrated “first and foremost on improving basic national economic proportions; on improving the distribution of production and the all-around development of economic regions; on securing high rates in the production and delivery of the most important types of products; on pursuing a single government policy in the realm of technological progress, capital investment, wages, prices, profits, finances, and credit; and on monitoring economically the effective use of productive capital, manpower, material, and natural resources.”

Even if it is technically feasible, it is difficult and ineffective to resolve operational and current questions on a centralized basis. Today, technology is developing so rapidly and demand and needs are changing so quickly that the system of making operational decisions on the spot, within the framework of the unified optimal national economic plan, is the scientific form of expression of the division of labor in the management process per se.

Even before the reform, the USSR management system was generally effective. It promoted the development of

production at a rate unprecedented in history, extricated the nation's economy from the wretched condition it had been in during tsarist times, raised Soviet society to the level of a highly developed society, proved the possibility for successful management by an association of producers without the participation of capitalists, and prepared the prerequisites for the creation of communism's material and technical base. All these things are evidence of the inexhaustible strength of a people liberated from the fetters of private ownership of the means of production. But at the same time, the advantages and possibilities opened up by the socialist economic system have not been used fully. In particular, the predominance of administrative methods over economic methods made itself felt. Another factor was that enterprises lacked moral and material incentives for elaborating intensive plans.

The objective need for a substantial change in the methods of planning and evaluating the work of enterprises was felt rather acutely. The decisions of the Twenty-Third Party Congress posed the task of improving the methods of planning and economic incentives to the new Program of the CPSU. The Program of the CPSU states: "The entire system of planning and evaluating the work of central and local organizations, enterprises, and collective farms must arouse their interest in adopting higher plan targets and in the maximum dissemination of progressive production experience."

The Communist Party has persistently sought ways of improving the methods of influencing production and of increasing its effectiveness. The economic reform was preceded by a broad discussion. Personnel of enterprises, scholars, and economists spoke out in the press.

It is important to emphasize that the meaning of the economic reform being carried out in our country does not consist solely in the elimination of shortcomings in manage-

ment. The reform is called upon to create an entire system of management that would ensure further considerable growth in the effectiveness of social production. The necessity for basic changes in the methods of economic management was assessed in this way in the Report of the Central Committee of the CPSU to the Twenty-Third Party Congress: "The interests of communist construction and the necessity for overcoming existing difficulties required not individual, partial amendments but rather the elaboration of a system of measures which would promote the more rational utilization of the gigantic productive forces that have been created in our country, the more rapid growth of public well-being, and the complete disclosure of the advantages of our system."

From this it follows that the economic reform can in no way be reduced solely to raising the role of profit and to imparting a directive nature to this index for evaluating the effectiveness of and encouraging the work of enterprises, or to intensifying collective and personal material incentives. These measures are very important, but they make sense only to the degree to which they promote the functioning of the integrated system of scientific centralized planning and national economic management.

The Communist Party has organized the broad discussion and elaboration of urgent economic issues. Inasmuch as objective conditions in the development of the economy have required continuous improvement in the methods of management, the press has raised and discussed questions relating to improving economic management.

The questions raised by scholars and practitioners in their articles on improving planning and economic incentives evoked great interest among the most varied circles, beginning with the heads of agencies and ending with rank-and-file workers at construction sites and enterprises. By the end of 1962, the editors of *Pravda* alone had received

more than 1,000 articles and responses; the newspapers *Izvestia*, *Trud*, and *Ekonomicheskaja gazeta* received and published numerous materials. Articles on these topics were published in the journals *Kommunist*, *Voprosy ekonomiki*, *Planovoe khoziaistvo*, etc. Different opinions were expressed in the course of the discussion.

The economic discussion was organized and conducted with the encouragement of central and local party organs.

Bourgeois commentators have maintained and continue to maintain in all sorts of ways that, virtually at the initiative of the author of the present work, profit was declared to be the only criterion for evaluating the work of enterprises in the USSR. However, this was pure fiction. In an article by the author entitled "Plan, Profit, Bonuses," published on September 9, 1962, in *Pravda*, it was proposed that profit and profitability be recognized as the basic indices for evaluating enterprise performance, but with the obligatory condition of fulfillment of planned contractual deliveries in physical form and hence also with consideration of the quality of products and their delivery schedules.

Another article, published in *Pravda* on September 20, 1964, and entitled "Once More Concerning the Plan, Profits, and Bonuses," emphasized: "Under our conditions, profitability is by no means the sole index of effectiveness. It is first of all necessary to evaluate the work of an enterprise in terms of how it fulfills its deliveries with respect to quantity, product-mix, quality of goods, and delivery schedules. Contractual deliveries based on direct ties between suppliers and customers are the basis for the stability of plans. And this assessment of the conscientiousness of suppliers must be reinforced by profitability."

However, it must be admitted that the author made a number of imprecise statements. The role of profit as a production stimulator was correctly emphasized. But the fact that the stimulation of an increase in the volume of

output in many cases retains independent significance was not kept in mind. And in the given instance, the profit index cannot be the only one in providing incentives. These inaccuracies provided the basis for the distortion of the author's ideas. In foreign commentaries, the idea of returning to capitalist "market enterprise" was attributed to him, even though the author had nowhere proposed this but, to the contrary, had continually defended the principle of communicating centralized volume and product-mix plans to the enterprises.

It is important to note that a number of economic experiments were conducted parallel to the discussion. Especially significant were the experiments in the sewn goods industry, begun in 1963 at two production associations, the "Bol'shevichka" in Moscow and the "Maiak" in Gorky. The results of the work of these associations in 1963-1965 very clearly showed that the planning of the production of consumer goods on the basis of orders and direct contractual relations with the trade network improves by many times the satisfaction of consumer demand and at the same time leads to an increase in the profitability of production as well as to the acceleration of trade turnover. Successful experiments were conducted at a number of mines in the Western Coal Basin (Ukrainian SSR). The methods of economic incentive were verified at a number of transport enterprises.

In October 1964, a plenum of the Central Committee of the CPSU put an end to ill-conceived and hasty administrative reorganizations. In 1965, special commissions were organized, and they did an enormous amount of work to collect and critically assess various proposals on economic reform. Consideration was given to all materials in the economic discussions, to the elaborations of a number of institutes, and to the opinions of scientists and practitioners, party organizations, and central agencies. The decisions of the September (1965) Plenum of the Central

Committee of the CPSU, which were a comprehensive program for improving management, planning, and economic incentives, were prepared on this basis.

Thus, it is clear that Western propaganda has exaggerated the role of individual economists without any foundation whatsoever. Such an enormous task as the elaboration of the principles of the reform and the implementation of these principles could only be carried out with the effort of the entire Soviet people headed by the Communist Party. The collective thought of many scholars and practitioners was considered in the elaboration of the decisions of plenums of the Central Committee of the CPSU and of the Twenty-Third Party Congress, aimed at further improving the system of scientific management of social production.

The substance of the economic reform was well expressed in the Theses of the Central Committee of the CPSU on the Fiftieth Anniversary of the Great October Socialist Revolution, which state: "This system reflects the altered conditions of socialist management, the increased scale of modern socialist production, qualitative changes in its structure, and the demands of the revolution in science and technology. Since it is consistently socialist in its essence, and since it expresses the necessity for bringing the economic relations of socialism into correspondence with the level and nature of the productive forces, the economic reform means a new approach to economic management. The essence of this approach consists of intensifying the role of economic methods of management, improving government planning, expanding the economic autonomy and initiative of enterprises, and incorporating and improving cost-accounting in every way. In large measure, the successful implementation of the reform depends on the correct combination of centralized management with the economic autonomy of enterprises, on moral and material incentives, on the skillful use of socialist-based commodity-monetary

relations and related economic categories—profit, price, credit, etc., which take on new social content under the conditions of socialism—and on the level of organizational and ideological work among the masses."

CHAPTER 1

GENERAL DESCRIPTION

OF THE ECONOMIC REFORM IN THE USSR

1. Most Important Features of the Reform
2. First Successes in the Implementation of the Reform
3. Shortcomings in the Implementation of the Reform

1. Most Important Features of the Reform

The September (1965) Plenum of the Central Committee of the CPSU made a detailed examination of the state of affairs in USSR industry. It was noted that the organizational structure of management existing at that time and the methods of planning and of economic incentive in industry were not in keeping with present conditions and with the level of development of the productive forces.

Improvements in the system of management were out-

lined in the following basic directions: (1) raising the scientific level of planning, the optimization of planning, and the intensification of the role of long-term plans and norms; (2) eliminating excessive regulation of the economic activity of enterprises and allocating the necessary means to develop their production; (3) strengthening and developing cost-accounting and intensifying economic production incentives with the aid of prices, profits, bonuses, and credit; (4) converting to the branch principle of industrial management.

As we know, the economic reform was elaborated in a rather extensive, specific form. First, there was a substantial reduction in the range of obligatory plan indices communicated to enterprises on a centralized basis, a number of indices were replaced, and the new profitability index was introduced.

Plan targets for the volume of output to be sold are being established for enterprises instead of the gross output index. This substitution is very substantial: it places production under the economic control of purchasers and creates prerequisites for the establishment of organic unity between planning and cost-accounting. The basic product-mix [*nomenklatura*] is also confirmed from above.

In addition to other indices, profit and profitability calculated as the ratio of profit to fixed productive capital and to normed working capital have been established as indices for evaluating the effectiveness of the work of enterprises. Thus, yardsticks of effectiveness which, although they have existed in our country for a long time, have not played a large part in planning, to say nothing of the evaluation of the work of enterprises, have been brought into economic circulation.

In our opinion, the plan should confront production with ultimate goals but should not directly regulate the means of their attainment within the enterprise, which would de-

prive the enterprise of the necessary maneuverability in finding optimal solutions for the fulfillment of plan targets.

Although they retain their importance as accounting indices within the branch, such indices as the number of personnel, the average wage, labor productivity, and enterprise cost of production are not included in the number of obligatory indices that are confirmed for each enterprise.

Even now, certain economists cannot see how such a very important index as labor productivity can be left outside the realm of obligatory centralized planning. But the reform in no way denies the fact that labor productivity is a most important index to the effectiveness of production. The task consists in monitoring the correspondence between the growth of wages (including bonuses from profits) and increases in labor productivity. Difficulties arise in this area because we still have not elaborated a fully satisfactory method for measuring labor productivity at enterprises. This will be discussed in greater detail in Chapter 3.

Payments to the budget and allocations from the budget are established as obligatory plan targets. The volume of centralized capital investment is also confirmed, since this is absolutely necessary for securing the required proportions in the development of branches of production in keeping with centralized national economic plans. The basic targets pertaining to the installation of new equipment as well as the indices of material and technical supply are also planned. In discussing the indices of material and technical supply, it must be borne in mind that, in keeping with the decisions of the September (1965) Plenum of the Central Committee and the Twenty-Third Congress of the CPSU, there will be a gradual transition to the planned distribution of equipment, supplies, and semimanufactures through the wholesale trade system.

Naturally, the restriction of the number of plan indices confirmed by higher-echelon organizations considerably ex-

pands the economic autonomy of enterprises. In no small measure, this autonomy is also promoted by the Statute on the Socialist State Production Enterprise, which extends and legislatively confirms many rights to enterprise heads.

The September (1965) Plenum of the Central Committee of the CPSU outlined such a structure of the incentive system in order to arouse the enterprises' interest in elaborating and fulfilling higher plan targets and in making fullest use of internal reserves and resources. This goal is realized through the unity of the system of planning and economic incentives for enterprise collectives, which serves to increase the country's national income. In this instance, the interests of society and of enterprises are combined more harmoniously.

The development of production is financed by centralized sources as well as by the enterprises' own resources. It is important to emphasize that provision is made for the broader utilization of the internal resources of enterprises and economic organizations as well as of bank loans, instead of nonreturnable budget financing of capital investment.

As a rule, the financing of capital investment and the augmentation of working capital at existing enterprises are done through the enterprise's own financial resources and through Gosbank loans. This essentially alters the attitude of enterprises toward the reconstruction and expansion of production, requires the more thrifty and economically substantiated utilization of new equipment and production areas, and obliges management to give greater attention to increasing the effectiveness of capital investment.

In order to increase the effectiveness of production, payments for fixed and working productive capital have been introduced. In the future, this type of payment may become an important source of national centralized net income and may, to a certain degree, replace other types of

payments, including the turnover tax. This is specifically the method of exerting economic influence on production which basically must counteract the squandering and mismanagement of social productive capital.

It is also important to note that normative payments for capital are established for a number of years so that a properly functioning enterprise will have a profit for offering incentives as well as for covering planned outlays. The more effective an enterprise's operation, the more profit it receives and the larger the share of this profit (after fixed payments to the budget, payments for the use of capital, and loan interest payments) is left at the disposal of the enterprise.

There are also a number of other important innovations that promote the strengthening of cost-accounting and the imparting to it of the nature of a real rather than a formal method of exerting economic influence on production. The role of the economic contract and the material liability of parties for its fulfillment are being strengthened, even to the point of providing for the complete compensation of losses to the injured party by the injuring party.

Liability is being established both horizontally, i.e., between enterprises, and vertically. We allude here to the establishment of guarantees of material liability not only of enterprises to ministries and agencies but also the liability of these organs if they are responsible for losses incurred by the enterprises. The first step in this direction is the conversion of economic and production associations as well as main administrations of industrial ministries to cost-accounting.

The strengthening of the cost-accounting of enterprises is also promoted by the better formulated system of using internal working capital. In the event that this capital is in short supply due to unsatisfactory management, the shortage should not be made up by the budget. An enterprise

should apply for a bank loan, and the interest on this loan should be higher. The interest payment diminishes that part of the profit which is used to form the enterprise's economic incentive fund. This means the realization of the urgent demand that sanctions affect the personal incomes of those responsible for the losses and that these losses not be automatically transferred to the government, as frequently was the case in earlier times. This kind of undefined responsibility was specifically one of the chief features in the formal nature of cost-accounting.

Contractual relations between suppliers and purchasers play a basic part in strengthening cost-accounting and, simultaneously, in improving the planning process. At the same time, direct contractual relations are a way of making product-mix planning more specific. Naturally, direct relations make sense if they are backed up by sufficient legal and economic guarantees.

The system of economic incentives makes provision for the formation of a special source of incentive payments above and beyond centrally established wage rates. The profit created at an enterprise is this source. It has been recognized that the amount of deductions paid from profits into the incentive fund depends on the fulfillment of the plan for increased sales or profits and on the profitability level contemplated in the annual plan (provided that the prescribed mix of key products stipulated in the plan is observed). In those instances when an increase in sales volume is not advisable, the size of the material incentive fund is determined as a function of increased profit.

Three economic incentive funds are formed on this basis: the production development fund, the material incentive fund, and the fund for sociocultural measures and housing construction.

The production development fund serves as a supplement to centralized sources of capital investment. It is

formed through deductions from profits as well as through the use of a certain amount of the amortization deductions earmarked for the total renovation of fixed capital.

The material incentive fund is created solely from profit. The size of the deductions from profits paid into the material incentive fund is determined according to norms depending on the increase in the sales volume (or the amount of profit) and the profitability level stipulated in the annual plan. Norms are established as percentages of the wage fund: for every percentage point of increase in sales volume in comparable prices (or amount of profit) stipulated in the plan for a given year as compared with the previous year; for each percentage point of profitability stipulated in the annual plan.

Norms are envisaged as stable for a number of years and are differentiated by branch (and, where necessary, by groups of enterprises within a branch). Limits on deductions paid into the material incentive fund are not established.

Payments of an established amount are made to the material incentive fund when the enterprise fulfills the profit and sales plan for the product-mix stipulated in the plan. When an enterprise overfulfills the profit and sales plan, additional payments are made to the material incentive fund. When an enterprise fails to fulfill the profit and sales plan for the established product-mix, payments are made to the material incentive fund at a lower rate. The product-mix is assigned to enterprises by higher-echelon organs in the process of confirming the indices of the yearly plan, and, if it is not fulfilled, payments to the material incentive fund are reduced. Other restrictions on deductions to the material incentive fund are not established.

The formation of the incentive fund is connected with the quality of planning at the enterprise. In order to eliminate, or at least diminish, the striving to conceal reserves in

the elaboration of plans at enterprises so as to make these plans easier to fulfill, resources are paid in full into the incentive fund only if the production growth plan is fulfilled. But in the event the plan is overfulfilled, the rates are reduced by approximately 30% for that part of the increase in output which represents overfulfillment. The idea is to make the deliberate lowering of plans disadvantageous, since the enterprise will thereby lose one-third of the incentive it would otherwise receive for the increase in sales which is overfulfillment.

On the other hand, the plan should not be unduly high. Therefore, if the plan is not fulfilled, the incentive payment is also reduced by the same amount compared with the established normative rates. The procedure for reducing rates of payment for the overfulfilled and unfulfilled part of the plan concerns not only the increase in sales (or profits) but also incentives for the profitability level, and such incentive is established without discounts for the level of profitability actually attained on the basis of normative rates solely within the framework of the plan.

The same methods have also been adopted for the formation of the third incentive fund, which is earmarked for sociocultural measures and housing construction.

Of basic importance is the fact that enterprises are not regulated by strictly centralized instructions in the matter of distributing the incentive fund among production participants. Enterprises may elaborate one or another provision on the procedure for awarding incentives on the basis of standard recommended methods in accordance with the specifics of their production. The only point that has been established is that bonuses to workers under presently existing statutes will be awarded from the wage funds in the future as well. But in addition to this, workers may also be paid bonuses from the material incentive fund formed from profit. Furthermore, these bonuses may be

paid under special provisions, for example, for improving the quality of production, for economizing on materials, for mastering new products or processes, as well as on a one-time basis for individual attainments on the job.

The awarding of bonuses to managerial, engineering, and technical personnel and employees is also regulated by special provisions. In addition, certain sums in the incentive fund are reserved for one-time assistance. An important feature is that part of the material incentive fund is earmarked for rewards to personnel based on their performance for the year, depending on their length of service at a given enterprise.

The September (1965) Plenum of the Central Committee of the CPSU emphasized that the price formation system must be improved if the reform is to be successful. Price must more completely reflect socially necessary labor outlays and must assure the compensation of production costs and the accumulation of profit by every normally functioning enterprise. At the same time, prices must also stimulate an improvement in the quality of production and in the expedient service life and reliability of products. Therefore, prices must take into account additional outlays by the producer for the improvement of the quality of goods as well as the effect of such improvement on productive or personal consumption. It has been emphasized that, as a rule, retail prices on consumer goods may be revised only in a downward direction. The reform of wholesale prices was carried out in 1967. The new prices reflect socially necessary outlays much more closely and completely. Nonetheless, in the future as well it will be necessary to conduct work to improve prices.

The reform of the system of planning and economic incentive in industry is inseparable from the simultaneous restructuring of industrial management. The national economic councils did a certain amount of useful work, espe-

cially in production cooperation locally, i.e., on a territorial level. But at the same time, administration based on the territorial principle has also carried negative effects: it has hindered the implementation of a single-branch technological policy; it has weakened intra-branch specialization and cooperation, which are no less important than territorial cooperation; it has led to a certain irresponsibility due to the lack of strict distribution of functions among national economic councils and branch committees; etc. After all the advantages and shortcomings of the branch and territorial systems of management were carefully weighed, a branch system of management was adopted and appropriate branch industrial ministries were created.

The September (1965) Plenum of the Central Committee of the CPSU emphasized the great importance of measures proposed to improve the organization of management and to intensify economic methods for industrial management. The importance of these measures is that they combine unified government planning with total cost-accounting operation of enterprises, centralized branch management with broad republic and local economic initiative, and the principle of one-man control with the enlargement of the role of production collectives. Moreover, democratic principles of management are further expanded and economic prerequisites are created for broader mass participation in production management and for mass influence on the results of the economic work of enterprises. As stated in the Decree of the September (1965) Plenum of the Central Committee of the CPSU, such a system of economic management more closely conforms to modern requirements and permits the better use of the advantages of the socialist system.

The extensive training and retraining of managerial personnel is required for the successful implementation of the economic reform.

Of great importance is the organizational and educational work of the party organizations, whose role is substantially increasing. At the September (1965) Plenum of the Central Committee of the CPSU, A. N. Kosygin stated: "While not supplanting the economic organs, and by abandoning petty wardship over them, from the bottom to the top, party committees are called upon to use their inherent means and methods, especially in working with people, with cadres, with workers, and with the production intelligentsia. Most important is the ability to mobilize the initiative and activity of toilers in our industry, to accumulate their experience and their creative energy."

2. First Successes in the Implementation of the Reform

The introduction of the new system at enterprises has been carried out on the basis of careful preparations under the leadership of ministries and of a special Joint Commission created under USSR Gosplan.

Initially, certain of the best prepared enterprises in various branches of production were converted to the new system. The Joint Commission under USSR Gosplan elaborated guidelines for the conversion of individual industrial enterprises to the new system and, on this basis, a great deal of preparatory work was carried out at many enterprises. This work began with a careful analysis of production potential. In the process, new and higher plans—compared with those previously confirmed—were determined with respect to both sales volume and profit and profitability of enterprises.

The most important prerequisite for converting enterprises to the new system was that the financial relationships with the budget for each ministry not be violated. All additional resources required by the enterprises for the formation of incentive funds had to be sought in additional profit resulting from the use of reserves on the basis of the enter-

prises' own initiative. The allocation of between 60 and 90% of the additional profit to the formation of enterprise economic incentive funds was authorized, and this served as a powerful stimulus for disclosing and utilizing reserves for increasing profitability through increased sales volume as well as through lower enterprise cost of production.

By early 1967, 704 enterprises employing more than 2 million persons had been converted to the new system. Of these enterprises, 43 had operated under the new system since January 1, 1966; 200 enterprises, since April 1; and the remaining number, since July 1, 1966. On their own initiative, the enterprises raised the sales plans initially established for them by more than 300 million rubles and their profit plans by 130 million rubles. In connection with this, planned payments to the budget also increased by 34 million rubles. At the same time, there was a considerable increase in the amount of net income that was left at the disposal of enterprise collectives as the creators of this income: the material incentive fund increased by 80% as compared with 1965, the fund for sociocultural measures and housing construction increased by 60%, and the production development fund increased by 210%. At the overwhelming majority of enterprises operating under the new system, all plan targets were successfully fulfilled and overfulfilled. By the fall of 1967, 5,500 enterprises, which produced approximately one-third of all industrial output and which at the same time accounted for approximately 45% of all profit, were operating under the new system.

In 1966, enterprises operating under the new system sold 600 million rubles' worth of output in excess of the plan and realized 250 million rubles in profits in excess of the plan. In the first half of 1967, these indices improved and amounted to 1,200 million and 300 million rubles, respectively.

The fact that the sale of one-third of the output yielded

approximately 45% of the profit shows that enterprises which had converted to the new system worked more profitably than the others.

By December 1, 1967, the reform already encompassed approximately 7,000 industrial enterprises producing 40% of the output and accounting for more than half of all profit. To a large extent, these enterprises were responsible for the high indices for industry during 1966–1967. At these enterprises, sales increased by approximately 11% in 1966 and by 12% in 1967; profit increased by 23.5% and 25%, respectively. (1)

Enterprises belonging to the USSR Ministry of Instrument-Building, Means of Automation, and Control Systems functioned especially well, since all enterprises and a number of main administrations (associations) belonging to this ministry were entirely converted to the new system in 1967. Under the plan adopted by this ministry for 1967, the sales volume increased by 3.9% over the initially established plan while profit increased by 4.8%. Economic incentive funds rose to 72.5 million rubles. Is this a large or a small amount? K. N. Rudnev, USSR Minister of Instrument-Building, Means of Automation, and Control Systems, cited interesting calculations on this matter in an article. (2) If the enterprises had not been converted to the new conditions at all, then the fulfillment of the initially established plan would have placed 23.8 million rubles at their disposal under the old statutes, or only 33% of the amount they received under the reformed system. But even if the initial plans were overfulfilled precisely to the amount that the enterprises raised their plans in keeping with their conversion to the new system, then the enterprises would have received only 41.4 million rubles, or a mere 57% of the sum that was left at their disposal after their conversion to the new system.

The average yearly increase in production for 1966–

1968 amounted to 16.5% for enterprises belonging to this ministry. The average annual increase in profit was from 19.3 to 29%. The average annual increase in labor productivity was 10%. The number of small plants diminished by one-third, while the number of large plants increased 1.5 times. In 1968, the conversion of all main administrations to cost-accounting was complete. This was a record-breaking year for production growth rates—which reached 18%—and for growth of labor productivity—which reached 11%. (3) By the end of 1968, the reform fully encompassed enterprises belonging to eight union and union-republic ministries as well as many enterprises and main administrations of other ministries.

By January 1, 1969, all railroad administrations, sea-going steamship lines, civil aviation administrations, river steamship lines, and automotive common carriers had been converted to the new system of planning and economic incentive. Experiments connected with the conversion to the new system are in progress in trade, in construction, and at communications enterprises. By April 1969, 3,743 state farms had been converted to complete cost-accounting.

In the first quarter of 1969, more than 5,000 additional enterprises were converted to the new system of planning and economic incentive. Thus, in April 1969, more than 32,000 enterprises producing more than 77% of all industrial output were operating under the new conditions.

In most cases, those indices which are now generally planned by the enterprises themselves have improved following conversion to the new system. Thus, in the case of enterprises that were converted to the new system from the beginning of 1966, labor productivity increased by 8% in a half-year, whereas the industrywide average increase was 5.2%. The number of personnel was lower than planned, and the growth rate of labor productivity surpassed the growth of wages on the whole.

In the case of the first two groups of enterprises (converted prior to June 1, 1966), profit increased by 23.3% in 1966 as compared with the corresponding period in 1965, which was more than twice as high as the average growth in profit throughout industry as a whole (10.6%). More than half of the total increase in profit was due to the reduction in the enterprise cost of production. This attests to the unquestionable success of the first steps of the reform.

The new economic system not only has had an impact directly on production but also has affected the circulation sphere. The turnover rate has been accelerated in the "commodity-money" phase and this has meant considerable additional commodity resources for the national economy without special investment. Of course, this is a one-time reserve which chiefly takes effect only upon conversion to the new system, but it can have very substantial consequences.

As yet there are no generalized data on the acceleration of turnover of capital in production and in circulation at those enterprises that have been converted to the new system. But individual facts are a good illustration of this beneficial process. Prior to its conversion to the new system of operation, the Kirov Turbine Plant in Kharkov required an average of about 60 days for such operations as the dismounting of turbines after the experimental assembly and testing of finished machines, the mothballing and packing of parts, shipping, billing, and collecting amounts due from its purchasers. After the reform, all these operations require only 25 days. Approximately the same thing occurred at the Leningrad Twenty-Second Party Congress Plant: the period between finished production of turbines with a capacity of 200–300 mv. and billing was cut in half.

Furthermore, it is not enough to manufacture parts and submit them to the technical control section. Today, they must be delivered on time and in a uniform fashion. The

prerequisites for the elimination of rush work have been created on a firm economic basis—the interest of collectives in the ultimate effect, specifically, in product sales.

Following the price revision in 1967, the Erevan Chemical Combine began operating at a loss. But with the assistance of its ministry, its equipment was quickly renovated, and as early as 1968 the combine was rhythmically operating at a profit. In the fourth quarter of 1968, its monthly plans were fulfilled, on the average, by 33.2% during the first 10 days of the month, by 33.9% during the second, and by 32.9% during the last 10 days of the month. (4)

In order to ensure rhythmic operations, many plants have converted to shipping on a 24-hour schedule. The Tbilisi Machine-Tool-Building Plant has regularized its shipping documentation and has accelerated the process of submitting payment documents to the bank. One-time purchasers have been completely converted to letters of credit, and in the case of regular purchasers, shipments are made at the beginning of each month so that money for products will be transferred to the plant's current account by the end of the month. While before, overdue indebtedness of purchasers at the end of every month used to amount to 400,000 rubles, in 1969 this amount did not exceed 50,000 rubles. In addition, in 1968, the plant's operation was profitable, and profit increased by 20% over 1967. (5)

The considerable improvement in the use of fixed capital is no less important a consequence of the new system than is the accelerated turnover of capital and the increased measure of rhythmic production. Most important, enterprises have begun to divest themselves of unneeded capital. During 1966, the Kirov Turbine Plant in Kharkov discovered 1,600,000 rubles' worth of superfluous fixed capital and reduced its working capital by 1 million rubles. At the Norilsk Mining and Metallurgical Combine, the value

of released equipment, including equipment in very short supply, amounted to 1.3 million rubles.

At the Mozdokskii Tulle Mill, the workers thought of ways of fulfilling the program on one machine instead of two in order to increase the profitability of production and thereby increase the enterprise's incentive fund; they left two machines instead of five in one of the shops and offered the remaining three to another enterprise.

First and foremost, the economic methods of influencing production result in a changed attitude of people toward production. A. Biriukov, Hero of Socialist Labor and senior rolling-press operator in the rolling shop of the Taganrog Metallurgical Plant, wrote: "The conversion of the plant to the new system of planning and economic incentive has had an extremely favorable impact on our work. We closely watch every sheet (of metal—*E.L.*), and we see to it that it goes directly to delivery, to a freight car and the purchaser, and that all output is more quickly sold. . . . During this time, labor productivity has increased by 30%. . . . The secret of success lies in the friendship and solidarity of the collective, in a conscientious attitude toward the cause." (6)

The reform has also had a favorable impact on improving the quality of output. At the Volgograd Red October Metallurgical Plant, shops "sell" products to one another on the basis of accounting prices that take the gradings and quality of the products into account.

Using their right to chose various types of incentives for different shops, many enterprises have achieved good results in improving product quality specifically with the aid of well-planned material incentive systems. At the Voronezh Excavator Plant, bonuses have been established for many workers for the manufacture of flaw-free goods and for acceptance of goods the first time they are submitted. Shop cost-accounting is also used skillfully for the same purpose.

The Khmel'nitskii Forge and Press Equipment Plant offers an interesting example. In order to test the machine tools it produced, the plant used much plastic, stamping various plastic parts that no one needed. This expenditure was entirely within the "base" for the enterprise cost of production plan and, prior to the conversion to the new system, the plant gave no thought to the use of these "legal" waste materials. But now the workers are trying to use them. The plant has begun receiving press forms and orders for parts and has begun stamping the required items in the course of testing the machine tools. The expenditure of several dozen tons of metal is replaced by the utilization of 2.5-3 tons of plastic which were previously wasted in the form of scrap. Such are the unexpected resources for increasing sales and profits.

The struggle for output quality at enterprises operating under the new conditions has become a permanent process. At the First Watchmaking Plant in Moscow, the terms of material incentive are differentiated by shop. Furthermore, the assembly workers are rewarded when their timepieces are accepted the first time they are submitted, and the inspectors in the Technical Control Section are rewarded for the absence of claims, as is done at the Voronezh Excavator Plant and at other plants.

In the sewn goods industry, there has been an important change that was observed as far back as the experiment conducted at the Gorky "Maiak" Production Association. The factories began producing items from inexpensive but fashionable material, using the technology for sewing high-quality items.

In view of the particular importance of the problem of improving the quality of output, a number of indices characterizing the quality of the means of production are presently proposed: service life, reliability, repairability, etc. Moreover, the question of including such indices as evaluation

indices in enterprise plans is being raised. Proposals have been made to adjust the volume of output against quality coefficients, to introduce special incentive systems for increasing the quality of output, etc.

Of course, such indices may play a positive part. However, in our view it would be irrational to again increase the number of obligatory evaluation indices. Coefficients of quality are needed to substantiate plans for the introduction of new equipment. They are also necessary to certify the quality of output and hence to establish price markups for high-quality products, as well as price discounts on obsolescent products. This factor itself affects the volume of sales and the amount of profits, i.e., the ultimate indices upon which output quality should exert a decisive influence.

No matter how important they might be, economic incentive measures for individual attainments at enterprises are not sufficiently complete. Incentives must be provided for final, aggregate production results. This is why it is difficult to communicate to the enterprises special plan indices pertaining to the quality of output. Quality must have a powerful impact on the ultimate and most important results of production: profit and sales. And it is the business of the enterprise proper to reward those workers who are responsible for product quality from incentive funds formed from profit. In practice, this is what is done. The sewn goods industry rewards workers for the quality of work performed in finishing operations. At clock, excavator, and other plants, rewards to assembly workers for the quality of their output play an especially important part. At many enterprises, the quality index is taken into account, although perhaps as yet to an insufficient degree, in rewarding the workers and executive personnel in those sectors of production where such rewards are called forth by technological requirements.

The flexibility of methods for stimulating workers is an

important attainment of the reform. Plants elaborate and apply specifically those systems of incentives which serve to prod the laggards or to stimulate workers in the decisive sectors of production. At the specialized automotive plant in Gorky, workers in the assembly shop are given additional bonuses for rhythmic output during the month. And this promotes the more successful fulfillment of sales plans.

No less substantial are successes in the utilization of material and moral incentives at light-industry enterprises. At the Rigas-Aditais Knitwear Factory, managerial personnel are rewarded for fulfilling the plan with respect to product-mix, product grades, and profit. In addition, supplementary bonuses are awarded for specific performance indices for each service. For example, personnel in the production planning department are also rewarded for the fulfillment of cooperative delivery schedules; personnel in the engineering department are rewarded for the implementation of planned measures relating to new equipment; and personnel in the sales department are rewarded for the fulfillment of contractual deliveries of basic products and for observing the norms for inventories of finished goods.

Light industry has conducted an interesting experiment which places at the disposition of shop chiefs a certain incentive fund as a percentage of the actual shop profits to be used for additional bonuses to individual workers achieving the best results in intrashop socialist competition (the Voroshilovgrad "Severokhod" Fiftieth Anniversary of the Great October Revolution Combine). In the pattern-cutting shop of this combine, the leading shift receives a monthly bonus of 300 rubles and the leading brigade receives a monthly bonus of 150 rubles (in 1969). Thus, moral incentive in the form of awarding the titles of leading shift and leading brigade is reinforced by material incentive. (7)

One of the most notable results manifested in the work of enterprises in 1966-1968 was the disclosure of reserves

and their inclusion in counterplans initiated by enterprises, even though individual enterprise directors initially accepted this task with a certain amount of conservatism.

In this connection, N. E. Drogichinskii, Chief of the Department for the Introduction of New Methods of Planning and Economic Incentive of USSR Gosplan, wrote: "The habit of striving for an easy plan and of maintaining a reserve for the overfulfillment of the plan virtually became the norm, and for this reason the present striving to obtain a higher target, observed on the part of all plants, factories, and firms converted to the new system of planning and economic incentive, seems rather strange to some people. But all of us must surmount this psychological barrier. Indeed, such is the impact of economic methods: you cannot argue with them as you previously argued with higher-echelon organizations in an attempt to prove that the targets assigned to you were unrealistic." (8) This is a characteristic confession by a specialist who has himself long worked in the system of planning organs.

Less resources—more output! This slogan is being implemented in practice by the collective of the Shchekino Chemical Combine. The Central Committee of the CPSU has heard a report on the work of the party committee of this combine. (9) As a result of work carried out at the combine, there has been a substantial increase in output and a simultaneous decrease in the number of personnel through improvements in the organization of production, labor, and wages. In the space of two years, labor productivity has increased by 87% and output by more than 80%, while the number employed has decreased by 870 persons. This work is of great national economic importance, and it is recommended that the experience of the Shchekino Chemical Combine be broadly disseminated.

Ability rather than number! This important slogan has been advanced and implemented at many enterprises that

have been converted to the new conditions of planning and economic incentive.

At one time, an article published in *Pravda* in 1966 (10) correctly emphasized that prior to the reform, enterprise heads recognized a very important stage—"the defense of the plan"—when the directors spared neither energy, time, nor eloquence in arguing that the proposed plans for production and labor productivity were intolerably high, while the capital investments, wage fund, number of personnel, and amount of material resources were absurdly small. In principle, the new system changes not only this procedure but the very psychology of managers as well. The "defense" of the plan gradually is losing its former nature, and, instead of "defending themselves," enterprises are beginning to go on the "offensive." To be sure, they are still timid (and, as we shall see later, there are unfortunately serious reasons for timidity). As a result of their timidity, even the higher plans of 1966 and of the first half of 1967 were overfulfilled to a considerable degree, with respect to both the volume of sales and profits.

In spite of the significance of material incentives, they will not be fully effective unless they are combined with moral incentives. Our leading workers realize this fully. K. Fomin, a machine-tool operator in Rostov-on-the-Don, wrote to *Pravda* that during 20 years on the job, he had received bonuses, commendations, and certificates many times. But what did he remember most? An instance when, at the end of the shift, the brigade leader took a short break and shook the then young Fomin's hand in the presence of all, saying: "Fomin, you did a good job today. The entire brigade thanks you."

K. Fomin correctly observes that such a good thing as the awarding of bonuses should not be bureaucratized. Unquestionably, bonuses "have become a perceptible addition to wages but nothing more. And yet the meaning of the

bonus also includes something else. A bonus should carry an educational thrust and should produce in others the striving to follow leading workers." Bonuses should not be awarded in the conventional way: "A thick document is shoved through a narrow window. You sign opposite your name and the cashier quickly counts out the proper sum—take it and leave." (11)

Bonuses "with a garnish of indifference" that offends the actual recipients must everywhere become a thing of the past. Those who reduce our reform to "the power of the ruble or ready cash" are mistaken. *Social recognition of labor services and skill—this is the most important thing that every ruble of bonuses carries with it.*

As we see, changes in psychology have affected not only the managers—heads of shops and enterprises—but the workers as well. In his letter to *Pravda*, A. Pozdniakov, a steel founder at the "Red October" plant, told how the reform genuinely aroused the interest of workers in the results of the work of the entire collective of open-hearth shop No. 1. Pozdniakov wrote: "It is no secret that not every worker previously thought seriously about the fulfillment of the plan. They knew that in one way or another the program would be fulfilled. And since there was a plan, there would also be a bonus. For this very reason, the meetings were sluggish, boring, and without particular activity." (12)

Now the picture has changed entirely. Every worker at the plant knows how much a given material costs and how much the overexpenditure of each ton of fuel or ferroalloy amounts to. Questions of how to improve the quality of output and reduce defects are very actively discussed.

This is one of the most important results of the economic reform: the increase in the effectiveness of production is genuinely becoming the common goal for one and all. And this must be developed in every way by improving the

methods of evaluating and stimulating every working collective through the combination of material and moral incentives.

The production development fund is also being skillfully used. The "Conditioner" Communist Labor Plant in Kharkov has used this fund to implement measures to raise standards of production and industrial design, and to improve working conditions. These measures enabled shop No. 5 to increase labor productivity by 20–25% and enabled the foundry shop to raise labor productivity by 10%. The share of manual labor has been reduced to 19%, and manpower turnover has been sharply reduced. In the space of three years, the average annual increase in the production of central conditioners was 21%, balance-sheet profit increased by 18.3%, production profitability increased by 14%, and profit per ruble of fixed capital increased by 15.9%. It is noteworthy that the entire increase in the volume of production was realized exclusively through higher labor productivity without an increase in the number of personnel. (13)

The successes of the reform by no means indicate that everything has been perfectly smooth and that there are no difficulties in the implementation of the reform. Against the background of the existing possibilities, many shortcomings in various aspects of the implementation of the reform have been revealed. The economic reform has taken only its first successful steps on the complex road to bringing our production relations into correspondence with the level of development of the productive forces, and the methods of planning and management into line with the demands of the objective laws of socialism.

3. Shortcomings in the Implementation of the Reform

Certain shortcomings in the implementation of the reform are objectively due to the complexity and novelty of

the tasks involved in the profound reorganization of management methods. Some of the difficulties are connected with the vitality of conventional methods of management and with the striving to preserve former indices, calculation methods, and methods of evaluating the work of enterprises.

Noting the difficulties and shortcomings in the first stage of the economic reform, N. K. Baibakov, Chairman of USSR Gosplan and Deputy Chairman of the USSR Council of Ministers, wrote: ". . . The introduction of the new system requires a change in the methods of production management and necessitates learning how to work under the new system. And this does not come immediately." He noted that many shortcomings are also due to the "habits of individual personnel. These shortcomings cannot be eliminated all at once, by an order. The more complete and consistent introduction of the economic methods of management will result in the disappearance of voluntaristic administering." (14) Painstaking and extended work is required to overcome these difficulties. There are problems stemming from the fact that not all organizational-technical and methodological questions were elaborated with sufficient completeness. And under the influence of the new economic conditions, they require additional work.

It is most advisable to consider shortcomings in the implementation of the reform in terms of the basic directions of improving the methods of planning and economic incentive, beginning with the communication to enterprises of targets concerning the volume of sales and the product-mix for the most important items.

In planning the indices for 1968, some ministries did something that did not conform at all to the reform. Z. Belozerova, Director of the Rosa Luxemburg Knitwear Factory (Kiev), told participants in the *Ekonomicheskaja gazeta* "Business Affairs Club" that the Ministry of Light Industry—both republic and all-union—was planning pro-

duction in terms of 15 (!) indices, including enterprise cost of production as well as the number employed, even by groups. (15)

In practice, since the wage fund is planned, ministries must control the correspondence between the actually expended wage fund and the volume of gross output. V. Firsov, Director of the Nevskii Machine-Building Plant, wrote in this connection: "A strange situation is created whereby an index planned from above (wage fund) will be controlled in terms of its correspondence to a calculated index planned by the enterprise itself (gross or commodity production). And since there can be no control without a plan, clearly the wage fund will be planned on the basis of the volume of gross output, and the latter can be restored to its rights through this roundabout but 'reliable' way. Moreover, if the plant tries to work on the basis of minus tolerances and to decrease the weight of items, this is bad for the 'gross.' It is specifically according to the volume of gross output that the planning calculation of the directive index—the wage fund—is made, and this places the plant in a difficult position, since it has to abandon economical items in the name of gross output." (16) The wage fund for the Voronezhsel'mash Plant is planned in the old way—based on output per worker and gross output. But since the plant has a special design office, four-fifths of whose activity is not connected with the needs of the plant, the wage fund was slashed by 190–200 thousand rubles. (17)

The restriction on the number of indices planned from above would seem to be a question already resolved in documents on the economic reform. Attempts to increase the number of obligatory indices planned for the enterprises were still explicable in the early period of the reform, for example in 1966. But here we have before us a publication of a talk between L. Kulichenko, First Secretary of the

Volgograd Regional Committee of the CPSU, and A. Karpov, Chief Economist at the "Red October" Metallurgical Plant. This plant is one of the 43 enterprises first converted to the new operating conditions in January 1966. And it would seem that everything should be in exemplary order at this plant. But it turns out that the Ministry of Ferrous Metallurgy decided (with reference to the early part of 1969) to confirm even repair schedules for all open-hearth furnaces, rolling mills, and all metallurgical equipment. A. Karpov states: "For some reason, they take care of us as if we were little children. If we spend 1,000 rubles on capital repair, we have to write a certificate. . . . We write reports on the work of each unit, with respect to every index. And the number of planning indices is already approaching 20." (18)

Basic shortcomings are also manifested in the striving of ministries to impose higher sales volume on the enterprises. This is an expression of uncertainty that, independently, the enterprises will sufficiently utilize their production capacities and disclose reserves. This aspect of planning requires further improvement.

The question of what the "product-mix of most important items" is must be clarified. At present, its definition is chiefly left to the ministries. But the ministries tend to expand rather than restrict this product-mix, and this expresses a tendency to retain the old methods—to provide a greater degree of regulation, since otherwise they supposedly cannot be responsible for the results.

The following curious example can be cited. Among a number of indices, the Republic Ministry of Light Industry also plans the quantity of most important products for the R. Luxemburg Knitwear Factory in Kiev. Trade organizations have been demanding such items as openwork stockings. Such hosiery is more labor-intensive, and the productivity of the equipment declines somewhat in their

production. In terms of cost, such hosiery is a profitable product, and the factory could realize 10 million rubles in profit, though the number of items would naturally be somewhat smaller—3.9 million pairs as opposed to 4.5 million pairs. But the ministry officials say: “No, you are not entitled to do so. You can produce stockings and socks in any assortment, but you must turn out 4.5 million pairs in keeping with the plan.” It can be guessed that the knitwear branch, like many others, also reports to Gosplan, to the Central Statistical Administration, and to the ministry on the quantity of items as well as on other indices. Hence, here we observe a tendency to retain the old methods of evaluating work.

Let us now turn to the indices of profit and profitability. The Ust'-Kamenogorsk Lead and Zinc Combine put into operation a shop for processing slag. The shop employed a mere 200 persons. In order to produce the same amount of raw zinc that is produced by this shop, it would have been necessary to open a new mine employing 800 persons. However, the combine is reproached for having excessive manpower. But the result is that the combine increases its profits by reducing waste while its work is evaluated in the old way: according to “gross output.” The extraction of raw materials from waste is a more labor-intensive operation than the extraction of raw materials from ore. Therefore, average output per person declines while wages per ton of raw material may rise somewhat. In return, society obtains an additional amount of valuable raw materials without considerable capital investment and virtually without material expenditures.

This example illustrates with sufficient clarity the possible consequences of evaluating and stimulating production according to the gross output index instead of basing the evaluation on the volume of sales and profitability.

Profit and profitability still do not occupy their proper

place in the system of planning and evaluating the work of enterprises. In many cases, payments for funds comprise an insignificant share of payments into the budget. For example, at the Kosinskii Knitwear Factory, payment for productive funds comprised only 3.8% of the profit, while payments of the free remainder into the budget amounted to 80% of the profits (following the formation of incentive funds). This is also the case at many profitable enterprises.

Enterprises have used their right to reward increased sales volume and profitability in such a way that the reward for increases in sales was dominant. Therefore, the importance of profit and profitability would seem to be relegated to a lesser place. In accordance with the Standard Recommendations of the State Committee on Labor and Wages of the USSR Council of Ministers, principal attention should be focused on rewarding increased output or, more correctly, fulfillment of the plan for such growth, while profit, irrespective of its volume, serves only as a source for awarding bonuses. But since the shops almost always fulfill the plans for increased output, even after the reform it is rather frequently the case that engineers and technicians do not feel the connection between their activities and the amount of profit or the level of profitability of production. The only thing they truly feel is the necessity to divest themselves of superfluous productive capital and to make better use of available capital in order to “fit into” planned profitability, and even then this is true only when the index of profitability has been communicated to the shops. However, in other respects everything has remained virtually the same at certain plants: there is still the striving to lower the shop plan for output volume and to “fit into” the wage fund. The realization of a large increase in the planned volume of output or profit vis-à-vis the preceding year is important only for the formation of the incentive fund for the plant as a whole. In the shops, the

impact of these increases is not felt, since frequently no direct quantitative relationship exists between shop incentives and such a criterion as the increase in plantwide profit or the profitability level. This shortcoming in method is being overcome in the course of improving the methods and norms of economic incentives.

Interruptions in the supply of materials and component parts continue to be a major difficulty in the work of enterprises. It is to be assumed that these difficulties are temporary. They are due to the fact that material and technical supply organs have still not been converted to the new work methods, and the system of contractual relations and increased sanctions for the violation of delivery schedules is still not fully in operation. On the whole, the supply system is going through a period of reorganization, and the demarcation of duties between planning organs, branch supply and sales organizations, and territorial material- and technical supply administrations is still not complete.

Instability of supply also frequently leads to instability of production plans. At the Petrovskii Plant in Dnepropetrovsk, product delivery targets have been changed repeatedly. The same complaints have come from other Dnepropetrovsk enterprises as well. The Raichikhinskii Meat Combine was converted to the new system in July 1968. And already during the period of operation under the new system, its plan has been changed three times, and on January 15, 1969, on the basis of a telegram from Rosglavmiaso, its plan indices for the already elapsed 1968 were changed with respect to the production of meat and sausage. As a result, notwithstanding the rather high indices actually attained, the plan proved to be unfulfilled and it was impossible to reward personnel for the fourth quarter of 1968. And this is because plans are sometimes even "corrected" retroactively. (19)

In 1969, the Kharkov Petrovskii Bicycle Plant's profit plan was revised upward four times.

The insufficient stability not only of deliveries but also of plans as a whole stems from the existing procedure whereby only a ministry can alter a plan, while main administrations can transfer the plan target from one quarter to another. When the targets are unrealistic and unfulfillable, they are initially transferred from one quarter to another with the idea of requesting the ministry to correct the plan retroactively only once at the end of the year, when it is already evident that the plan cannot be fulfilled.

The product-mix of the most important items for bearing plants is determined by the sales organization, which does not always have the proper picture of the plants' production resources. On the other hand, the plan for the development of capacities is determined by the main administration, which does not have a sufficient knowledge of the demand for items produced by the plants. This is why, for example, immediately after the Kuibyshev Bearing Plant was converted to the new system and the yearly product-mix plan had been confirmed, in the first quarter of 1966 the plan was changed with respect to 361 types of bearings for a total of 769,000 rubles, and in the second quarter the plan was changed for 801 types in the amount of 2,064,000 rubles. (20)

This is a complicated and fundamental question. In our opinion, changes in orders for bearings are inevitable. In their aggregate, these orders constitute the product-mix plan. And the initial planned product-mix is only a guideline. Orders for metal for bearings produced in small batches need not be determined in advance. Metal should be purchased on the basis of the probable demand for bearings of various types, and, in addition, there should be a certain surplus in the supply of metal in warehouses of Metallosbyt bases or of the plants. Similarly, standard

bearings in small batches should be sold from the warehouse, while major purchasers of bearings should be assigned directly to the producing plants.

Unfortunately, discrepancies in metal supply which were permissible in the initial stage of the reform are also found today. Deliveries under the product-mix plan are made with great interruptions and losses. Some metal profiles are replaced by others, and, according to estimates that are far from complete, this results in a loss of 450–500 thousand tons of metal a year. The reader may say, what of it? That is approximately 0.5% of the rolled metal that is supplied. But how many times are the delivery terms not met? Such disruptions concern not only special but ordinary rolled metal as well.

The reason is that the production of metal is planned by USSR Gosplan and the Ministry of Ferrous Metallurgy, whereas the orders are distributed by Glavmetallobyt of USSR Gosnab. Not one of these agencies is responsible for unsatisfactory supply to the purchaser. The Ministry of Ferrous Metallurgy can alter the production plans for one mill or another without considering orders already issued. Metallobyt can issue orders for mills for which the given assortment has not yet been mastered. As a result, in 1968 Soiuzglavmetall received 37,000 letters and telegrams concerning disrupted delivery schedules. These “shortcomings in metal supply are felt especially keenly under the conditions of the new system of planning and economic incentive.” (21) Deliveries are frequently disrupted because of the violation of government discipline at enterprises and in ministries.

In order to eliminate these and other similar shortcomings, in addition to strengthening cost-accounting relations and increasing the role of material sanctions, it is essential to educate cadres in the spirit of observing government discipline in all elements of our economic system. This is

a very essential prerequisite to the success of the economic reform.

Let us now examine the question of difficulties that have been discovered in the realm of economic incentive. As already indicated, in 1966 the rewarding of shops at plants and factories was aimed chiefly at heightening their interest in fulfilling the plan for increased sales. But at the same time, increased output volume is not required in many branches. After all, commodity lists are not confirmed by chance, and overfulfilling a government plan confirmed for these commodities is forbidden.

At many enterprises it is found that the existing system of economic incentive does not sufficiently resolve the key task of making full use of reserves and of increasing interest in the elaboration of intensive plans. Intensive plans are adopted very timidly, as can be seen in the considerable overfulfillment of plans by many enterprises. This is because a “fine” (i.e., reduced incentive norms) has been established not only for the overfulfillment of plans but also for the underfulfillment of them. One must consider which is more advantageous from the standpoint of the formation of the enterprise’s incentive fund: to lower the plan and overfulfill it or to adopt a high plan and risk its nonfulfillment. On the basis of existing experience, it can be stated that for the enterprise—in the person of its general plant services—the nonfulfillment of the plan is extremely disadvantageous, since in the case of nonfulfillment, even if there is an incentive fund, the heads of plant services lose their bonus either entirely or to a considerable degree. And this is a powerful hindrance to the adoption of sufficiently high plans.

Many believe that the procedure for forming incentive funds is too complex. This point was also discussed at the All-Union Economic Conference in May 1968.

Enterprises justifiably complain that they do not have

a sufficient economic interest in adopting an intensive sales plan and that the incentive norms are revised each year "based on the level attained." At the Omsk Instrument-Building Plant, the personnel themselves have elaborated and proposed the use of profit per ruble of wages rather than increased profit or profitability as the fund-forming index. They correctly believe that labor productivity will grow more rapidly than the average wage. (22)

Tire workers in Dnepropetrovsk believe that the point in the statute on material incentive funds which stipulates that bonuses based on the results for the year not be paid out with the nonfulfillment of sales or profits plans retards the adoption of maximally possible plans. They believe that the nonfulfillment of plans is a punishment in itself, since the size of the incentive fund is diminished. Thus, in the given instance the complete deprivation of bonuses is unnecessary and hinders the implementation of the principle of the reform: all-around stimulation of the use of all potential in the actual planning process.

Difficulties also arise with the use of incentive funds. It is difficult to buy or build anything using the fund for socio-cultural measures and housing construction. Even though material funds were already allocated in 1968-1969, the ministries did not always make these funds available to the enterprises. We have many enterprises, some of whose development funds are relatively small. And if every small enterprise builds or manufactures everything it needs in a primitive way, this proves very costly to society. Therefore, the enlargement of enterprises must play an important role here.

The enterprises themselves do not always make able use of the incentive fund. The greater part of the bonuses is not paid monthly for the fulfillment of plans but instead is paid as rewards for "the fulfillment of especially important assignments." But frequently additional payment for work

on days off and holidays is concealed in such cases. For example, at the Minsk Meat Combine, during 1968 and three quarters of 1969, 55 days off were declared working days in individual shops, and 14 days off were declared working days throughout the combine as a whole. In addition, 4,548 overtime man-hours were worked at that combine. (23) Because of the incorrect use of incentive funds in ways not connected with increased labor productivity and in order to legitimize rush work, the average wage outstrips labor productivity in some places.

Concerning the strengthening of cost-accounting, numerous complaints about the billing and crediting procedure should be noted. The billing procedures do not ensure the prompt payment of money to a conscientious supplier.

Government arbitration boards are supposed to examine claims involving illegal refusal to make payments within ten days, but in actual practice, when a favorable decision is made, as a rule no order for compulsory payment is issued. The respondent is simply obligated to pay off his indebtedness within a month. And only after nonpayment during this period is an executive order issued for the compulsory issuance of payment. Thus, the receiver can make free use of products for two or three months and thereby disrupt the fulfillment of the sales plan on the part of the conscientious supplier. (24)

Frequently, enterprises refuse loans solely because of the great amount of work involved in drawing up operational information on worthiness for credit. Therefore, in January 1966, authorization was granted for issuing credit on the basis of credit worthiness as determined from the enterprise's balance sheet, but this right was qualified with such terms that it is still purely formal. A new approach is needed to the organization of credit and accounts as a whole in the spirit of the reform.

The new Statute on the Socialist State Production Enterprise, ratified in October 1965, is frequently violated. Point 104 of the statute stipulates which organs perform total audits of the work of enterprises and at what times. But in 1966, the Suchanskii Division of Gosbank did not recognize this point and organized numerous checks on the work of coal enterprises. Similar things are also being done by many other organizations.

The rights of enterprises are not uniformly interpreted by various agencies. Should a higher-echelon organization confirm administrative expenditures for an enterprise operating under the new system? In response to a question by A. Iufit, Director of the Leningrad Electrotechnical Plant of the Ministry of Railways, N. E. Drogichinskii, chief of a department of USSR Gosplan, replied that a higher-echelon organization should not do so and referred to a protocol of the Joint Commission under USSR Gosplan dated January 17, 1967, according to which this is a gross violation of the rights of enterprises and undermines the reform. At the same time, in response to a similar question, M. Kuzin, Chief of Personnel Administration and member of the Collegium of the USSR Ministry of Finance, replied that, according to existing data, ministries, in keeping with Point 79 of the Statute on Enterprises, confirm allocations for administrative costs for enterprises converted to the new conditions of work, and stated that the Central Personnel Administration believes that ministries are operating in accordance with the law in this process.

Also deserving of attention is the action taken by certain finance organs locally vis-à-vis enterprises that have been converted to the new conditions of work. Upon being converted to the new system, the Volgograd "Red October" Metallurgical Plant adopted a higher plan and pledged itself to reduce spending on production, including spending on

wages to administrative personnel, by 815,000 rubles. This sum was written into the plan for 1966. Then the plant received a belated directive from the ministry to reduce expenditures by only 205,000 rubles as opposed to the initial plan. The plant paid no attention to this document on the assumption that, since the plant's pledges to economize on spending were higher than this sum, the matter was taken care of. But far from it! The local finance organs interpret the matter in their own way. They regard the sum of 215,000 [sic] rubles as an additional target in excess of the plant's pledges and immediately exact the money from the plant. And even though all authoritative bodies—USSR Gosplan, USSR Ministry of Finance, USSR Ministry of Ferrous Metallurgy—believed that an error had been committed, it was not corrected for a period of four months.

If an enterprise sustains a loss due to violation of the established planning procedure, the plant must have the right to exact compensation for its loss. A procedure must be elaborated for compensating for losses which are not the fault of the enterprise from the special reserve fund of the ministry that has now been created. The recommendations of the All-Union Scientific-Technical Conference on the Organization of Industrial Management (Moscow, 1966) state that higher-echelon economic and planning organs must be made liable when they are responsible for the enterprises' nonfulfillment of plans.

Notes

- 1) "Piatiletka: god tretii. Interv'iu s predsedatelem Gosplana SSSR tov. N. K. Baibakovym," *Izvestia*, January 1, 1968.
- 2) "Effekt reformy," *Pravda*, July 5, 1967.
- 3) K. Rudnev, "Novyi shag reformy: glavki," *Pravda*, February 9, 1969.

- 4) A. Oganesian, "Kliuch k rostu rentabel'nosti," *Ekonomicheskaiia gazeta*, 1969, No. 12, p. 10.
- 5) E. Stoliar, "Realizatsiia uskorilas'," *Ekonomicheskaiia gazeta*, 1969, No. 13, p. 10.
- 6) A. Biriukov, "Khoziain zavoda—kazhdyi," *Pravda*, August 2, 1969.
- 7) N. Volkov and M. Nazarov, "Material'nye i moral'nye stimuly," *Ekonomicheskaiia gazeta*, 1969, No. 13, p. 12.
- 8) "Eshche dvesti," *Ekonomicheskaiia gazeta*, 1966, No. 18, p. 8.
- 9) See *Pravda*, October 9, 1969.
- 10) See S. Balbekov, "Million v avangarde," *Pravda*, May 24, 1966.
- 11) K. Fomin, "Premiia s garnirom," *Pravda*, February 15, 1969.
- 12) A. Pozdniakov, "Reforma i rabochie," *Pravda*, October 21, 1967.
- 13) *Krasnoe znamia*, September 13, 1969.
- 14) "V dobryi put'," *Ekonomicheskaiia gazeta*, 1967, No. 2, p. 36.
- 15) See *Ekonomicheskaiia gazeta*, 1967, No. 37, p. 13.
- 16) "'Val'—raschetnyi pokazatel'," *Ekonomicheskaiia gazeta*, 1967, No. 18, p. 10.
- 17) See *Ekonomicheskaiia gazeta*, 1967, No. 36, p. 35.
- 18) L. Kulichenko, "Ispytanie na delovitost'," *Pravda*, February 21, 1969.
- 19) See G. Khmeleva and T. Naumova, "Zadnim chislom," *Ekonomicheskaiia gazeta*, 1969, No. 8, p. 12.
- 20) N. Rudakov and N. Shumskii, "Mnogoobeshchaisshchie itogi," *Ekonomicheskaiia gazeta*, 1966, No. 38, p. 11.
- 21) N. Chernyshev, "Zakaz na metall," *Pravda*, February 20, 1969.
- 22) A. Nazimov and B. Zhelezniak, "Nashi predlozheniia," *Ekonomicheskaiia gazeta*, 1969, No. 18.

23) A. Skripchenko, "Pod flagom 'osobo vazhnykh zadanii,'" *Ekonomicheskaiia gazeta*, 1969, No. 24, p. 7.

24) See P. Startsev and I. Divnogortsev, "Sistema novaia, metody starye," *Ekonomicheskaiia gazeta*, 1967, No. 35, p. 13.

CHAPTER 2

CONCERNING THE OPERATION OF THE LAW OF VALUE

1. Commodity-Monetary Relations Under Socialism
2. Profit Under Socialism

1. *Commodity-Monetary Relations Under Socialism*

The economic reform in the USSR has confirmed the essential role of commodity-monetary relations in the system of planned economic management. On this basis, a more detailed examination should be made of a number of questions of principle and methods concerning the most effective means of using commodity-monetary relations in our economic practice.

The historically determined level of development of socialist production and of the social nature of labor gives rise to the necessity of comparing the labor of every worker and every collective against the results of their labor. The value

form of such comparison is due to the fact that the socio-economic heterogeneity of labor has still not been completely surmounted. There is complex and simple labor, mental and physical labor, skilled and unskilled labor. The expenditures of labor of individual workers and collectives of workers may be higher or lower than the socially necessary expenditures of labor on a given type of use value.

Since the measure of labor must be controlled, when activity in the form of the product of labor is exchanged, the need arises to observe equivalence and to equate the products of labor. The products of labor can be compared and exchanged by equating them to a third, particular product of labor—to money, the universal commodity equivalent.

Soviet scholars differ in their explanations of the reasons underlying the existence of commodity-monetary relations in socialist society. Thus, some of them claim that the basic reason is the social heterogeneity of labor, while others believe the cause to lie in the necessity for offering material incentives for labor. In our opinion, these viewpoints are not contradictory. Material work incentives are necessary since it is essential to compare the measure of consumption against the measure of labor, and this in turn is connected with the social heterogeneity of labor.

Similarly, debates as to whether socialist production can or cannot be called “planned commodity production” or only “production in which commodity-monetary relations are used” seem relatively fruitless. Since the specific point at issue is the planned production of goods and services, it is clear that spontaneous, market-type commodity production is not involved. Planned patterns [*planomernost*] are evidence of the directly social nature of production. The economic relations of people are not concealed by an imaginary mask of relationships between things, and hence commodity fetishism is overcome. Exchange value does not play the role of universal or sole regulator of proportions in the dis-

tribution of social labor. Therefore, the commodity nature is not a constituent feature in socialist production, but it is nevertheless an integral feature together with other essential characteristics.

Highly developed socialist production is based on the profound social and technological division of labor. Specialization and cooperation are a guarantee of the transition to the highest forms of automated production. The division of labor means the organization of production in the form of numerous branches and enterprises. Since the means of production are owned by all the people, production in the USSR is unified, and hence it would be inconceivable to manage the economy without a single nationwide plan.

But at the same time, our production system is being divided up into a number of operationally autonomous enterprises. It is impossible to monitor and compare expenditures on production against the results of production solely by calculating the labor of each individual employed. The output of modern production is not only the fruit of the efforts of individual workers but, in larger measure, the result of the efforts of the collective worker. It is also necessary to use value levers and such a special economic category as cost-accounting in assessing, stimulating, and consciously managing enterprises in general. The exchange of activity between enterprises is now in the form of the movement of goods.

The operational autonomy of enterprises and the need to manage them in one way or another will also be preserved in communist society. But without indulging in utopian forecasts, it can be affirmed that the compensability of each act of exchange of activity need not be monitored. The different attitude toward labor and the abundance of goods will fundamentally change the methods of managing production and distribution of the results of labor.

The planned patterns of our production and circulation do not exclude many of the most important features that are characteristic of commodities in general: the necessity for compensated exchange, the social recognition of commodities through their sale, and the reduction of expenditures to the socially necessary level and the reduction of the latter level to a minimum. But at the same time, commodities under socialism do not have many features that are characteristic of commodities of previous formations and especially of the capitalist formation. Commodity exchange in socialist society expresses the division of labor and society's control over the production of associated producers.

In our production system, not all elements are of equal value with respect to the role that they play in the social division of labor. Within enterprises (collective farms, state farms) there is a technological division of labor; there is no commodity circulation between shops (sectors); the correspondence of labor to technological rather than social norms is monitored directly.

But there is social division of labor between enterprises. It is mediated by commodity circulation and monetary relations even if the buying and selling of commodities was anticipated in the necessary instances by the social form of planned distribution of the social product.

In our country, the social recognition of commodities takes place as though in two stages. Initially, the plan establishes the proportions for the distribution of labor by branches of production, and this guarantees a general and basic correspondence of the commodity mass and its structure to social and personal needs. This reflects the directly social character of labor and constitutes a key advantage of our system, which safeguards society against crises, disproportions, and unemployment. But this is followed by concrete social recognition of every commodity unit. This

recognition takes place with the aid of acts of commodity circulation.

The way in which centralized planning is combined with commodity-monetary relations is an extremely fundamental question. The notion of two forms of economic relations is rather widespread. The first form—direct relations—refers to planning acts and decisions, directives on economic questions, instructions, and orders. This is the principal, dominant form of relation under socialism. The second form is, so to speak, an indirect rather than a direct relationship based on commodity-monetary relations. It is a supplementary, auxiliary form, but at the same time it is very important for ensuring the material interest of the working people and for realizing the first form of relations. The second form of relations is compensatory, based on the principle of equivalent commodity exchange, whereas the first basic form of relations is noncompensatory and is not based on commodity circulation. Here it is important to note that the second, commodity form of relations, since it is supplementary, simultaneously imparts its value form to the entire system of relations, including planning acts, in such a way that all types of economic relations have a value form under socialism.

The conception of the two forms of relations is suitable for explaining certain complex questions. But at the same time, this conception is far from irreproachable in the face of many facts of economic practice. First of all, our commodity relations turn out to be just as indirect and purely market-oriented as those under the capitalist market exchange. But in fact, this is not the case. In our country, even in the population's purchase of consumer goods, commodity acts have a social nature that is distinct from capitalism. Here, such planned values and relationships as government prices, the volume of commodity supply, and the income of the population play a decisive part. To a considerable

extent, even on the collective farm market, planned patterns exert a perceptible influence, albeit on a local scale. Each purchase of consumer goods is outwardly performed as an act of free choice. But the aggregate of acts of choice is predetermined with particular clarity where proper consideration is given to demand and where supply satisfies demand by surpassing it to an optimal degree. And so our commodity acts can hardly be considered to be solely indirect. Taken in their aggregate, commodity acts are economic relations that realize proportions of the distribution of social labor on a planned basis through exchange.

Here, someone will probably object that the emphasis on the limited "indirectness" of our commodity exchange is an attempt to "invent" an artificial construct in the nature of a "socialist commodity," and that such constructs in turn conceal the attempt to exaggerate the role of commodity production under socialism. But there is no need whatsoever for such "inventions." As an economic category, commodities have essential functional differences depending on the kind of economic formations they serve. At the same time, a commodity continues to be itself, i.e., the unity of value and use value. And as such, it is also destined to serve the aims of planned commodity production for the satisfaction of social and personal needs under the conditions of socialism.

The recognition of the need for and possibility of creating a system that is planned and oriented toward the satisfaction of social needs with the aid of commodity-monetary relations is one of the most important achievements in the Leninist stage of development of political economy. In generalizing the experience of the first years of socialist construction, V. I. Lenin concluded that it was necessary to use commodity-monetary relations under socialism.

Well known are V. I. Lenin's statements concerning the necessity of retaining money clear up to the building of

communism; concerning the important role of profit, which is henceforth used to benefit all society rather than private entrepreneurs; and concerning the need for our trusts and enterprises to strive to operate without deficits and with a profit. V. I. Lenin considered all these things necessary for the planned, centralized management of social production.

We have had to build socialism at the same time that capitalism remained in a number of developed countries. Economic competition with capitalism is inevitable. We have been given the opportunity to demonstrate the superiority of socialism in satisfying and elevating the needs of the people and thereby to achieve socialism's ultimate and irreversible victory in the world arena. The successes of the economic reform are evidence of the fact that the skillful use of commodity-monetary relations is multiplying our strength in the economic competition with capitalism. At the same time, we clearly see that our commodity circulation is not a spontaneous, market process but is rather the most economical form for the planned management of the process of production and sale of the social product.

This is the situation with the "indirectness" of commodity circulation. Let us now consider the question of the "non-compensability" of the first form of direct relations. In our view, it is incorrect to regard direct relations as noncompensable, since we are discussing economic relations. Indeed, can anyone believe that, when we plan one or another construction project, we do not contemplate the return that it will yield to the national economy within a certain period? Is not society entitled to count on compensation for the material expenditures and manpower resources utilized?

Of course, one cannot demand that the planning of some basically new measure always be based on flawless economic calculations of compensation. An economic intuition and a certain risk play a definite part. But the less precise

the calculation, the more cautiously and reflectively must decisions be made and verified through expert assessment and experimentation. Also necessary are those actions that are determined not by economic considerations but, for example, by defense considerations.

Thus, in most cases, direct relations of the first type also include expenditures that are compensated, but the form in which compensation is manifested is different. However, this should not distract us from the essence of the phenomenon. One form of compensation is manifested quickly, in every act of commodity exchange. Here, in a manner of speaking, we are confronted by one-time compensation, but even this compensation has already been stipulated in the price, in the commodity mass of each type, and in the effective demand. Another form of compensation is that which is realized over a long period. In a certain period of time, the deterioration of the implements of labor is compensated, the social accumulation fund is restored, and the national income also grows for society. Who compensates society for this? Society is compensated by its own members, by persons employed in various sectors of associated production. The compensation of one-time acts of commodity exchange is also performed through the equating of the labor of one participant in social production, as a purchaser, to the labor of all other participants in production, who have formed a long chain in the consecutive transformation of natural matter into an object suitable for consumption.

As we know, all plans, both long-term and annual, must be balanced, and this ultimately means the exchange of products of one type of labor (for example, to create the means and objects of labor) for the products of another type of labor (for example, to provide society with consumer goods). In principle, all masses of labor to be exchanged should be compensated on an equivalent basis; otherwise society will sustain losses, as happens, for exam-

ple, in the case of low-quality production or in the case of quantitative disproportions. However, when the exchange is equivalent and when labor productivity increases, more and more of the mass of the labor can be directed toward raising the standard of living.

Thus, in our opinion, under socialism there is a unified system of economic relations operating on the basis of planning and on the basis of compensability. Under such an approach, there is no need to consider commodity forms of relations to be "auxiliary and secondary" and thereby to justify attempts at encroaching upon them or ignoring them. At the same time, there is no need to declare direct relations to be "noncompensable."

In this case, it is also easy to prove the incorrectness of the proposition that—in the process of creating the material and technical base of communism—the main forms of relations must expand in every way, while the "secondary or auxiliary" forms must retreat and diminish.

And if we occasionally encounter attempts to intensify the regulation of production life by increasing "direct" instructions from higher-echelon economic organizations, this is partly the result of the pronouncements of those economic theorists who glorify "direct relations" while they belittle commodity and monetary relations, calling them auxiliary, i.e., secondary. Frequently, and not always consciously, commodity and monetary relations are underestimated since they are destined to have only a temporary existence. In the second phase of the communist formation, they will gradually wither. But commodity and monetary relations must be used at present with maximum effect specifically for the earliest possible attainment of this phase. Such is the course of dialectical development. Stages of development cannot be skipped. After all, the state is also destined to wither, but no one would ever think of belittling the leading role of the socialist state during the building of

communist society. We must not forget that the role of science in our country is very important and responsible. In practice, theoretical postulates and terminology that are not sufficiently thought out can lead to actions that are not entirely consonant with the economic interests of society.

The understanding of the necessity for the movement of the products of labor as commodities preserving the contradictory unity of value and use value within the framework of unified, centralized, planned economic management is an attainment of Soviet economic science. Unfortunately, the necessary practical measures have not always followed from these scientific conclusions. Our economic reform is specifically aimed at utilizing the entire aggregate of commodity and monetary relations to the ultimate degree by strengthening and developing the centralized, planned management of social production. Socialism does not create anew commodities, money, price, profit, and wages but rather uses them by producing a fundamental transformation in the essence of these categories by changing their functions. It is useful to recall one pronouncement by K. Marx: “. . . the vulgar economist cannot conceive of forms that have developed in the depths of the capitalist mode of production as being separated and liberated from their antagonistic capitalist nature.” (1) In our country, in addition to certain “classic” functions, money serves as an instrument of nationwide planning, the means of controlling the measure of labor and consumption, and the means of distribution according to labor. But most importantly, money no longer serves as a means of capitalist accumulation and exploitation. It loses, or virtually loses, the functions of treasure. The fact that money has existed for a historically long period by no means discredits money in the eyes of champions of socialism if they judge money on the basis of the essence of phenomena rather than on a formal basis.

The role of the law of value also changes in the same fashion on an objective basis. The use of value categories under socialism in no way contradicts the necessity and possibility for planned economic management. To the contrary, the use of these categories is an important prerequisite for the exercise of control over the compilation and fulfillment of unified government plans. Since the spontaneous impact of the law of value on production—independent of society’s interests—is eliminated, profit ceases to be the aim of production, and crises and unemployment disappear. But the law of value as the law of equivalent exchange of commodities and of the reduction of labor expenditures to their socially necessary level is in the service of planned socialist production.

For a long time, certain economists regarded the law of value as alien to socialism or, at any rate, as secondary. For many years, others unequivocally believed that the law of value did not and could not play any kind of regulatory role under socialism.

It seems to us that the essence and functions of each law cannot be viewed in isolation. After all, in such a case the hierarchy of laws is established in a speculative or in a purely logical fashion. It is as if they were being assigned grades: some of them, for example, the law of economizing time or the law of the planned development of the national economy, are acknowledged to be good laws pertaining to socialism, so to speak, in pure form unsullied by affiliation with commodity relations, while others, including the law of value, are not entirely good and do not enjoy the right of being a regulatory function. But such a scheme is not very convincing. Regulatory functions are exerted by all laws together, in their unity, rather than by each law in isolation from the others. Essentially, the basic economic law of socialism specifically expresses the unity of operation of all other laws, including the law of value.

How can the economy be managed on a planned basis without the regulation of demand and consumption with the aid of the law of value, without the calculation of prices in such a way as to stimulate the optimal use of resources, and, finally, without the regulation of the value proportions of consumption and accumulation funds and the balance of the population's monetary income and expenditures?

In real life, each individual law is not on a separate shelf and is not differentiated by rank. All laws operate jointly, and none of them can be ignored. All economic laws are equal, and the basic economic law is the resultant of all laws, i.e., the expression of their combined force and their synthesis. Therefore, each law has a certain regulatory function (otherwise it would not be a law), and this function can be consciously used in accordance with all other laws and, thereby, in accordance with the basic economic law of socialism.

This is why the proportions for the distribution of social labor cannot be determined solely on the basis of the principles of exchange value. The maximum profit of individual enterprises, and even branches of production, does not always coincide with the national economic optimality criteria—with such criteria as the satisfaction of social needs in dynamic form and the growth of productivity of social labor. Sometimes long-term capital investments with long recovery periods are required, while in other cases such capital investments should be avoided.

There are those who may say that any investment over a period of decades will prove to be advantageous, even from the standpoint of exchange value. But the social constraint imposed by the regulatory function of the law of value specifically consists in the fact that long-term variants of technological development are implemented on a planned basis in the interest of improving the well-being of present and future generations of working people.

In analyzing these variants, however, which are equal from the standpoint of society's interests, we must reckon with the law of value as well as with other economic laws, and we must first develop progressive branches and enterprises with the greatest return, as stated in the decisions of the Twenty-Third Congress of the CPSU.

There is much evidence that, in our country, exchange value itself cannot regulate the distribution of social labor. For example, from the standpoint of profitability, it would be advantageous to increase the sale of alcoholic beverages. However, we are not doing this, since not all consumption is the satisfaction of scientifically understood social and personal needs. The government considers the structure of consumption and does not blindly pursue commercial gain, as is the case in the world of private enterprise.

Thus, each economic law exerts regulatory force to the extent to which it promotes the joint operation of all economic laws. To summarize, it can be affirmed that in socialist society the law of value is used for the purpose of observing those optimal planning directions, rates, and proportions in the development of the national economy that are dictated by the aggregate of society's interests.

It remains true that under socialism the law of value never acts as the sole regulator—it would be simply impossible, since land, minerals, enterprises, and labor power are not commodities in our country.

The law of value is not a spontaneous regulator of production, since spontaneity in the development of our national economy is excluded due to the public ownership of the means of production. The planned pattern is the key, the decisive, feature in the development of a socialist economy. But in this connection I would also like to mention a certain narrowness in the conception of spontaneity.

People who think in an extremely linear fashion frequently believe that since we have a planned economy, lit-

erally every action can and must be foreseen, that the agent, time, and manner by which an action is performed must be designated, and that a check must be maintained to see whether an action is performed in keeping with the instructions. But such an approach frequently leads to irresponsibility. One must remember V. I. Lenin's statement to the effect that unity in the main, fundamental thing presupposes rather than precludes diversity in details, in the approach to the matter where the broadest initiative and creative force of all the masses of laboring people must specifically be manifested.

And indeed, is it practically possible to foresee everything? The very nature of human life is opposed to excessive direct regulation of production activity, which sometimes occurs under the pretext of combating spontaneity. But after all, many individual actions and events—elements of “spontaneity”—cannot and need not be foreseen, even though they will undoubtedly be present in our work and in our life. For example, it is impossible to foresee specifically what kind of clothing a given woman, say, in Kzyl-Orda will want to buy for the winter. It is similarly impossible to say beforehand whether a given vacationer will want to go south for his vacation or fish in the local river. And such economic consequences as the fluctuation in demand for textiles, the shortage of some colors or articles and the failure of others to move, the overloading of railroads in the summer, the shortage of fishhooks and spinning reels, etc., stem from the impossibility of precisely calculating the impact of these “spontaneous” actions by such “undisciplined” citizens.

Unquestionably, our economy is developing according to the laws of determinate planned forecasting. Probabilistic stochastic processes do not dominate our economic relations but are entirely amenable to planned regulation. But these processes do nonetheless exist, and they must be skill-

fully mastered specifically for the purpose of directing them into the planned channel. Therefore, such “spontaneity” should not be combated directly, and regulation of each individual action should not be attempted. To the contrary, from the scientific point of view, the less voluntaristic intervention in such “spontaneity,” the earlier and more precisely can one foresee its ultimate result, master the mechanism of its operation, and act in accordance with scientific forecasting.

After all, it is well known that the necessary is manifested through the accidental. One must seek the pattern in the aggregate of actions which outwardly appear to be independent of one another but which in their aggregate are determined by objective laws. Predictions of human behavior and production events issuing from it cannot be absolutely single-valued or precise. This is a stochastic type of forecasting which is probabilistic to a certain degree. But there is absolutely nothing wrong with such a degree of imprecision in forecasting. One need only elaborate methods for scientifically calculating the reserves or that optimal surplus of resources over needs without which the scientific direction and planned management of the economy is impossible.

Specifically in the sphere of this “spontaneity,” a certain latitude must be given to the regulatory power of economic laws. By knowing the foreseeable results of a “spontaneous” process which, nonetheless, is entirely controllable in its aggregate, one can, for example, also consciously use the regulatory function of the law of value by changing prices in order to equalize supply and demand for one or another commodity or type of service. But this can be done on the basis of the recognized pattern, rather than by voluntaristic and formally administrative methods.

When a citizen takes a taxi, it is a “spontaneous” affair. Every person is free to take a taxi or to travel “by shank’s

mare," as was the saying in olden times. And in each individual case, it is impossible to say why a given citizen did or did not take a taxi, since an innumerable number of reasons unknown to the central authorities can operate here. But in their aggregate, all trips by citizens are based on certain patterns. And such patterns can be studied and controlled, even though in the process we will not issue directives requiring a citizen to take a taxi once every three days.

Academician L. V. Kantorovich demonstrated what scientific planning can provide in the sphere of "spontaneous" processes. After studying the number and distribution of taxi trips according to distance under existing rates and earnings (general and average for each trip), he proposed the introduction of both a relatively high minimum charge for taking a taxi and a substantially lower kilometer rate. And what was the result? There was a considerable increase in the overall number of fares, the proceeds were higher, and the use coefficient of the machines increased, or, what amounts to the same thing, the distance traveled without passengers decreased. Moreover, the result proved advantageous both to the passengers and to the government, and in addition the result had an impact on raising the drivers' wages.

Thus, under socialism it is possible to overcome "spontaneity" through the study and use of economic laws, including the law of value, since here "spontaneity" operates within the framework of the overall planned increase in the income of the population and corresponding material conditions of production. Without overall planned boundaries, it becomes difficult to overcome such spontaneity, even to a limited extent.

Planning must be based on the study of massive, including stochastic, processes. It is essential to establish regulators (incentives, prices, reserve funds, etc.) in such a way that any behavior on the part of the subjects under study

would be amenable to overall planned forecasting and regulation in a direction that is necessary and optimal from the standpoint of social interests.

Of course, by no measure can planning be based on stochastic models alone. Most problems can and should be solved by the method of direct and discrete (determinate) planning of balanced proportions, major structural changes, key capital investments, and the relatively more rapid development of one branch of the economy or another. But even in these cases it is essential to reckon with the law of value, and if it becomes necessary to violate its demands deliberately, one must know what such a violation will cost and how and when this loss will be compensated.

From the foregoing comments concerning the operation of the law of value in the stage of socialism and its exertion of a regulatory influence in conjunction with other laws, does it follow that the law of value should be perpetuated? No, this conclusion cannot be drawn. When an abundance of material goods is created and when labor becomes a natural need and a delight for people, distribution according to labor will be unnecessary and distribution according to need will become possible. Under these conditions, there will be no need for the law of value, and it will die out together with its main instrument—money.

2. Profit Under Socialism

The role of profits and profitability of enterprises stems from the essence of economic relations in socialist society: they serve as important indices among the general indices for describing the effectiveness of the work of enterprises. Although in its form, profit under socialism is similar to profit under capitalism, in its content, it is basically different, since it reflects socialism's production relations. As we know, profit is the goal and the only driving motive of capi-

talist private enterprise. In our country, profit is not the goal of social production. The goal of production under socialism is the increasingly complete satisfaction of the social and personal needs of people.

Practice shows that underestimation of the demands of the law of value leads first to a disparity between prices and the real objective foundations—socially necessary expenditures of labor. The disparity between prices and real expenditures can become the cause of many difficulties in the national economy. Thus, in the recent past, prices on agricultural products did not compensate the production and labor expenditures on collective and state farms, which naturally had a negative impact on the rate of agricultural development. In industry as well, it is by no means true that prices on all types of products have properly reflected the level of socially necessary production costs or the necessary measure of deviation from them.

Prior to the economic reform, in many instances the old wholesale prices for industrial products did not reflect actual production costs. As a result, there were great fluctuations in the profitability of production at individual enterprises. Therefore, even though enterprises were assigned a profit target before they were converted to the new system of planning and economic incentive, in such cases profit as an economic category did not express the effectiveness of the enterprises' work. Frequently, profit was the result of the random combination of factors that were external with respect to the enterprise: the product-mix confirmed from above, price revisions, and a high share of new items that were initially produced at a loss but that became extremely profitable after the production technique was mastered, etc. Profitability was not planned at all as an independent indicator, and, even if it was calculated in financial planning, it was only calculated in the form of a ratio of profit to the enterprise cost of production.

Rent payments were by no means applied everywhere. Therefore, differences in natural conditions as well as in the location and technological equipment of enterprises caused considerable fluctuations in the profitability of enterprises operating under exactly the same prices, irrespective of the real effectiveness of their work. Thus, the enterprise cost of production of one ton of cast iron for steel manufacture at new enterprises (Magnitogorsk, Kuznetsk combines) was more than three times lower than at old Ural plants using low-capacity blast furnaces and operating at a low level of mechanization.

The economic interests of people and society as a whole require the establishment of material incentives according to the production index which, when increased, forms the source of incentives. It is necessary to encourage reduction of enterprise cost of production. But there have been instances in which the enterprise cost of production was reduced through the deterioration of quality and through the production of products the customer did not need. Under the rules that were in force, bonuses were awarded while the output was sometimes unsold and was ultimately discounted at a loss to the budget. Thus, losses were encouraged by bonuses, in direct contradiction to social interests.

The September (1965) Plenum of the Central Committee of the CPSU urged improvements in the use of economic levers, including profit, in addition to other important measures, to improve planned management of the economy. A decree issued by the Central Committee of the CPSU and the USSR Council of Ministers on October 4, 1965, entitled "On Improvements in the Planning and Intensification of Economic Incentives for Industrial Production," stated: "It is deemed necessary to intensify the role of profit in the economic stimulation of enterprises and in increasing the material interest of collectives and individual persons employed at enterprises in order to attain optimal work results,

and the amount of profit left at the disposition of enterprises must depend on improved results of their economic and financial activity.

“Profit must be a source for the formation of enterprise funds, for financing enterprises’ capital investments, for increasing working capital, and for other enterprise expenditures.”

Today, in connection with the economic reform, every person employed at an enterprise can and should know where the created profit goes and what the dependence is between the well-being of the entire collective and of himself personally and the amount of profit, profitability, and the promptness of the sale of goods produced. This will promote the growth of the creative activity of the masses.

The great part played by profit in the building of communist society was repeatedly noted by V. I. Lenin. He emphasized that, according to the communist yardstick, it should be recognized that if profit belongs to the government, this is also a plus from the communist point of view. (2) Lenin spoke of this not only in connection with the transition to the new economic policy but earlier as well. The comment made by Lenin in 1920 on the margins of Bukharin’s book *The Economics of the Transitional Period* [Ekonomika perekhodnogo perioda] is of particular interest. Bukharin wrote that the aim of the capitalists consisted in production for the sake of profit, whereas the aim of socialism was to satisfy social needs. Lenin’s remark was: “Did not come off. Profit also satisfies ‘social’ needs. He should have said: where the *surplus product* goes not to the class of owners but to all working people and only to them.” (3)

And indeed, in our country the most important types of social services are, to a considerable degree, rendered gratis on the basis of profits. Education, science, public health, social security and pensions, the development of sports, cul-

ture, and science—all these needs are satisfied from ever-increasing social consumption funds. This new form of collective consumption contains the seed of distribution according to need rather than according to labor.

We should consider in particular the use of profit as a yardstick or indicator of the effectiveness of the production activity of our enterprises. If prices correctly reflect socially necessary labor expenditures at some initial point in time, and if, after a certain lapse of time, enterprises produce products with fewer outlays, this means that we have, in the form of profit, evidence of the effectiveness of labor expenditures at each enterprise and throughout the nation as a whole. Under the conditions of planned price formation, profit serves as one of the important indicators of the successful activity of collectives of working people at our enterprises.

Under socialism profit cannot and must not increase as a result of inflated prices. Prices are controlled by the government in the interest of the working people. Under designated prices, profit increases because of the reduction in the enterprise cost of production and because of the growth of labor productivity (moreover, the increase in labor productivity must excel the growth in wages). Essentially, in rewarding for profit, there is no economic sense in reducing the enterprise cost of production at the expense of the quality of products. To the contrary, there is sufficient basis for striving to improve the quality of products, since prices are raised for products of higher quality. Nor should superprofits be obtained by lowering wage rates.

The amount of profit can fluctuate to a very great degree. These fluctuations will indicate the greater or lesser effectiveness of production. However, one should bear in mind that the enterprises themselves may be of different size. Large enterprises may have a larger profit and a lower

degree of production effectiveness as compared with smaller enterprises.

Clearly, in order to make a correct judgment as to the effectiveness of production, one must know not only the volume but also the norm of profit, i.e., the relative expression of profit or profitability. In addition to the enterprise cost of production, the sum total of fixed and working capital has been recognized as a basis for calculating profitability.

It is true that value is created only by live labor. It is also true that, per unit of time, labor of the same quality and the same intensiveness always creates exactly the same value. But more productive labor will nonetheless differ very substantially from less productive labor by virtue of the fact that value created by more productive labor will contain relatively less necessary labor and relatively more surplus labor.

Here it is useful to recall Marx's theory of production of relative surplus value. In analyzing categories characteristic of capitalism, Marx noted: "The value of commodities is inversely proportionate to the productive force of labor. This is also true of the value of labor power, since it is determined by commodity values. Conversely, relative surplus value is directly proportionate to the productive force of labor. It rises with an increase and declines with a decrease in the productive force of labor." (4)

Thus, the share of the surplus product depends not only on the expenditure of labor but on its productive force. Since under socialism profit is the monetary expression of the value of the surplus product proper, profit must be compared with those resources which generate higher labor productivity. In turn, greater or lesser labor productivity depends on the productive capital per worker (other things being equal), on the organic structure of capital.

This explains the fact that, as the monetary expression

of the surplus product, profit should be related to the value of capital that embodies the economic potential for growth of the productive force of labor. Comparison of profit against productive capital shows the degree of increase in the potential of our production for expanding and improving production and for improving the people's standard of living.

Of course, the foregoing cannot be construed as an apologia for the bourgeois theory of the three factors in the creation of value: land, capital, and labor. This is not the theory of J. B. Say or McCulloch or even of the later Schumpeter. The three-factor theory was aimed at justifying the claim of capitalists and landlords to the lion's share of value created by labor. We proceed from the fact that value is created solely by live labor. But we also proceed from the indisputable fact that live labor becomes more or less productive depending on the technical means with which it is equipped. The property of live labor to be productive to the degree to which it is properly combined with technical means is specifically that property which we must measure first by relating profits to productive capital.

When calculating profitability in this way, we achieve total economic homogeneity of calculation: the value of parts of the surplus product is contained in both the numerator and the denominator—that which is newly created (profit) and that which was previously created by all society (productive capital). Part of the net income is used to reward personnel who have achieved an effectiveness of labor that is socially normal or higher than the social norms. But since the given level of effectiveness is achieved with the aid of all society, which has placed part of the previously accumulated surplus product at the disposition of the collective in the form of productive capital, the demand not only to compensate society for worn-out imple-

ments of labor but also to secure further increase in accumulation is entirely justified.

The theoretical substantiation of profitability and payments for productive capital from profits still does not mean that payment for capital sufficiently stimulates our effective use of new equipment. In the course of the reform, it has been found that payments for capital can also retard the acquisition of new implements of labor, especially in view of the high prices on them.

The passive stimulation of the installation of new equipment by exempting enterprises from payments during the running-in period has proved insufficient. There must also be active stimulation through the financing and encouraging of processes involved in the creation of new, complex equipment through special centralized funds of ministries and of the State Committee on Science and Technology of the USSR Council of Ministers.

Notes

- 1) K. Marx and F. Engels, *Soch.*, Vol. 25, Part 1, p. 426.
- 2) See V. I. Lenin, *Poln. sobr. soch.*, Vol. 45, pp. 262-263.
- 3) *Leninskii sbornik*, XI, Moscow-Leningrad, Sotsekgez, 1931, pp. 381-382.
- 4) K. Marx and F. Engels, *Soch.*, Vol. 23, p. 330.

CHAPTER 3

CONCERNING THE QUESTION OF OPTIMALITY OF CENTRALIZED PLANNING

1. The Functions of Centralized Economic Management
2. Plan, Product-Mix, and Economic Relations
3. The Optimality of Plans
4. Capital-Intensiveness in Production
5. Specialization of Production and Technological Progress

1. *The Functions of Centralized Economic Management*

The centralized management of the national economy is an integral feature of the socialist system and stems from the public ownership of the means of production. "National centralization of the means of production will become the national basis for a society consisting of the amalgamation of free and equal producers engaged in social labor under a common and rational plan." (1)

Many opponents and critics of socialism proceed from the assumption that centralism and bureaucratism are interconnected: once there is centralism, bureaucratism must inevitably nestle nearby. Unquestionably, such a danger existed and was manifested when V. I. Lenin was still alive, but it was he himself who formulated the principle of democratic centralism which makes it possible to enjoy the advantages of centralism and which creates a powerful barrier against bureaucratic manifestations. The strength of this barrier is in proportion to the degree to which the actual participants in production are drawn into the management process on the basis of increased moral and material interest in the results of aggregate labor.

V. I. Lenin stated: "Socialism is not created by edicts from above. Bureaucratic automatism is alien to its spirit. Live, creative socialism is the creation of the masses themselves." (2) The constant incorporation of this "democratic component" into the management process is the true way of overcoming manifestations of bureaucratism.

Democratic centralism cannot be construed as the mechanical amalgamation of centralism and democratism. It is incorrect to juxtapose centralization and decentralization, since such a juxtaposition makes it appear that centralism is something that is supposedly free of democratism and hence inclined toward bureaucratic degeneration. Likewise, in such a juxtaposition, decentralization appears to be the only possible form in which democratic principles can be manifested.

In fact, democratic centralism must be juxtaposed with bureaucratic centralism. *From top to bottom, our entire system of management is a centralized system.* And, at the same time, *all our management, again from top to bottom, is management by all the people—management that is permeated with democratism at every level in the managerial hierarchy.*

This is true because centralized management must always be exercised on the basis of genuine socialist democratism, through the strict observance of collegiality in decision-making and through collectiveness in combination with one-man rule in management. Even decentralized decisions are not only an expression of democratism; they are also a mode of fulfilling unified centralized directives. Moreover, they are not fulfilled with bureaucratic indifference ("just another order!") but with maximum display of creative initiative, with consideration being given to local particulars, and with everything that V. I. Lenin considered to be the most important features of centralism in a truly democratic sense.

Every decentralized decision is ultimately oriented toward the optimal fulfillment of one part or another of general plans or designs adopted at the center. But every such general decision contains the result of collective experience.

The democratic principle does not mean the abandonment of one-man rule or of the discipline and responsibility of each manager and executor. To the contrary, democratic centralism presupposes the observance of the strictest government discipline and responsibility. At any level of management, the process of elaborating and making decisions is based on collegiality, but once the decision has been made it becomes obligatory for managers and executors in all links of management in a descending line, irrespective of the opinion defended by a given person in the discussion process or of the position he occupies.

To be sure, there are instances when the management mechanism based on democratic principles operates formally and not entirely well. But this happens because we still have not learned how to make full use of the very great wealth of opportunity that is presented by the forms of participation of working people in the management of social production under socialism. It must be said that the

economic reform provides a good basis for more actively involving workers and employees in the elaboration of plans and norms, in the distribution of bonuses, and in work on rationalization and invention. But the diversity of forms for the active involvement of working people in the management of production is far from exhausted. The activities of local soviets of working people's deputies, mass people's control, production conferences—all these are different ways of involving working people in the cause of improving production. The work of all social organizations must be made interesting and meaningful. The people participating in these organizations must see the real benefit of their work. Then the process of democratization will proceed at an accelerated pace from the bottom to the top.

Stereotyping is a characteristic feature of bureaucratic distortions. V. I. Lenin wrote that there is nothing more erroneous than the confusion of democratic centralism with bureaucratism and stereotyping. "In this case, diversity is the guarantee of viability, the pledge of success in the attainment of the common, single goal." (3) It is important to stress the mention of the attainment of the "common goal." Accordingly, diversity should not lead to disorder, to anarchy, but should promote the discovery of the best ways and means for fulfilling the common plan. Not only current but long-range plans as well acquire great importance in this connection. ". . . It is impossible to work without a plan calculated for an extended period and for serious success." (4)

The management of social production on a large scale is beset by two dangers. On the one hand, there is the danger of the demands of voluntary and involuntary prisoners of petty bourgeois anarchism striving for total "decentralization of decisions" and thereby for the notorious "autonomy" of enterprises. Another serious danger which V. I. Lenin continuously warned against and resolutely

fought is bureaucratic centralization with excessive regulation of the economic activities of the enormous mass of working people.

Democratic centralism helps to overcome both of these extremes. It requires the carefully considered delineation of the functions of centralized and local management. And this problem is not resolved in a single sitting on the basis of logical and speculative constructs but rather through studying the wealth of experience accumulated by the party and economic management over the years. Essentially, the point at issue is the continuous development of the principle of democratic centralism.

Centralized management is strengthened and improved when it is given those tasks and functions that can and must be resolved and exercised at the center from the standpoint of national economic interests. The principle of centralism may weaken if the directing centers are assigned tasks that can be resolved locally.

To prevent these words from sounding too formal, let us turn to several simple examples. It is possible and necessary for the directing center (USSR Gosplan, ministries) to examine and decide questions pertaining to the scale of development of a given branch of production, for example, the sewn goods or footwear branch. Possible, because only the center can achieve a balance between the development of these branches and the development of animal husbandry, of the leather or textile industry, of the production of synthetic fibers, and also take into account the more remote interbranch relations and imports. Necessary, because this approach promotes the general dovetailing of production and public consumption.

But at the same time, there is absolutely no need for the center to establish a detailed product-mix by style, color, quality, and size for each territory, region, city, combine, or factory. As experience has shown, local planning must

take into account the public demand in a given region and must be based on orders from large stores or wholesale and retail firms, and, in addition, the orders must be addressed directly to the producers or to local sales organs.

This principle is even more justified with respect to capital investment. Major investments altering the structure of production and interbranch relations and promoting technological progress are unquestionably the prerogative of the center. But the resolution of problems of mechanization and automation of existing production without fundamental reconstruction, financed from decentralized sources (production development funds, short- and medium-term credits), can be handled more successfully by the production associations and enterprises themselves.

Excessively detailed planning from the center hinders rather than strengthens the principle of centralism. Excessive concern with detail poses the danger that central organs will lose precision in calculation and planning, and can cause minor but appreciable disproportions. It is precisely this type of phenomenon that serves as the basis for identifying centralism with manifestations of bureaucratism.

The resolution of a great many questions at the center does not mean the strengthening of centralized management. It is much more expedient to restrict the functions of centralized management to the most important ones. In themselves, centralized decisions on key questions operate as an enormous stimulating force. They indicate where the coordinated efforts are directed and what results the working people achieve acting in unison. On the other hand, instructions issued by the center on various minor questions create certain difficulties in management since, in case of need, corrections and amendments on each detail can be made only by the central organ that issued the initial order, and this requires considerable time and extensive coordination.

Large-scale (aggregate) decisions have special essential features. They can be more extensively thought out and substantiated and, if necessary, can be subjected to expert evaluation. These decisions very seldom have to be altered. But even if the need for some correction is discovered, there is always sufficient time to make such an adjustment. It is a different matter with operational orders. Any inaccuracy they might contain is frequently irreparable, since these orders concern actions that unfold quickly. For this reason, this type of decision should be made at the level of economic management having the greatest amount of information and all necessary data characterizing the production process, i.e., directly at the enterprises. The period of effect of such decisions is relatively brief.

2. *Plan, Product-Mix, and Economic Relations*

The system of centralized production management presupposes the necessity of the functioning of a special system of ties and relations between the sphere of production and the sphere of consumption. Here, we fully reject the so-called market socialism concept that has been circulated in the West. If this term has any content, it amounts to the negation of the principal role of centralized planning and the orientation of each individual enterprise (or association of enterprises) toward the current market demand of customers.

What, then, is the difference between "market socialism" and capitalist private enterprise? As far as can be judged from certain "models of market socialism," the difference lies in the fact that enterprises belong not to private owners but to society through self-governing collectives of enterprises as independently operating subjects. Naturally, there are many variations of this "model," but they are all basically the same: it is something in the nature of corporative

or guild socialism, a reminiscence of anarchistic and syndicalistic ideas that were condemned in fierce debates when Lenin was still alive.

Essentially, it is the latent or manifest assumption of the theory of "market socialism" that intrabranh competition and orientation toward the market automatically lead society to progress in production without the aid of centralized decisions.

Western commentators tend to confuse such concepts as "attention to the consumer" and "orientation toward the market." Outwardly they appear to be similar, but in actual fact there are enormous differences between them. Attention to the consumer is a task which entirely corresponds to the economic interests of people under socialism. It is not by chance that today, at a time when a powerful production apparatus has been created, more attention is focused on the production of consumer goods. In 1968, 1969, and 1970, the growth rates of consumer goods production began surpassing the rate of production of the means of production. At the same time, the share of output of Department I remains dominant in the structure of the gross social product.

But we have a completely different attitude toward the principle of "orientation toward the market," which is written on the banner of champions of "market socialism." This is not so much a question of the satisfaction of and the continuous increase in the population's needs as of somehow "facilitating" the conscious management of social production. To this end, it is proposed that reliance be placed on spontaneous market relations and collisions and that success be judged according to the degree of profitability of production and the volume of sales of any goods and services, which means following habitual, frequently perverted tastes inculcated by the petty bourgeois way of life.

Such "orientation" requires nothing more than the study of current demand or, more accurately, obsequiousness to the more profitable directions of such demand. Centralized plans (except for discussion of "indicative" programs) are unnecessary and are therefore rejected. Nor is there any need for an apparatus to actively influence the volume and structure of consumption by means of scientific forecasting, industrial research, and introduction of the sale of totally new goods and services promoting the ever more complete and all-around development of man's capacities.

Orientation toward the market is a manifestation of the fear of failing to cope with the truly serious problem of planning production on a bilateral basis; to take resources into account, to make optimal use of them, and to master the achievements of the revolution in science and technology on the one hand, and to consider consumer demand and satisfy it maximally on the other.

Socialism is a society of creators. In a twofold process, the forces of nature are mastered to an ever-increasing extent, and the human mind is more and more restructured, man's alienation from society is eliminated, and his capacities are developed in every way.

Orientation toward the market is the "socialism" of skeptics, of those who lack a deep belief in the creative strength of the working people. In their hearts, such "socialists" do not believe that modern man is far removed from the half-savage nomad but that he needs beefsteak instead of raw meat, a Volkswagen instead of a camel, a cottage in place of a yurt. All these things are indeed necessary, but this does not tell the entire story of human nature. The protests of students and young working people in all capitalist countries against the existing "market" construction of the way of life are very vivid evidence of the social collapse that results from orientation toward the market. And this is precisely the orientation that is persistently propagand-

dized by people attempting to undermine socialism from within.

Socialism does not espouse asceticism. Material needs must be satisfied. This is a necessary prerequisite for the development of society and for the realization of people's intellectual needs. Nor do communists espouse narrow consumerism. But there exists not only the consumer's demand vis-à-vis society but also society's demand vis-à-vis the consumer. And an increase in the demand on man based on the Marxist law of increasing needs must orient the development of production under socialism.

It is as if society mobilizes and concentrates all the best that there is in man at every stage in historical development on the road to communism. Such mobilization cannot be achieved by orienting production according to the image and likeness of the "market socialism" concept. Therefore, neither can the idea of automatic regulation of production and consumption with the aid of the market mechanism be included in the arsenal of the struggle to increase the effectiveness of socialist production. Automatic self-regulation through the competition of private producers in the market is a stage that has been traversed long ago, even by modern capitalism.

In itself, the consideration of the needs of the market does not lead to progress. Today, even in the West only major concerns—and these make use of government orders or other forms of financing and credit—can apply the latest technological advances, albeit in a contradictory, unstable form. Large-scale concentrated and centralized production is a higher degree of socialization of labor and is more likely to pave the way for the transition to socialism than the return to market competition among private or group producers. Therefore, group management oriented solely toward the market is a reactionary movement backward to

the era of initial capitalist relations that has already been passed in most developed countries.

But the fundamental difference between centralized large-scale industry under socialism and monopolies originating under capitalism is that our management is not authoritarian but is based on the participation of the working people in management. Our working people take part in the management of production and monitor it, acting as genuine masters of all social production and not as owners of the factory or plant where they are working at a given time. Thus, their material interests do not conflict with social interests as a whole.

Large-scale production creates greater impetus for the development of needs than does the market for the development of production. But once the needs are created, the demands of consumers must necessarily be considered in the planning process. There must be continuous feedback between consumption and production. In its final form, the enterprise's product-mix plan is the sum total of deliveries based on contractual obligations, projected for a planned time segment.

This conclusion is the result of an analysis of vital demands and not only of scientific reasoning. Ia. L. Orlov, Deputy Chief Editor of the journal *Soviet Trade* [Sovetskaia trgovlia], writes in this connection: "The procedure whereby the plan precedes the contract and the contract supplements the plan is still considered normal. The plan stipulates the volume, the assortment, the quality, the manufacturing time, and the price. Therefore, as jurists say, there is very little room for the contracting parties to express their will.

"In order to intensify the impact of trade on the production of goods needed to satisfy the population's demand, the government has directed the USSR Ministry of Trade—together with interested ministries—to elaborate measures

contemplating a higher role for economic contracts. It has been established that plans for production with respect to volume, assortment, and quality of consumer goods produced by industry in sufficient quantity must generally be determined in accordance with economic contracts concluded between trade organizations and industrial enterprises." (5)

It is advisable to extend the same procedure to the production of the means of production. Here, purchasers can be not only individual enterprises but also scientific research institutes, design organizations, and new construction projects acting in the name of ministries and agencies.

Of course, to a certain degree the plans must be compiled with some reserves. In this case, a field of activity remains both for subsequent corrections and for maneuvering in the area of sales on the part of the enterprises proper as well as on the part of sales organizations.

In his report at the All-Union Economics Conference in May 1968, N. K. Baibakov, USSR Gosplan Chairman, stated that long-term direct relations must be established and that economic contracts must be concluded between enterprises and associations on the basis of five-year plans. The five-year plans must also make provision for changes in prices, for stable standard deductions to be paid into the economic incentive funds, and for other long-range measures. "Only if this condition is met can there be long-term basic norms regulating the production activities of enterprises and economic associations; only if this condition is met can there be firm economic relations between them." (6)

Ignoring the demands of the customer and the direct relations between suppliers and customers has already led to certain losses. We all remember that in 1963-1965, at great expense to the budget, it was necessary to discount a large number of items of clothing, cultural items, and

recreational items that were not moving and did not meet the demand of the customer. In 1966-1968, on the other hand, there was a shortage of some of these same items.

An optimal production plan can be compiled only when consideration is given to continuous feedback from the consumption sphere. A constant watch must be kept over the operation of the mechanism of commodity and monetary relations in order to ensure prompt, corrective influence by the center on the course of fulfillment of the plan. In the process, most small deviations must be eliminated on the spot by applying the regulatory mechanism built into the plan proper: reserves, reserve funds, rights of enterprises and associations to make certain changes in the plans to satisfy urgent needs. However, substantial deviations that can influence the basic proportions, that can reduce work incentives, must receive the attention of central planning organs. In this case, the force of centralized influence will be manifested through the use of reserves, through the redistribution of capital investments and imports, and through changes in prices or the wage level.

In 1965, we witnessed maneuverability in the use of the lever for increasing the wages of equipment operators in agriculture at the expense of budget reserves, and we saw the rapid result that this produced. The decision of the September (1967) Plenum of the Central Committee of the CPSU to raise the wage rates of machine-tool operators by 15% is an even more convincing example. Such an increase in rates will lessen the difficulties of staffing the decisive sectors of production with worker cadres.

Our system of centralized planning and national economic management possesses enormous maneuverable potential and reserves that are unattainable for a capitalist economy.

Let us now examine more closely the circumstances which sometimes lead to a disruption of the relations be-

tween production and current needs. As we know, every enterprise is simultaneously a supplier and a purchaser. A centrally established, excessively detailed product-mix requires that all enterprises be exceptionally good suppliers and conscientious purchasers.

As a purchaser, the enterprise sends an order to the center, not yet having a precise knowledge of its own production program and hence unable to foresee all the items of the supplies and implements of labor it needs. (We emphasize that, first and foremost, this involves the overwhelming majority of enterprises in the manufacturing branches, such as machine-building and light industry.) The issue here is not only that under the existing procedure orders must be given in advance, almost half a year before the beginning of the planned year. The main point is that the development of science and technology makes useful alteration and updating of plans and orders obligatory. And because of this, in his orders for the needed materials, the purchaser will obviously be imprecise due to changes in demand both for consumer goods and, to a large extent, for the means of production as well.

On the other hand, an enterprise acting as a supplier demands that the ministry and the planning and sales organs provide a precise plan for all items in the product-mix at least three months before the beginning of the year. But the center can provide the enterprise with a precise product-mix plan only by totaling all orders from other enterprises ordering or purchasing the products of a given enterprise. And as we have just noted, these orders cannot be sufficiently precise because of the progressive development of production and consumption. This also means that the excessively detailed production programs compiled at the center cannot be precise.

Without sufficient basis, we have sometimes blamed, and continue to blame, gosplans, ministries, and supply and

sales organizations for regrettable misunderstandings, for disproportions, for production losses, and for violations of the interests of consumers. When so many erring people are encountered, the reason should be sought not only in their individual qualities but in the system, more precisely, in the "theory" which latently and gradually became a primitive understanding of planning as an all-embracing, excessively detailed product-mix order from the center.

In certain branches of production, cost-accounting main administrations, acting in conjunction with corresponding branch sales organizations, have the opportunity to determine the product-mix for each enterprise. In principle, this procedure is intended to optimally distribute the product-mix among producers and at the same time to assign them to customers in such a way as to reduce transport costs to a minimum. Clearly, such problems can be solved with the use of the methods of optimal planning and electronic computers. A contract between a main administration as the producer and the sales organization representing the interests of purchasers can facilitate the establishment of close relations between enterprises. This is possible in those branches of production where the product-mix is stable (pipe and certain other types of rolled metal, hardware, standard equipment and devices, cement and other building materials, etc.) and where the demands on quality change negligibly. But in the case of branches with a large product-mix—branches in which types and assortments change rapidly due to technological progress—there must be direct ties between producers and purchasers.

It must not be forgotten that excessively detailed product-mix plans established at the center (in ministries) cannot be sufficiently precise for a number of branches. Therefore, enterprises as well—even enterprises fulfilling these plans in the most ideal way—will fail their purchasers to a certain extent. But since the producers themselves will be let

down by their own suppliers, if only by 5 to 10%, the errors will multiply and, theoretically speaking, will amount to not 5% of the volume of deliveries but, in all probability, approximately 20 to 30% of the total exchange of activity between enterprises. However, as a rule this does not happen. Even in 1959–1964, when there was a very cumbersome system (national economic councils, their union and republic centers, sales associations, republic and union gosplans), most of the deliveries were made and the production plan was fulfilled with an overage.

Why were the deliveries made and why did production generally cope with the targets? This occurred not only because of the method of centralized product-mix planning but also because of the experience of our managerial personnel. Ultimately, they did what was genuinely required, albeit with delay. “Expediters” also helped. Thus, while not entirely without error, that which was necessary was selected from the total mass of that which was planned.

We by no means plan to sing hymns of praise to the institution of “expediters” or to perpetuate it! However, any mass social phenomenon—even a superficial one—deserves study if we wish to understand its causes and to see deeper relations and patterns through them. The existence of expediters, which were sometimes variously transformed into “technical agents” or “exchange-of-experience representatives,” is evidence of some kind of gap. In rather distorted form, this phenomenon expressed the real necessity for well-organized direct relations between suppliers and purchasers.

Once again, we emphasize that the compilation of contracts and the issuance of orders to suppliers must generally precede the ultimate confirmation of current plans with respect to volume and product-mix. Perhaps this cannot be achieved all at once, but such is the line of development of this important branch in our system of management. “It is

deemed expedient that contracts for consumer goods between retail and wholesale trade organizations and industrial enterprises be concluded *before the compilation of the annual plan and that they serve as its basis. Orders and economic contracts will also increasingly be transformed into a real basis for elaborating plans for the output of products earmarked for use in production.*” (7)

As a matter of fact, this principle was incorporated into the economic reform documents, since the plans of enterprises must be based on the portfolio of orders. The implementation of this principle will become important in preparing the Five-Year Plan for the Development of the National Economy for 1971–1975.

As for the production of consumer goods, it is already universally recognized that the plans of light-industry enterprises must be based on preliminary orders from trade organizations and stores.

Since they will be assigned to suppliers for an extended period, major purchasers and customers should also have long-term contracts for the delivery of items earmarked for use in production. These contracts must be updated annually by orders or schedules. Essentially, this means that the annual production and supply plans will be based on contracts concluded in advance.

It should be borne in mind that such a procedure also essentially corresponds to the statutes on the deliveries of products, which became effective as of July 1, 1969. (8) The statutes stipulate that purchasers can also place orders with suppliers for products that are not distributed on a planned basis and that, in the case of prolonged economic relations between the parties, orders for the delivery of such products are submitted to suppliers within time periods agreed upon by the purchaser and the supplier. Suppliers are not entitled to violate these economic relations unilaterally (point 11 of the statute). One can only hope that

the product-mix not distributed on a centralized basis will expand increasingly, and this is also stipulated in the decisions on the economic reform.

It should be remembered that in many branches of industry it is impossible to foresee a precise product-mix for a year or even a quarter ahead. This applies, for example, to electrotechnical industry enterprises producing motors of standardized series and dimensions. There can be extremely diverse variations within the framework of this standard. In such cases, the overall number of motors of given dimensions (series) and the overall cost of the motors are confirmed in the product-mix plan, usually determined for a year with a quarterly breakdown. Then the targets are updated each month on the basis of schedules or orders from actual purchasers.

Thus, on the basis of schedules received or contracts concluded, initial volume plans for the number of motors and their cost become real product-mix plans. It can be said that the plan is a projection on the time scale of all existing contracts (schedules) whose period of fulfillment pertains to a given year or quarter. The effective period of contracts does not necessarily end within a given year or quarter. The enterprise must always know what it has to do, irrespective of the time of confirmation of the plans. The stability of the plans is guaranteed by the mutual obligations of the purchaser and the supplier, and losses resulting from the violation of these obligations must (according to the contract) be immediately and completely compensated on the basis of complete cost-accounting.

In our opinion, it would also be useful to make provision for a certain reserve of production capacities—substantiated by experience and calculation—in order to eliminate possible local deviations from the plan and in order to fulfill urgent additional orders. An optimal reserve of capacities is no less important than a reserve of finished material

goods, since the reserves of capacities make it possible to convert these reserves into finished products urgently required to balance production and consumption in a relatively short period of time.

The realistic nature of the plan and its continuity and stability depend on the combination of centralized, generalized targets and the concretization of plans on the basis of contractual relations. Now the main question is how to make the transition to the mechanism of planned wholesale trade with the aid of stable relations. The necessity for such a transition is already recognized, but the time periods and the volume of trade turnover in the means of production it should encompass are still not clear. In any case, if such a transition is successful with one group of commodities, it will scarcely be necessary to limit its extension to all other commodity groups that are homogeneous with respect to economic circulation.

The practice of changing suppliers in the middle of the year without the preparation and agreement of purchasers is also a stumbling block. The overloading of the capacities of suppliers is permitted, and this creates the threat that the delivery plan will not be met. Frequently, orders are issued for items that are still in the developmental stage or are submitted to enterprises that have not yet become operational. Another serious shortcoming is that too many organs are in charge of supplying the same purchasers.

Let us cite one characteristic example. The “Sibelektromotor” Plant (Tomsk) is a major and steady purchaser of winding and enameled leads. The “Emalprovod” Plant of the same Ministry of the Electrotechnical Industry is located several blocks away from it. But in 1968, the “Sibelektromotor” Plant received 230 tons of leads, not from its neighbor, but rather from Kuibyshev, Moscow, and Khabarovsk. And the “Emalprovod” Plant ships the same product to the eastern and western regions of the country. Another

example: out of 289,000 bearings, only 75,000 come from the Tomsk Bearing Plant, and the remainder comes from Saratov. At the same time, the Tomskites ship more than 300,000 of these same bearings to the European part of the nation. The "Tomkabel" Plant manufactures hose-type cable needed by the "Sibelektromotor" Plant, but the motor-builders receive this cable from Vladimir Region. (9)

What is amiss here? It is difficult to determine specifically who is to blame. Funds for various items are allocated to the "Sibelektromotor" Plant by four organizations: Glavelektromash, the Administration for Cooperative Deliveries and Acquisition [*Komplektatsiia*] of the USSR Ministry of the Electrical Industry, the Production Administration of the same ministry, and the West Siberian Territorial Supply Administration. This complex system of distributive organs hinders supply. The question of who will distribute products depends on many factors. On the one hand, the importance of a given item exerts an influence. There is funded output (distributed by Gosplan); there is a centrally distributed product-mix under the jurisdiction of ministries and their main administrations as well as of branch administrations of Gosplan; and, finally, there is a group of items distributed on a decentralized basis which is at the disposition of enterprises and local territorial supply administrations. In addition, deliveries are divided into interpublic, intrarepublic, intraministry, and intraregional deliveries by regions of operation of territorial material-technical supply administrations.

To the purchasing plant, the product-mix it requires for production purposes is equally important. However, funds must be received in four or five places, and hence it is necessary to clarify misunderstandings that arise in various agencies; moreover, these misunderstandings sometimes pertain to the same delivery. Unification of the supply system has

long been an urgent problem, and the transition to planned wholesale trade will evidently assist in its solution.

We are devoting so much attention to matters pertaining to direct contractual relations because they are of enormous importance for the improved combination of centralized planned management and purchasers' orders. Figuratively speaking, if centralized planning by branch of production is the vertical warp, direct contractual cost-accounting relations are the woof. These are the horizontal threads that bind the vertical lines of branch planning into the single, strong fabric of economic management.

We have already stated that needless intervention in the sphere of production and sales activity of enterprises hinders the satisfaction of the needs of purchasers. Notwithstanding the reform that is being implemented, and in direct contradiction to it, such actions unfortunately still occur.

At a meeting of the *Ekonomicheskaiia gazeta* "Business Affairs Club" held in Kiev in September 1967 (10), V. Momot, director of a chemical plant, described how the plant had received an order from the USSR Ministry of the Chemical Industry forbidding the overfulfillment of the plan for a herbicide in view of the purportedly limited market. It was even stated that the overfulfillment of the plan for this product would not be counted and would not be incorporated into the calculation of incentive funds. A short time later, another order was received for the production of a number of products, and this very herbicide was listed as one of the most essential. A special bonus was even established for its production. But the plant had known of the great demand for this product of labor even earlier, since state and collective farms had repeatedly requested that this herbicide be issued to them. On the whole, the conclusion drawn from a number of similar facts at the meeting of the "Business Affairs Club" was correct: in addition to the capacities necessary for the fulfillment of a centralized or-

der, enterprises should have a certain reserve of capacities and should decide which products to produce from this reserve based on their knowledge of the needs of their contracting parties.

The work of our watchmaking industry (including clock manufacturing) is a good example of active influence exerted by production on consumption, on the basis of direct relations. At one time (prior to 1948) there were not enough watches, even though the prices on them were relatively high. Then this branch began to develop rapidly, and the watchmaking industry encountered difficulty in selling its output. However, as Ia. L. Orlov wrote regarding this matter: "Systematic expansion and renewal of assortment, improved quality, lower enterprise cost of production and subsequently lower retail prices—all these things have become the motto in the watchmakers' work. They have created their own service for studying demand, give due consideration to demand in their plans, and skillfully advertise their products. And this is the result: during the first two years of the five-year plan, at a time when the market was greatly saturated, more than 49 million timepieces were sold. The watchmaking industry presents the example of how production, in the words of Marx, runs ahead of demand, and supply takes demand by force." (11)

It should also be added that since 1966 the watchmaking industry has been converted to the new conditions of management and is yielding a high profit due to, rather than in spite of, a reduction in prices. This is the answer to those economists who believe that incentives from profits will be accompanied by higher prices, to the detriment of the interests of the working people. To the contrary, the transition to mass, high-quality, and economical production must lead to a reduction in retail prices. Sales (including exports) must increase on this basis. When sales are increased, profit will also grow, and the needs of the popula-

tion for high-quality commodities at low prices will be more completely satisfied.

Frequently, difficulties in supply are in no way due to a shortage of resources. A kind of "organizational" shortage exists because of the irrational connection between production and consumption. In one place, the materials are found in abundance—most frequently in the warehouses of the enterprises themselves—while in other places there is an imaginary shortage. Moreover, it would appear that local supply organs frequently have an interest in such a situation, since their personnel are rewarded not for the completeness with which the needs of purchasers are satisfied but for total trade turnover. Hence, from their standpoint, it is more advantageous to distribute stocks to plants and to increase trade turnover than to concentrate certain reserves at their own bases and subsequently shift them.

Supply and sales organs bear virtually no responsibility to purchasers for the prompt fulfillment of delivery orders. Some comrades propose that the main supply and marketing boards be returned to the charge of branch ministries, thereby abolishing the principle of an extradepartmental territorial supply system.

But in our opinion, the most important thing is not administrative, organizational restructuring but rather the strengthening of economic methods of increasing the effectiveness of supply and sales. There is the urgent problem of converting the entire supply system to cost-accounting from top to bottom. And this requires a broad expansion of planned trade in commodities earmarked for use in production, which, strictly speaking, is stipulated in the documents pertaining to the economic reform.

Clearly, it is essential to strive to restrict centralized funding and distribution of output to the key items. Of course, in the stage of substantiation of production plans, it is advisable to calculate the needs of enterprises with the

degree of detail necessary to preclude errors in the compilation of centralized production development plans. But after these plans have been fixed, the entire process of output distribution must be based on direct, long-term contractual relations between suppliers and purchasers, including local organs in the supply and sales system.

The system of planned assignment of purchasers to suppliers must embrace not only major contractors but small contractors as well through the assignment of local supply organs to specific suppliers. Then it will be possible to issue orders to assigned suppliers (producers or sales organs) for the bulk of the output. In turn, this will cause the suppliers' production plans to be based on contracts and will increase the reliability of product-mix planning.

At the same time, the transfer to local and branch (central) supply and sales organs of all functions pertaining to the material supply of production and the sale of stocks in small batches will raise the material liability of supply and sales organs and will make it possible to incorporate cost-accounting principles in their work.

That the transition to planned wholesale trade requires a great degree of organizational preparation is self-evident. It is necessary to expand and create a network of new specialized warehouse capacities with a sufficient level of mechanization of warehouse-transport operations. The territorial system of supply and sales must be converted to cost-accounting. Finally, it is essential that these organs not only total up orders but also study market conditions, foresee demand, and secure the optimal reserve on the basis of data pertaining to the needs of production in the branches of industry that are being served. This is a labor-intensive work but one deserving of serious attention.

Large-scale purchasers must have direct contracts for a number of years with suppliers (or with sales organizations) and must receive the necessary materials directly,

without prior shipment to a warehouse. The same is true of individually ordered commodities as well as of deliveries of component items of nonstandard fulfillment [*ispolnenie*] on a cooperative basis. All other materials must be delivered to territorial warehouses and sold on the basis of wholesale and small-scale wholesale trade and advance orders.

V. E. Dymshits, Chairman of the State Committee for Material and Technical Supply of the USSR Council of Ministers, states, concerning supply principles under the reform: "Under the economic reform, when the enterprises are interested in making better use of their working capital, they must be able to obtain needed materials in the simplest way. . . . They must buy what they need, as much as they need, and when they need it." (12)

Thus, in our view, the centrally established volume of output to be sold and the key product-mix, determined on the basis of orders (we are not discussing mass homogeneous materials), can initially be in the nature of control figures and can subsequently be updated on the basis of direct contractual relations or schedules.

If the plan is updated on the basis of schedules in the course of fulfillment, the evaluation of changes in plans can be approached in a new way. These changes may affect only two factors of interest to both the national economy and the enterprise: sales volume and profit. Where changes in the sales volume are concerned, the plan should be adjusted according to total existing orders, delivery contracts, or schedules. If these changes secure the receipt of additional profit, the plan established for the enterprises will be overfulfilled and the interests of the government and of the enterprise will be observed. If changes in the plan entail a reduction in the enterprise's profit, on the basis of full cost-accounting, the enterprise should be fully compensated for this loss, either by the purchaser who alters his contract

(order) or by the higher-echelon organ responsible for the loss.

The proposed mechanism for coordinating the plan and needs guarantees the leading role of the centralized plan, since in their aggregate, plans coordinated by branch (ministry) must ultimately agree with the national economic plan and must be component parts of this plan. Possible divergences should be eliminated.

Thus, there must be feedback from consumption to production in the very process of elaborating the plan. To an even greater extent, this feedback must be realized in the process of fulfilling plans through channels of information. But there must be certain gradations of information reaching the center, and superfluous information based on the principle of "knowing to be abreast of everything" should be eliminated as much as possible. Enterprises or associations of enterprises oriented toward the local optimum should themselves eliminate local "disturbances" without appealing to the center and should have their own rights, local funds, and reserves to do so. This will be exactly the desired model of centralized management devoid of over-indulgence in the collection and processing of unused *ex post* data.

The system of management that is built according to the scheme "any local disorder is signaled to the center—command from center to eliminate local disorder—execution of command locally" is bad and unreliable. One can still frequently encounter among economists those whose understanding of cybernetics is somewhat simplistic. Cybernetics is not simply control based on data processing. After all, it is also the most economical control, i.e., the attainment of the optimum through the processing of the minimally necessary and sufficient data reaching the necessary points in space at the proper points in time.

When a satellite is launched toward a planet, the calcula-

tion of its trajectory cannot be ideally precise immediately, since this would require an inconceivably vast body of information concerning all influences on the movement of the satellite which are unknown beforehand. And even if all these influences were fully known, they would still prove to be imprecise due to their variability. For this reason, a rocket is launched initially in a direction that is only approximately precise, but with a sufficient degree of exactness so that the inaccuracy is not too great to be corrected. Further, the satellite or rocket carrier itself reports minimally necessary supplementary information, i.e., maintains feedback with the control center, on the basis of which additional commands are given to correct the trajectory. Thus, the necessary accuracy is not achieved immediately but rather gradually, through adjustments, through feedback, and through the processing of selective—complex but minimal—information. Moreover, upon approaching some object, self-regulation mechanisms built into the satellite and based on optical and gravitational pickups are automatically activated. This is precisely an example of the economical processing of necessary and sufficient data for precise control.

In the same way, centralized plans must define the main direction. In elaborating them, one should not strive for ideal precision, which is not attainable immediately. However, there should be sufficient certainty that the overall development of the economy will proceed in the required direction.

Economic subjects—producers and consumers—interacting with one another within the framework of a single, correctly elaborated plan, must secure the fulfillment of the plan by their actions under the specific conditions of the changing environment and at the same time must provide feedback so that the plan can be updated at numerous points in economic circulation. Such a combination of the general planned direction with the system of feedback and a

certain self-regulation through the circulation and consumption sphere is, in our view, precisely the essence of the application of the cybernetic principle of socialist economic management. The commodity-monetary mechanism does not act as an independent regulatory force but is instead an instrument for the fulfillment of centralized plans. In the course of satisfying needs, information is needed not only to correct current plans but also to elaborate more perfect plans for future periods. Thus, the interrelationship between production and consumption is initially incorporated in the plan and is then realized through the process of plan fulfillment.

Under our conditions, the correspondence between production and consumption means that supply should generally exceed demand by a certain optimal amount. Marx wrote of the necessity of having under socialism "constant relative overproduction" and emphasized that "such a type of overproduction is tantamount to society's control over the material means of its own reproduction." (13) A certain excess of supply over demand must ensure the true correspondence between them. In this case, there can be no discussion of "overstocking," since by varying commodity masses and prices, it is always possible to achieve the complete sale of goods. In similar fashion, there can be no discussion whatsoever of "competition." We refer to the planned and real satisfaction of needs of a personal and productive nature.

3. *The Optimality of Plans*

Under a centralized production management system combined with the all-around utilization of the initiative of the working people, the optimality of plans is the guarantee of the effectiveness of production. But the optimum is

a conditional concept that depends on its correspondence to a selected optimality criterion.

Can the goal of socialist production serve directly as such a criterion? Evidently not, since this goal—the satisfaction of the social and personal needs of the working people—is a broader concept. The mode of satisfying needs can be variously interpreted: as the maximization of the gross social product; as the growth of national income; as the saving of expenditures of social labor; etc. The difficulties in arriving at a single-valued formulation of the optimality criterion are objective. Some authors formulate the optimality criterion in very general form: the attainment of the maximum results with the minimum of outlays. But it is necessary to determine what to consider "the maximum results." Others propose increased effectiveness of production as the optimality criterion. But how can this be measured?

In our view, even though the goal of production and the optimality criterion do not directly coincide in the planning process, they are closely intertwined. Therefore, we must look for the optimality criterion among those yardsticks of production whose attainment influences the satisfaction of people's needs directly and to the greatest degree. From this point of view, there is reason to believe that the maximization of national income (net output) in a given stage of our development is exactly the criterion we seek. However, it is still impossible to formulate the criterion in such a single-valued way. It must be used as a basis for stipulating a number of additional demands. For example, the demand that the national income rise not only in absolute terms but also in per capita terms and, considering high employment, per person employed; the demand that proportions between accumulation and consumption funds be optimal, i.e., that they simultaneously promote growth of production and consumption. Since this criterion is not

absolute, it cannot be separated from the historical situation, and hence it is necessary to determine the optimal period of optimization proper. And most importantly, quantitative determinacy, without which optimal planning loses its base, must be imparted to interrelated criteria.

Let us examine various points of view on this problem. A. I. Notkin, who has written more than others concerning the optimality of economic development, has devoted most of his attention to the formulation of the prerequisites of optimality. (14) While the prerequisites he advances are indisputable, it cannot be proven that they are sufficient for the attainment of an optimum. On the basis of a number of considerations, A. I. Notkin also proposed a generally acceptable optimization period of ten years. But the author does not give a quantitative definition of this criterion.

Another approach to the problem is characteristic of many works by proponents of optimal planning methods. The ultimate criterion of optimality of production is generally not substantiated in works of this school. Such a criterion is assumed to be given a priori, for example, maximization of consumption, or final output, or national income. However, another problem is being solved—what the optimal structure of output should be (“resource vectors”) to achieve maximization, for example, of the volume of consumption in the face of certain constraints on capacities, raw-material and manpower resources, etc., and also on the basis of the conditions of equilibrium between supply and demand.

Maximization of the consumption fund (or of national income with a certain share of the consumption fund in it) is frequently taken as the criterion of ultimate optimality of social production.

A. Katsenelinboigen and S. Shatalin believe that it is advisable to determine the structure of consumer goods on the basis of studies of the population's demand, giving due con-

sideration to nonreturnable, centrally allocated stocks as well as to the influence of the development of production, scientific discoveries, and recommendations concerning the composition of consumption resources. (15)

For our purpose, it is important to note that the optimum is recognized to lie in the sphere of the satisfaction of needs (moreover, personal and social needs are merged into the single concept of “social needs”). This means the maximization of national income (or the final product) not only in its value form but also with regard to its material structure.

Other works of the same school directly state: “The maximum satisfaction of social needs is the optimality criterion for an economic system.” (16) And, finally, it is admitted that the objective function of consumption can be based on the data of budget studies, provided they are representative.

The following thesis is advanced: if prices are based on an optimal plan which guarantees the maximization of the satisfaction of needs, then the criterion of enterprise profitability should ensure the observance of the national economic optimum (at least in principle, while all these tasks are in the model-building stage).

It should be noted that the profitability criterion can be effective if profit expresses an increase in value added accompanied by higher labor productivity. In other words, profit must be determined by excluding the influence of price increases (without corresponding improvements in output quality) and of deliberate assortment changes in the direction of more expensive items, especially in the face of unsaturated demand. Similarly, the fulfillment of contractual deliveries in physical terms with respect to the volume and assortment of output must serve as a necessary prerequisite to rewarding enterprises for their work.

A. Aganbegian and K. Bagrinovskii (17) have expressed interesting ideas concerning the compatibility of the crite-

tion of maximization of the satisfaction of needs and the criterion of higher labor productivity. The authors propose the solution of two interrelated problems of optimum: the first is the maximization of the satisfaction of social needs and the second is the minimization of aggregate labor inputs. In both problems the optimal use of resources (their n -dimensional vector) is determined with constraints on these resources from the standpoint of various objective functions: in the first problem, the maximum consumption; and in the second problem, minimum labor inputs. But at the same time, in the first problem the optimal utilization of labor resources serves as an additional constraint, while in the second problem the optimum of the first problem, i.e., maximum satisfaction of needs, serves as such a constraint. It is argued that if, in the first problem, the condition of total utilization of labor resources is also imposed, then in this case, and only in this case, two such areas of admissible plans in which extremal ("saddle-shaped") points will coincide for any type of resource can be found. In other words, the production of each resource in amounts corresponding to a given point will be necessary, and it (the resource) will be used optimally with respect to satisfying needs as well as to economizing on expenditures of social labor.

In the given instance, the condition of total utilization of labor resources is extremely important. Unless this condition is observed, the minimization of labor expenditures—which in itself does not promote the effectiveness of production—rather than the maximization of the satisfaction of needs, may become the optimality criterion.

This opens the way to the elaboration of an optimal plan based not only on the social utility of resources (i.e., judging by their influence on the increase in final consumption) but also on labor expenditures (labor-intensiveness, enterprise cost of production, effectiveness of capital invest-

ment). A. Aganbegian and K. Bagrinovskii write: "Optimal prices expressed in labor are just as acceptable as prices expressed in units of social utility. . . . The quantitative determinacy and relationships of optimal prices of both types are the same." These problems can also be solved dynamically through the reduction of expenditures made at different times by the discount method. When both (and only both) constraints are adopted, orientation toward the profitability of individual enterprises can guarantee the selection of genuinely optimal solutions from the standpoint of the goals of socialist production.

We add that, strictly speaking, the optimality criterion previously proposed in our work—increased national income per employed person—in itself means the coincidence of the criteria of maximization of satisfaction of needs and of the minimization of labor expenditures, since the increase in national income per employed person is the national economic index to the growth of labor productivity. But the mathematical treatment of this question is of great importance. It demonstrates the possibility of constructing plans for the development of production and prices for individual types of products (resource vectors) based on the simultaneous attainment of criteria, and hence not for the overall mass of output in value terms but rather with the specific differentiation of production plans and prices required for influencing production.

As we see, most authors lean toward the view that the optimality criterion lies on the plane of the satisfaction of social and personal needs.

The optimality criterion interpretation proposed by L. Evstigneeva and L. Nikiforov (18), who initially formulate this criterion as increased production effectiveness, does not agree with this view. They later disclose their understanding of effectiveness: the growth of the gross social product, which can be a criterion under the condition that

the accumulation norm secure the further, uninterrupted increase in the social product but, at the same time, not lower the existing living standard. The authors mention neither the final product nor national income. They consider it impossible to proceed from the structure of the consumption fund, since, in their opinion, the structure of output of Department II is entirely independent of the structure of the production of the means of production. Generally, the authors are correct when they write that consumption itself is a function of production, but this specifically contradicts the idea they advanced to the effect that the structure of consumption is independent of the production of the means of production. They also believe that the formulation of the optimality criterion should be based "on reproductive relations."

But in our view, these relations cannot be perceived passively, the way they have developed historically. They must be actively restructured in the name of a clearly recognized production goal. And since production cannot but be directed toward the satisfaction of social needs, the restructuring of reproductive relations can and should begin entirely on the basis of ultimate goals and the definition of final output, first output for nonproductive consumption and then output for productive use in terms of volume and structure. The authors themselves do not deny that the optimization of the structure of consumption is necessary, but, in their interpretation, it is a "secondary problem." In our opinion, this indicates the lack of differentiation in the approach to the study of reality and to the restructuring of this reality.

In exerting a planned impact on production, knowing where to search for the optimality criterion is not enough. It is also necessary to have a quantitative description of the optimizing criteria and to take into account the actual situation. From this viewpoint, the problem of optimization in

general reduces to two questions: what growth rate of net output can be adopted as optimal, and what the proportions between the parts to be consumed and accumulated in this product should be (or the solution of the so-called two-sector model of the optimal plan). This is precisely the root of the problem.

Under socialism, the distribution of national income into the part that is to be consumed and the part that is to be accumulated is based on an objective pattern that has already been established. In all socialist countries with centralized, planned management, a rather stable ratio has been observed for a number of years: approximately 75% of the national income is used for consumption (personal and collective) and approximately 25% is used for accumulation and other needs.

However, within the overall framework of established, regular proportions, changes of very great importance can occur. These proportions do not hinder the active and conscious exercise of economic influence on changes in consumption and accumulation norms by 2-3% in one direction or another, which can attest to the growing effectiveness of production. For example, when the consumption norm rises to 78%, the accumulation norm may decline to 22%. But as a result of a reduction in the capital-output ratio, more output may be obtained from this 22% accumulation than from the 25% accumulated portion of the national income that was not used as effectively in the past.

The optimum is the best possible combination of growth rates and proportions between consumption and accumulation funds. These combinations must consider the interests of present and future generations. Western propaganda (e.g., sociologist Raymond Aron) repeats in various ways the notion that the secret of the high Soviet production development rate is very simple: reduced consumption in favor of accumulation. But there is no secret here. It is well

known that the Soviet Union did not receive outside credits for the creation of its industrial and defensive might. It is well known that we had to limit ourselves in many respects in the name of defense and of the creation of socialism's material and technical base. And this is worthy of respect. Europeans who received a very valuable "dividend" from the Soviet economy by being spared the Hitlerite plague—in large measure due to our highly developed industry, which was created at the price of restricting vital needs—should show proper respect for this great historic deed of the Soviet people.

Under the conditions of the complete and ultimate victory of socialism, the problem of finding an optimal relationship between the consumption and accumulation funds becomes especially urgent.

In a certain stage, constraints on consumption begin to offset the process of effective accumulation. Work incentives are diminished, and hence the very process of accumulation of productive capital and its utilization becomes less effective. Thus, that optimum whereby the consumption fund would be the source for sufficient stimulation of the labor process and hence the source of further expansion of production and higher production effectiveness must constantly be determined, not only for ethical reasons but for purely scientific, economic reasons as well. Naturally, one must try to make sure that the share of the part of the national income earmarked for consumption grows from year to year and remains close to the overall national income growth rate. At the same time, the effectiveness of the utilization of the accumulation fund should not diminish. Essentially, the entire system of economic measures for influencing production stipulated in the economic reform is directed toward this goal.

An increase in the share of the part of the national income earmarked for consumption need not necessarily lead

to a reduction in the production development rate. The point at issue is determination of that relationship whereby the increased level of consumption will serve as a powerful incentive for increasing productivity of social labor. Then it will be possible to create greater production capacities with smaller outlays. And there is no doubt at all that this is a realistic possibility.

Let us now examine historically determined factors in the quantitative characteristics of the optimality criterion. In the quantitative definition of the optimality criterion of our development, the starting point must be the necessity of raising the Soviet people's standard of living.

Naturally, variants of optimal plans must be calculated, starting with the final product, which determines both the volume of the net product and the size of the consumption fund in the net product. Therein lies the answer to the question of what should be considered the desired value in the first approximation and what should be accepted as the initial conditions. In a problem as complex as that of finding the optimal plan for the development of the national economy on the basis of a dynamic model, the desired and initial values can and should change places several times after each approximation.

Initially, we will proceed from the desired size (by year) of the net product and of the per capita consumption fund in the net product under given prices to the required resources. Then, after comparing resources against the initial data, we will proceed in the second approximation from the adjusted resources and prices to the necessary rate and volume of increase in net product and consumption fund. Of course, from one reiteration to another, resources will remain passive but will change in connection with the implementation of capital investment programs, imports, selection of optimal structure of technological variants, and price changes. In other words, methods of interbranch bal-

ances and principles of optimal planning must also be employed.

By alternating the places of the desired and initial values and by gradually reducing the gap between results, we should arrive at a formulation of nearly optimal and most probable growth rates of the per capita net product in constant prices. Since we will also change the prices, the national income growth rates in current prices will also change. National wealth must increase in such a way that the increase in consumption is not only stable but also at an accelerated pace.

Let us examine this question in somewhat greater detail. Let us assume that in t years we wish to increase national income and the consumption fund by a certain amount. This requires a certain increase in the volume of capital investment at a given coefficient of capital investment effectiveness. But capital investment resources are limited by the accumulation norm in the national income. We shall select those variants, under which we can meet the planned accumulation norm, and we shall verify them in terms of labor resources and labor productivity growth rates which are functionally connected with the growth rate of the capital per worker. If the growth of labor productivity secures the necessary growth of the gross, final, and net products, this means that the desired variant is among the "satisfactory" variants.

But if the attainment of the necessary increase in labor productivity requires an increase in capital per worker, it will be necessary to increase the accumulation norm. To avoid affecting the consumption norm in the process, it may be necessary to use currency reserves within certain limits. If, to the contrary, the accumulation fund is more than sufficient for increasing the capital per worker (through an increase in the output-capital ratio), it will be possible to

increase the consumption fund and thereby to reduce the optimization period from t to $t - k$ years.

Finally, if, in the process of approximating the solution of the problem, some proportions go beyond the limits of the proportions that are actually possible, it is necessary to calculate variants with "worse" optimization periods, i.e., not t but rather $t + f$ years.

We note that the criterion of the consumption level is not presented here as self-sufficient. The principal issue is the growth of national income in physical volume, both per capita and per employed person. And this is nothing but the criterion of increased productivity of social labor. Hence, there must be no thought that the primacy of production over consumption is ignored.

A further demand is that after a certain time the per capita consumption fund grow at a rate not less than the growth rate of the national income as a whole. In other words, consumption should increase in proportion to growth of labor productivity. To this it should be added that, during individual periods, the growth rates of the consumption fund may somewhat exceed the overall growth rate of national income, but with the condition that there be relatively more rapid increase in the effectiveness of each accumulated unit of increment of national income in current prices.

Naturally, when we discuss the maximization of the satisfaction of need, we are speaking of gradual growth and not of a spurt in consumption at the end of the planned period taken as optimal. It is entirely probable that the degrees of growth of the first years should be higher. It is hardly possible to have a variant whereby in the present stage it would be necessary to accumulate intensively for a period of seven to nine years in order to "reap the harvest" in the eighth to tenth year in the form of a one-time, major increase in consumption. Such a model is generally unrealis-

tic, since any encroachment on consumption threatens a reduction in the growth of labor productivity, i.e., in the same accumulation. Therefore, it is probably necessary to establish a dependence between increases in consumption and national income in the form of a derivative of higher labor productivity. And if this dependence is known, at the beginning of the optimization period it is entirely possible to strive to increase consumption as the guarantee of higher production. This is a difficult problem, but nonetheless one which is entirely solvable with our scientific forces of economists, cyberneticists, and mathematicians.

And so the optimum must be specifically formulated as the attainment of a given average standard of living in a given number of years, for which the overall national income and the national income per employed person must grow by a given percentage from year to year while the volume of consumption in comparable and current prices must increase by a given percentage. Many would say that this is an extreme oversimplification, that it is a much more complex matter, etc. But when there is a conglomeration of numerous contradictory facts and figures, proportions and coefficients, it is useful to abstract oneself from many circumstances.

The potential for large-scale economic maneuvering is one of the most important advantages of planned economic management. During the 1930s, our government resorted to the imposition of certain constraints on consumption in the interest of the accelerated development of a mighty industry. At the present time, the necessary conditions exist for resolving two problems: (1) liberating resources to further raise the material and cultural living standard of the working people and (2) eliminating "shortages" and making the transition to the planned distribution of the means of production through wholesale trade.

All these things are closely connected with our economic

reform and with the optimization of planning. We need historically concrete optimization rather than the reinforcement of some specific proportions for all time. In other words, we must apply "variable optimization." At present it is important to create powerful stimuli to increase labor productivity and thereby to eliminate shortages in supply and consumption. In any case, variants of "variable optimization" should be calculated and discussed.

Another approach to the determination of the optimal proportion of growth rates for the share of accumulation and the share of consumption in national income is also possible; it entails the use of the principle of the universality of labor under socialism and the resulting full employment of working people. From this it follows that the accumulation fund must increase each year by at least the amount of the cost of all new workplaces that are needed for those entering production for the first time as well as for personnel being transferred from one production sector to another due to increased mechanization and automation of labor processes. Thus, the lower boundary of the increase in the accumulation fund can be determined. But on the other hand, the accumulation fund must grow in such a way that the per capita consumption fund for the growing population at least would not diminish. This forms the upper limit to the increase in the accumulation fund. (19)

We note that there are great difficulties in determining the cost of new workplaces and the return on them (considering an increase in the shift index). Let us assume that we have overcome these difficulties and have obtained guideposts for the planned forecasting of the proportions between the consumption and accumulation funds. But full employment and the existing level of consumption are not the only criteria. The task is to achieve a substantial increase in per capita consumption without a reduction in

the effectiveness of the use of the accumulation fund in the face of full employment.

This can be achieved if each workplace yields an increasingly great return and reduces the capital-output ratio. In such a case, the cost of a workplace may decline in relative terms to such a degree that the difference between the upper and lower limits of the accumulation fund will greatly increase. Hence, in itself, the method based on the principle of the universality of labor is insufficient. Evidently, outlining increases in the consumption fund in advance continues to be a necessary prerequisite for optimizing proportions between the accumulation and consumption norms. But these proportions should be verified against the criterion of full employment. In other words, the consumption fund cannot grow in such a way that the accumulation fund would be inadequate to provide employment for all persons entering production for the first time and for personnel released from various sectors of production by virtue of technological progress.

From the foregoing it follows that increased return on workplaces and reduced capital-output ratios are very substantial prerequisites for increasing the effectiveness of production, and this must be taken into consideration in all calculations of optimal plans.

In terms of certain methodological positions, the problem of searching for an optimality criterion for plans is close to individual problems connected with economic forecasting. One can agree with the statement that "the *forecasting of social needs*—productive and nonproductive—is one of the chief aspects in long-range economic forecasting. This is a most urgent theoretical and practical problem." (20) But there has been little elaboration of the problem, and it has almost never been reflected in economics literature.

4. *Capital-Intensiveness*

Certain difficulties in the formulation of optimality criteria arise due to the insufficient elaboration of the problem of capital-output ratios. We proceed from the assumption that the net product and the national income, as another expression of the net product, grow from year to year. And since the consumption fund must grow at a no less rapid rate, this means that, in principle, the capital-output ratio should not increase but preferably should decrease. However, increases in capital-output ratios have been observed during certain periods in the USSR. Thus, between 1940 and 1962, the capital-net output ratio declined by 23%. But on the other hand, between 1952 and 1958, it declined by only 3%, and between 1958 and 1962 it rose by approximately 10%.

Some economists regard an increase in the capital-output ratio as a necessity connected with increased labor productivity. Indeed, in the period of transition from manual or relatively unmechanized production to mechanized production, this trend was observed in many countries, including our own. But if developed, industrialized production has already been created, this trend gives way to a systematic reduction in the capital-output ratio. As E. A. Gromov has shown, this stable trend is seen in the history of industrial development in the USA. (21) The trend toward a lower capital-output ratio was also observed in our country for a number of years. Periods of higher capital-output ratios can more likely be explained as the result of disproportions in the development of industry and agriculture as well as within industry proper and also of the decline in the effectiveness of construction and installation work. Accordingly, an increase in capital-output ratio can

scarcely be considered an objective necessity. To a certain extent, conclusions about increasing capital-output ratios can also be explained by the fact that there is frequently an inclination to judge proportions of social production according to the structure of the gross social product. And since there is a trend toward a lower share of net output in the volume of the gross product, the conclusion is drawn that an increase in the share of past labor in the value of output is supposedly the direct consequence of technological progress and of the growth in the organic structure of capital. Hence, an increase in the capital-output ratio is also a natural phenomenon.

In connection with this, we shall discuss the question of how to evaluate proportions in social production. Many of our economists still do not understand which form of the social product should be used for judging the proportions of production and the level of its effectiveness—the gross social product, the final product, or national income.

This situation is evidently explained by the fact that in Marx's formula of the amount of value of the annual product of capital ($c + v + m$), some economists have construed c to mean all advanced constant capital or the complete value of fixed and working capital, and have construed v to mean special variable capital in monetary form, necessary for the acquisition of labor power.

The reason for such interpretation is evidently the incomplete citation of the passage from *Capital* which states: ". . . For the sake of simplicity we assume that constant capital everywhere equally is included whole in the annual product of the capital under investigation." (22) However, the beginning of the same paragraph states: "The amount of the actual value of its (capital's—*E. L.*) product depends on the size of the basic part of constant capital and on whether much or little of this part is included in the value of the product due to wear. But since this circumstance has

no importance for the profit norm and hence for our present study (i.e., solely for the study of the profit norm—*E. L.*), for the sake of simplicity we assume that constant capital everywhere equally is included whole in the annual product of the capital under investigation." (23)

As we see, Marx meant by c only the depreciation [*iznos*] of the basic means of labor and the multiple circulation of the objects of labor. Many, including Werner Zombart and others, have reproached Marx for inconsistency or lack of clarity in expounding this question.

Let us recall the most important theses from Volume 1 of *Capital*, where the symbols c , v , and m are introduced into the analysis: ". . . Part of the constant capital applied, consisting of the means of labor, transfers only a part of its value to the product, while the remaining part is preserved in the previous form of its existence." (24) And further: "Part of the value, and specifically c , which represents constant capital *consumed* in the production process, does not coincide in its quantity with the value of constant capital *applied* in this production process." (25)

How can it be explained that, while including only the depreciation of the basic part of constant capital in c , Marx at the same time sometimes included all fixed (and working) constant capital in c ? The reason is that he proceeded from average social capital and assumed an equal value for capital and its annual product under certain strictly defined conditions.

Let us clarify this with a calculation. Let us assume that the aggregate or average capital equals 5,200 units—5,000 c and 200 v . At the same time, capital contains 4,000 units of fixed capital and 1,200 units of working capital. Let us further assume that fixed capital wears out in ten years while working capital has a turnover of four times a year. Then the value of the annual product of capital (turnover value) will equal 5,200 monetary units

$(4,000 \div 10) + (1,200 \cdot 4)$ or, with respect to value (but not structure!), will equal the value of all applied capital. That this is exactly what Marx had in mind becomes entirely evident from the following remark which he gave in parentheses: "Thus it is assumed that the working part together with the part of the value of fixed capital that is added to it during the year will complete such a number of cycles that the overall value of goods produced will equal the value of the entire aggregate capital used in production in a given year." (26)

However, the equal values of capital and its product as a certain simplification were only used by Marx when he was specifically discussing the general amount of capital, for example, in calculating the profit norm. But in his investigation of the reproduction process, in no case can c be construed to mean the total value of advanced capital. It is only the sum of depreciation of fixed capital plus the sum of multiple circulation of value of objects of labor together with the circulation of the wage fund for necessary labor proper.

Only in this light does it become clear that, on the one hand, one and the same amount of applied capital is divided into constant and variable ($c + v$) while, on the other hand, it is divided into fixed and working capital ($c_f + c_m + c_{la}$), where c_f is total fixed capital, c_m is the material part of working capital, created at other enterprises, and c_{la} is the part of the working capital that embodies live necessary labor which creates part of the working capital at a given enterprise in the form of incomplete production, semimanufactures, internally produced equipment, etc.

From such a structural decomposition of capital, it follows that if $c + v$ conditionally depicts capital outlays on the production of the annual product, then in this case, and

only in this case, v is none other than the wage fund that has been paid (turned over) for the year, which we denote as v_{to} . But if we are discussing the structure of advanced capital, i.e., capital applied or entering annual production, then in no case can v be likened to wages paid—not for a year, or a month, or a week—since the period for which it should be taken is not actually known. Some are confused precisely by the fact that the discussion concerns annual production, and therefore it would seem proper to take the annual wage fund. But on the other hand, wages are paid twice a month (in our country) or once a week (in the West). How is this to be approached?

In actual fact, the wage fund for necessary labor as a part of working capital is continuously bound in production, it is "in cycle" (and for this reason we designate it as v_{cy}). Together with all working capital, this fund makes a number of turnovers (cycles) during a year. Furthermore, it is specifically the rate or number of cycles of this active part of capital which creates new value that also determines the overall rate of turnover of capital and thereby the intensiveness of the reproductive process and labor productivity. The value v_{cy} will also quantitatively predetermine the entire wage fund for the year. For this purpose, it must be multiplied by the number of turnovers or cycles a year. If, for example, $v_{cy} = 20$ units of wages paid for live labor, while the working capital is turned over an average of $n = 4$ times a year, the turnover value v_{to} will equal 80 units ($20 \cdot 4$) of wages, or the actual wage fund for the year. On the other hand, when the annual wage fund v_{to} and the number of turnovers n are known, v_{cy} can be determined.

In order to determine the organic structure of capital, it is important to determine not the entire sum expended on wages but only that part which is continuously in circulation, i.e., v_{cy} .

Authoritative evidence in Volume 3 of Marx's *Capital* indicates that this is precisely the case: ". . . accordingly, this v which creates surplus value and which represents the sum total of wages paid out is more than v in $c + v$, and therefore the calculation becomes invalid." (27) And further, the calculation is given for this diminished value v (v_{cy} in our denotation) on the basis of concrete, numerical data on a cotton factory described in Volume 1 of *Capital*. Despite the fact that 2,704 pounds sterling in wages were paid out for the year, as variable capital, v amounts to only 318 pounds sterling, since the total working capital completed 8.5 cycles in a year, and hence $2,704 \div 8.5 = 318$ pounds sterling (this is specifically v_{cy}). Further, the calculation of the organic structure of capital is presented in the same chapter as follows: 10,000 pounds sterling are taken to be the value of the machinery, i.e., the entire fixed capital employed, and 2,182 pounds sterling as the working material part of constant capital (c_m in our denotation) are added. The latter sum is obtained in the following way: wages v_{cy} in the amount of 318 pounds sterling are subtracted from *total working capital* of 2,500 pounds sterling. Hence, from this it is quite apparent that the value v_{cy} is already a part of the working capital, is continuously contained in the working capital, is continuously being turned over, and is reproducing itself simultaneously with the creation of new and with the preservation of past value in the form of the objects of labor and the depreciation of part of the implements of labor. Then the organic structure of capital is determined as follows: 10,000 fixed capital + 2,182 working material capital = 12,182 c ; $12,182 c + 318 v = 12,500 K$ or (in percent) $97.5 c + 2.5 v = 100 K$. Then follows the important remark: only one-fortieth (i.e., 2.5%—*E. L.*) serves as wages, but repeatedly, more than eight times a year.

Evidently these important principles in their aggregate

and interrelationship have not been given proper attention by those authors who find that v is only the wages paid or a special reserve of monetary resources for paying wages currently due.

The foregoing is very important in resolving disputes concerning the evaluation of proportions and effectiveness of production. Clearly, the annual gross social product consists of only the total depreciation of fixed capital and the total multiple circulation of objects of labor as well as incomplete production, which also contains the wage fund for necessary labor (v_{cy}) in materialized form.

Of course, this does not mean that the enterprise never has working capital in the form of free money. This money is accumulated so that at the required time it can serve as a means of paying for raw materials, of satisfying obligations to the budget, or of paying wages. But these calculations are made in the circulation sphere, and here we are interested in the production process.

In the production process, resources for wages are always connected with that part of the working capital which

TABLE 1

Form of product	Depreciation of fixed capital (1/10)	Turnover of material part of working capital (turns over 4 times)	Turnover of wage fund (turns over 4 times)	Profit (with $m = v$)	Total product
Gross social product	10	$50 \cdot 4 = 200$	$20 \cdot 4 = 80$	80	370
Final output	10	50	80	80	220
National income	—	—	80	80	160

is directly in production and which performs the very important act of uniting live labor with the implements and objects of labor for the creation initially of incomplete production and subsequently of finished goods. In the commodity, live labor is already crystallized as value added which embodies both the necessary and the surplus product.

When the circulation of resources is normal, the commodity form is replaced by the monetary form and the resources required for current accounts appear. In one case, possible time lags in the change of these forms, connected with divergences between the periods of production and the periods of circulation, mean a shortage of cash resources which is compensated by credit; and, conversely, in the other case, they mean a surplus of these resources, which lie idle in enterprises' bank accounts as a resource for extending credit to other enterprises.

From the standpoint of circulation, variable capital is similar to working capital in every respect. We shall attempt to illustrate further conclusions from this proposition by a certain, very simple, two-period numerical model.

During the first period, let the volume and structure of productive capital have the following organic composition: $150 c + 20 v = 170 K$. But at the same time, this capital has a particular structure from the standpoint of the proportions of fixed and working capital: $100 c_f + 50 c_m + 20 c_{la} = 170 K$, where total working capital equals 70 (50 + 20).

The results of production for the first period can be expressed by the data given in Table 1.

Now let us assume that by the beginning of the second period, out of 80 units of profit during the first period, 40 units of profit are used to increase productive capital, of which 30 are used to increase fixed capital; 8, to increase working material capital; and 2, to increase the

wage fund for labor in incomplete production. This is tantamount to an accumulation of 25% of the total national income $(40 \div 160) \cdot 100$.

These investments, comprising 23.5% of the value of capital that was active, should cause an acceleration in the turnover of resources in production, let us assume, by 25%, i.e., should ensure five instead of four cycles a year. This is the only expression of the intensification of production or of the growth of productivity of live labor assumed here.

Productive capital in the second period is distributed as follows: $188 c + 22 v = 210 K$, while, from the standpoint of resource turnover, their structure will be as follows: $130 c_f + 58 c_m + 22 v_{cy} = 210 K$.

TABLE 2

Form of product	Depreciation of fixed capital (1/10)	Turnover of material part of working capital (turns over 5 times)	Turnover of wage fund (turns over 5 times)	Profit	Total product
Gross social product	13	$58 \cdot 5 = 290$	$22 \cdot 5 = 110$	110	523
Final output	13	58	110	110	291
National income	—	—	110	110	220

Now the production process in the second period can be expressed by the data in Table 2.

It appears that all our assumptions are more or less realistic and noncontradictory. We shall now illustrate the

basic proportions of production in dynamic form for both periods, first making the calculation with respect to the gross social product (Table 3).

TABLE 3

	First period	Second period	Change (+, -), in % of first period
Share of outlays of past labor in gross social product	0.57	0.585	+2.64
Share of national income in gross social product	0.43	0.415	-3.5

In calculating with respect to gross output, we obtain a "pessimistic variant" in which the share of the compensation fund increases and the share of national income decreases, the influence of prices being excluded. We shall now attempt to determine the same proportions in terms of the *final* output rather than in terms of the gross product (Table 4).

TABLE 4

	First period	Second period	Change (+, -), in % of first period
Share of expenditures of past labor in final output	0.271	0.244	-10.8
Share of national income in final output	0.729	0.756	+3.6

The evaluations proved to be diametrically opposed. When the count is based on final output, the share of national income grows rather than diminishes, since in this

instance there is no double counting of transferred value or duplicated cycles in the objects of labor. *The sense of such simplified models consists precisely in the fact that the phenomenon can be presented in its "pure" form, by neglecting details that have no direct bearing on the heart of the matter, provided that nothing essential is omitted.*

Naturally, capital-output ratios for all types of output in the given model decline. This is explained by the fact that fixed capital per worker grows at a slower pace than labor productivity. During the first period, the capital per worker equals 5 ($100 \div 20$), and in the second period it equals 5.9 ($130 \div 22$), which means an approximate growth of 18%. At the same time, labor productivity in the first period (in terms of the ratio of national income and functioning live labor) equaled 8 ($160 \div 20$), and in the second period it increased to 10 ($220 \div 22$), or by 25% (for t years). For this reason, the capital-output ratio declined. In particular, if one reckons in terms of the volume of all fixed and working productive capital, the capital-output ratio declined by 6.5% for final output and by 6% for national income.

In such a case, when the turnover is accelerated or when production is intensified on the basis of effective capital investment, in principle each unit of increment of national income should cost society a reduction rather than an increase in the accumulated share of the national income (share but not mass!). Let us examine these relationships in greater detail.

In the second period, capital investments increased by 40 units. This means an increase of 23.6% with respect to the value of the capital that was in operation [$(40 \div 170) \cdot 100$]. Let us assume that this same high growth rate for productive capital will not only be maintained but will even increase somewhat and that the increase will amount to approximately 24% during the third

period. To this end, it will be necessary to invest 50.4 (210 · 0.24) units from the national income of the second period. Then the proportions for dividing the national income into accumulation and consumption will be as follows (Table 5).

TABLE 5

Share in national income	First period (in %)	Second period (in %)
Accumulation fund	$(40 \div 160) \cdot 100 = 25$	$(52.8 \div 220) \cdot 100 = 24$
Consumption fund	$(120 \div 160) \cdot 100 = 75$	$(167.2 \div 220) \cdot 100 = 76$

This calculation illustrates the compatibility of two apparently contradictory principles: it is possible to increase the growth rate of productive capital and at the same time to reduce, or at any rate not increase, the accumulation norm or the share of accumulation in national income. Thus, the share of consumption can grow (or at any rate not diminish) at the same or at a greater rate in comparison with the growth rate of the accumulation fund (in constant prices). In our view, such a relationship can be adhered to in long-range planning of production in a given stage of historical development. Let us note that an increase in accumulation without the growth of its share in the national income is based on the fact that labor productivity (index 125) increases more rapidly than the fixed capital per worker (index 118) by 7 points. This does not represent anything unusual for the history of the development of our nation's economy.

Indeed, in the space of 16 years (from 1940 to 1966) [sic], our labor productivity increased by 3.9 times whereas capital per worker increased by only 3.6 times. (28) The

growth of labor productivity outstripped the growth of capital per worker exactly by 7% despite the unfavorable relationship between these indices in 1950–1960.

From the examples cited, it is evident that labor productivity and the intensification of production are reflected in the reproductive structure (i.e., in the dynamics of structural changes) first of all in the form of accelerated turnover of both the material and “labor” parts of working capital. The more past labor that is brought into motion by live labor, i.e., processed expediently per unit of time, the more gross as well as final output is created during the same time.

Therefore, repeating cycles that embody the constant reproduction of the initial reserve of the objects of labor and simultaneously the multiple transfer of their value from each cycle to the following cycle have paramount importance as a prerequisite for the creation of final output and of national income.

A. Bechin, in his article (29), correctly treats the problem of evaluating structural relationships. But he errs in his somewhat scornful reference to repeatedly reproducible reserves of raw materials and fuels as well as in his reference to intermediate semimanufactures, concerning which there are supposedly “only entries in statistics and in the balance sheets of the production and distribution of the aggregate product of enterprises and branches of the national economy.” Contradicting himself, he writes that yarn is actually “extinguished” in fabrics, that fabrics are “extinguished” in finished clothing just as coal is “extinguished” (literally) in coke and coke is “extinguished” in metal. But at the same time, in a given measure, the substance of yarn or of coal exists in a finished suit or machine. Unless the cycles for the reproduction of yarn or coal were increased, more finished clothing or implements of labor would not be produced. A. Bechin himself correctly notes this point

in his reference to Marx's little-known pronouncements concerning the gradual transformation of the matter of nature into various commodity forms in various consecutive stages (steps) of productive processing, which increasingly adapts commodities to the form in which they can be used. And in this concluding act of production, it is extinguished together with its product, since the beginning of the consumption process is at the same time the beginning of the destruction of the product of production.

Repeated cycles of one product or another in the structure of national economic output are very essential, and in no way can they be ignored in branch or interbranch planning, in particular in the elaboration of interbranch balances and technological coefficients of total outlays. However, *in assessing the structure of social production as a whole, these repetitive cycles must be excluded.* Thereby, national income and final output rather than gross output must be the point of departure in optimal planning.

One must not forget that, by their nature, repetitive cycles in the gross product cost society no additional labor at all. That which we call v_{cy} reflects a one-time mass of applied live labor, which is turned over repeatedly and which represents the total mass of live labor functioning for a year and creating both national income and profit. We have counted this value entirely in the final product. But the related cycles of the material part of working capital created at other enterprises during the same year are already included in the cycles v_{cy} , which we have already counted with respect to total production volume. How can they be taken into consideration if we wish to judge the proportions of live and past labor in the finished product? And it is unimportant that the sum of the cycles of c_{to} is greater than turnover value v_{to} . Each cycle v_{cy} preserves and reproduces the greater value of past labor and transfers it to newly created product.

The repetitive cycles of c_{to} and v_{cy} are a fact of the intensification of production when their increase is natural. First, they attest to the acceleration of its rate (provided that the initial mass of live labor increases to a lesser degree than the number of cycles v_{cy}). Second, the duplication of cycles—assuming that it does not conceal artificial “cooperation” with the aim of inflating the volume of output—is evidence of the increasing differentiation and specialization of production and of the increase in reciprocal servicing between enterprises and branches.

But the very fact of increasing the number of even entirely expedient cycles artificially exaggerates the compensation fund in the gross social product, and thereby leads to the incorrect conclusion that an increase in the effectiveness of production is sacramentally connected with a reduction in the share of national income in the gross social product. It seems that the better things are, the worse they are! And some economists are of this persuasion: according to Marx, the higher labor productivity, the relatively more unfavorable the structure of the social product from the standpoint of the share of national income and the consumption fund. In this connection, they refer to the growth of the organic structure of capital and to the trend toward a lower profit norm.

But this is, at any rate, a strange and illogical conclusion. The very simple numerical calculation cited above was specifically presented to show that Marx's conclusion concerning the increase in the share of past labor in the gross product (as well as in the unit product, since the gross product is the simple sum of output by enterprises) is indeed manifested, but at the same time the share of national income in the final product must increase when there is a proper increase in labor productivity.

National income and its physical volume also increase in the gross product, since there are fewer expenditures c

per unit of output but, as value added, national income in the gross product declines.

Of course, it is possible to wedge yet another type of social product—the final output of branches of social production—in between gross output and final output. Such output will exclude intrabranched turnover of both objects and implements of labor. There are those who favor the delineation of this type of output. (30) Undoubtedly, in many practical problems relating to branch planning and interbranch balances, the final output of branches can serve a useful function. But from the standpoint of social production as an integrated whole, even this “conditionally final” output will incorporate internal cycles costing society no expenditures of live labor whatsoever for a given year. Therefore, it is impossible to judge the proportions of social production or the material-intensiveness of output or the proportions of accumulation and consumption in the net product on the basis of the final output of branches.

Moreover, determining what a “branch” is proves very difficult. If it is not a question of the administrative concept of a group of enterprises subordinate to one ministry, it becomes very difficult to plan and calculate the final output of a “pure” branch. And if one considers the administrative boundaries, the calculation becomes economically unreliable. Indeed, bearing plants are subordinate to the USSR Ministry of the Automotive Industry. As a result, bearings delivered to the Likhachev Automotive Plant are not included in the final output of the branch, while the value of the same bearings sold to a plant belonging to another ministry will be incorporated in final output.

Attention must also be focused on one more point of confusion. In an article abounding in numerical data (31), V. Rutgaizer studied the relationships between gross output and national income. And even though the article calls gross output “the social product,” it is specifically gross

output rather than the final output of branches of production or the final output of the entire national economy. The author’s conclusions vary depending on the prices used to make the count. If the count is made in current prices, the share of national income increases. If the count is made in constant prices, the share of national income remains virtually unchanged. And this is the result of the opposing influence of a number of factors, including structural changes and the increase in the capital-output ratio on one hand, and the economy on material outlays per unit of output on the other. In our view, the count should not be made in relation to gross output but rather in relation to final output, and in such a case an increase in the share of the national income should be anticipated in all modes of counting. It is the author’s personal belief that the economy factor in material outlays is decisive. At the same time, he admits that the intensification of specialization and reciprocal servicing among branches increases material outlays per unit of national income. Thus, the proportions of social production and reproduction must be evaluated in terms of final output, and final output must serve as the starting point for the compilation of optimal current and long-range plans.

As has already been demonstrated, constant attention must be given to increasing the share of national income in final output and increasing the share of the consumption fund in national income through the increased effectiveness of capital investment. In this connection, a derivative evaluatory index of the relatively more rapid growth of the gross social product compared with the growth in final output can also be proposed. In our example (see p. 127), in the first period, the ratio of the gross social product to the final product was 1.68 ($370 \div 220$), while in the second period (see p. 127), it increased to 1.80 ($523 \div 291$), i.e., by 7.12%. Essentially, these values reflect the intensiveness of

production processes (or the rate of turnover) for a period of the same duration. The change in the value of initial productive capital plays a substantially lesser part. Thus, this index characterizes qualitative improvements in the structure of production.

It appears indisputable that, in spite of the importance of the balance of the gross social product from the standpoint of physical proportions, this form of the product cannot be used in structural analysis. If all social production is viewed as an integrated whole, the structural proportions in it will differ from those in the gross social product calculated according to the factory method.

A. I. Pashkov, Corresponding Member of the USSR Academy of Sciences, believes that the category of the final product by no means belongs exclusively to bourgeois political economy. It is also essential for socialism and has a number of advantages over the gross product category. Pashkov does not propose the elimination of the gross product category but rather proposes that it be supplemented by an analysis of the final product. (32)

In the final social product, consumer goods are predominant over the means of production. In dynamic form, the development of production objectively indicates that the more industrially developed society is, the more consumer goods predominate in the final product. But what does this pattern mean in practical terms? It means that for the production of a unit of the final product, society can allocate an increasingly smaller part of annual labor expenditures for accumulation, since the means of production are the physically accumulated part of the final product. This also means that an increase in the share of the product earmarked for consumption is entirely realistic. This increase becomes possible since capital-intensity per unit of final (as well as unitary) output must decline rather than rise. And this is entirely compatible with an increase in the

share of expenditures of embodied labor in the unitary and gross product. Even though the share of expenditures of past labor in the gross product increases, society should expend less and less material resources, including fixed capital, per unit of final output, since during the period of developed industrial production there is simultaneously an increase in labor productivity and a decrease in the capital-output ratio.

Using yet another simple example, it can be illustrated that in a society dominated by the law of steady reduction in socially necessary expenditures per unit of output, the trend toward a lower capital-output ratio must also be operative.

Let us denote V as the volume of production, F as productive capital, S as production costs, I as the index of change (with corresponding subscripts), and K as the coefficient of change.

Then: $\frac{F}{V}$ is the capital-output ratio; $\frac{I_F}{V}$ is the index of the capital-output ratio; I_F is the index of the value of capital; I_V is the index of change in the volume of output; and $\frac{K_S}{F}$ is the coefficient of the unit value of productive capital.

Let us also denote E as the coefficient of effectiveness of capital investment. According to these definitions,

$$\frac{I_F}{V} = \frac{I_F}{I_V} \cdot \frac{K_S}{F}, \quad (1)$$

i.e., the index of the capital-output ratio is the quotient derived from the division of the index of the value of capital by the index of output volume adjusted by the coefficient of change of value per unit of productive capital. With the use of certain assumptions that are kindred to our practice, we shall attempt to see how the index of change of capital-

output ratio will behave, let us say, during a given five-year period.

We shall assume that in constant or comparable prices at the end of the five-year period, productive capital will increase by 70%, i.e., $I_F = 1.7$. During the same period, output volume will increase by 55%, i.e., $I_V = 1.55$, which, as we know, approximates the figures for our last five-year plans.

If the change in the value of productive capital is neglected, the rise in the capital-output ratio will be 10%: $I_F / I_V = 1.1$ ($1.7 \div 1.55 = 1.097$). But during the five-year period, the value of each unit of capital must decline. After all, we are putting new capital into operation and are demanding a more rapid recovery period for this capital. In the machine-building industry, the coefficient of effectiveness is $E = 0.2$.

According to our calculations, under such a coefficient the value of new capital must decline by at least 20% as compared with the existing capital. This is achieved (1) by reducing the cost of productive capital as the object of production, and (2) by increasing the effectiveness of this capital in operation, i.e., by reducing the enterprise cost of production of those commodities that are produced with the aid of newly activated capital. Conditionally, both types of economy can be related to a unit of productive capital, which is construed as a reduction in the value of a unit of capacities or as an increase in the production of use values per unit of productive capital. Let us clarify this thought: a powerful new turbine is considered more economical if (1) it produces a reduction in the cost of capital per kilowatt of installed capacity and (2) it reduces the enterprise cost of production of one kilowatt hour of power produced with its aid.

However, we will be cautious and will include in the calculation not 20% but instead 5% of the relative annual

saving—one-fourth of the amount. This corresponds to our actual rates. We are discussing an approximate 2.5% annual reduction in the enterprise cost of output produced with the aid of newly activated equipment as well as a 2.5% annual reduction in outlays on this equipment (in comparable power). Under this assumption, the index of the annual anticipated reduction in the cost of capital (I_F / I_V) will equal 0.95, since $0.975^2 = 0.95$.

In order for the model to be more or less accurate, the structure of productive capital for the forthcoming five years must be determined. Let us assume that by the end of the five-year period, one-half of the capital will go out of commission entirely, which is close to the desired rates of capital renewal. Then, in order to increase capital 1.7 times by the end of the five-year period, the index of new capital growth must equal 2.2 ($1.7 + 0.5$). In other words, in order to secure the required twofold growth of capital, the annual index of increment of new capital should be $\sqrt[5]{2.2} \cong 1.17$.

Let us also calculate year-by-year indices on the reduction of the value of capital based on a 5% (0.95) average rate of reduction in expenditures. This index series will appear as follows:

Beginning of first year	1.0
End of first year	0.95
End of second year	0.90
End of third year	0.86
End of fourth year	0.81
End of fifth year	0.77

It is now necessary to determine the value structure of productive capital in the last year of the five-year period. In that year, half of the old capital will still be in operation, but the initial unit value of this capital will not change.

In each subsequent year this capital will be joined by newly created capital of higher quality and, simultaneously, with a lower value per unit of capacity.

In order to elucidate the structure of productive capital in the fifth year with the given conditions, we compile Table 6.

As a result of the calculation, the coefficient of change in the value of capital $\left(\frac{K_S}{F}\right)$ will be as follows with respect to the capital of the fifth year:

$$\frac{K_S}{F} = \frac{1.51}{1.70} \approx 0.89.$$

As a result, according to formula (1), in five years the capital-output ratio will equal: $[(1.70 \div 1.55) \cdot 0.89]$

TABLE 6

Year	Indices (coefficients) of new capital growth (1.17)	Increases in new and remainders of old capital	Index of reduction of capital unit costs	Index of reduction of cost of all capital (column 3 \times column 4)
1	2	3	4	5
Beginning of first	1.00	—	—	—
End of first	1.17	0.17	0.95	0.16
End of second	1.37	0.20	0.90	0.18
End of third	1.61	0.24	0.86	0.21
End of fourth	1.87	0.26	0.81	0.21
End of fifth	2.20	0.33	0.77	0.25
Old capital in fifth year	—	0.50	1.00	0.50
Total	—	1.70	—	1.51

$= 0.976$, or, in other words, in real terms the capital-output ratio will not increase by 10% but will instead decline by 2.4%.

In general form, the condition for a reduced capital-output ratio can now be written as: $\frac{I_F}{I_V} \cdot K \leq 1$, from which it follows that $K \leq \frac{I_V}{I_F}$. In other words, in order for the

capital-output ratio not to increase, it is sufficient for the coefficient of the average reduction in the value of productive capital that will be operative in t years to be no greater than the index of change in the output-capital ratio for the same t years. But at the same time, the calculation of coefficient K must be based on a certain statistical procedure illustrated above and generalized in the form of the following equality:

$$K = \frac{\sum_{i=1}^t \left[\left(1 - \left[\frac{1}{F_i} \right] \right) \left[\frac{I_S}{F_i} \right] - \left(1 - \left[\frac{1}{F_{i-1}} \right] \right) \left[\frac{I_S}{F_i} \right] \right] + F_{\text{old}} \beta}{\sum_{i=1}^t \left[\left(1 - \left[\frac{1}{F_i} \right] \right) - \left(1 - \left[\frac{1}{F_{i-1}} \right] \right) \right] + F_{\text{old}} \beta}$$

where β is the share of old productive capital in operation after t years, $i = 1, 2, \dots, t$ years. All other denotations remain the same.

Objections have been raised to such models to the effect that everything would be this way if prices followed value; but in life this is not always the case, and therefore the capital-output ratio in our existing prices still continues to grow. This is indeed true but, due to the fact that prices lag behind the level of socially necessary labor expenditures,

an accelerated growth of profitability inevitably accompanies an increase in the capital-output ratio.

Hence, what society loses from an artificially raised capital-output ratio, it receives from profitability that is also artificially increased.

In the given instance we are not interested in this effect of the price formation mechanism but in the fact that in principle, under conditions of stable growth of labor productivity, the capital-output ratio should not rise. And if it has risen in recent years, evidently it has done so only because our projections of the effectiveness of capital investments have not been fulfilled due to errors in planning and to delays in construction and in bringing capacities in line. The reform creates conditions for a further reduction in the capital-output ratio.

It has been necessary to analyze trends in the capital-output ratio here in order to confirm the substantiation for a criterion of plan optimality such as the growth of national income as a whole and of the part of it that is earmarked for consumption on a per capita basis. The correctness of this optimum cannot be refuted by references to the inevitability of an ever greater increase in the accumulation part of national income due to higher capital-output ratios.

The trend toward higher capital-output ratios observed in our country before the economic reform is now being overcome in large measure due to the changeover to the branch system of management and the new methods of economic incentives. This fact is confirmed by certain *ex post* data. In terms of fixed and working capital, the output-capital ratio in 1965 declined compared with 1960 and amounted to a mere 88.3%. In 1966, the decline in the output-capital ratio decelerated, and this ratio amounted to 88.1% of the 1965 level. And in 1967, the output-capital ratio increased by almost 5% and amounted to

92.6% of the 1965 level. Fixed capital increased by 19%, but the growth of the gross product amounted to 25%. (33)

5. *Specialization of Production and Technological Progress*

The problem of structural change in production is closely related to the problem of plan optimization. We note once again that conclusions concerning the necessity for such change cannot be drawn solely on the basis of needs. The organizational role of centralized long-term plans based on scientific forecasts and calculations is decisive. But in accelerating the implementation of the major structural changes outlined, the consideration of needs can play a rather important part.

Let us examine this question on the basis of the example offered by specialization and cooperation of production in machine-building. At first glance this is an intrabranched question, but it has enormous national economic significance. Moreover, machine-building is essentially a conglomerate of branches, and its intrabranched structure is an important factor in exerting an economic influence on the effectiveness of production.

We have made major strides in organizing specialized enterprises within a given branch. However, interbranch specialization of the item-by-item type and the specialization of service and auxiliary production processes still leave much to be desired. To this very day, plants with a complete cycle or plants of the closed type are preserved, and new ones are even being built. They produce their own castings and forgings, and tools and accessories, repair all of their equipment, and supply themselves with more or less primitively produced equipment for the small-scale mechanization of basic production, of transport, and of other auxiliary work.

In the period 1966–1970, a number of plants were already built and reconstructed for the centralized production of castings, welded components, forgings, hydraulic units, and gear wheels. Compared with the needs, all these merely constitute the first steps.

In 1968, approximately 7,500 shops and sectors were engaged in the production of billets. Labor productivity in these small shops is several times lower than at large enterprises, while the enterprise cost of production is 2 to 3 times higher. For example, the enterprise cost of production of a ton of cast iron in shops smelting less than 10,000 tons of castings a year is 190 to 240 rubles, as opposed to a mere 100 rubles in shops smelting more than 50,000 tons. In 1968, the share of output consisting of parts and units used in general machine-building and manufactured on a centralized basis was at a level that was little more than 1.5% of the total volume of machine-building output. (34)

In the case of billet-producing shops, in 1966 concentrated enterprises accounted for only 3.1% of the output, of which 3.7% was casting and 1.9% was forging and hot stamping. Of the total number of plants producing reinforcing hardware, only 1.2% are specialized. (35)

Many of our large plants consist of one more or less large basic production unit and a conglomerate of small production units assigned to it. But these small production units are relatively unspecialized and hence not sufficiently effective. It is probably true that small and medium-sized enterprises well specialized in certain homogeneous types of service within the framework of corresponding associations would be more effective.

How, then, can one explain the fact that, in spite of the many years of discussion and writing concerning the need for a high degree of effectiveness in interbranch specialization, this specialization is still realized at a very slow pace? After all, everyone realizes that the idea of interbranch

specialization is extremely fruitful for the rapid mechanization and automation of production. But unfortunately this idea is divorced from the real interests of enterprises.

At present each enterprise is chiefly interested in the fulfillment of plan targets for product deliveries and for indices on the effectiveness of production. And this gives rise to the dilemma of whether to manufacture an item at one's own plant, since this assures that it will be produced more or less on time, even though it will be rather costly and the necessary quality will not always be achieved, or whether one should rely on obtaining the item on the basis of cooperative delivery from a specialized enterprise which will produce a high-quality item at a price that will be basically lower, although it is very doubtful that the delivery will be prompt, and the supplier may fail to come through entirely. On the basis of many years' experience, there are very serious reasons for such doubts.

And most importantly, cooperation of production has frequently been accomplished by purely administrative means, without proper preparation and without material support. Let us suppose that someone has a good idea for centralizing the repair of machine tools. In the discussion of this question, everyone votes for centralization. Soon after, the order is issued to surrender repair equipment to the newly organized center and to deliver machine tools for repair to this point, which is not yet adequately prepared. Frequently, no good comes of such centralization. Upon seeing the situation, every plant director will strive to maintain his own repair group at all costs.

From his own experience, every plant director knows that he is first and foremost working "for himself," i.e., to fulfill his basic program, and everything that he is "supposed" to produce on a cooperative basis takes second place. To avoid this situation, it is not enough to create numerous specialized plants and to strengthen their ma-

terial base; it is also necessary to make broader use of economic and moral methods of influence.

We shall now turn briefly to analysis of the influence exerted on our production by the striving of each plant to supply itself with everything it needs through its own efforts. First, let us see how the machine-tool park is distributed.

Approximately 80% of the machine tools are in industry. Of this number, 49.8% of the machine tools are used in machine-building. Where are the rest of our machine tools? They are found at metallurgical plants, in transport, at sugar and textile enterprises—in a word, everywhere there is something to repair, where various parts, such as shafts and bushings, must be machined in order to perform repair work. In other words, the same rule of supplying one's own needs is operative here. This leads to appreciable losses of effectiveness in the utilization of fixed capital. After all, everyone knows that at a winery a machine tool is used much less effectively than at a specialized machine-building enterprise.

Let us now examine the structure of the machine-tool park in machine-building. The share of relatively simple turning lathes is 24.1%, while the share of grinding and buffing machines is a mere 11.7%. There are still too few special multi-positional automatic machines, contour-filing machine tools, and saws. What does this indicate?

The structure of the machine-tool park in machine-building reflects our still dominant production technology, which is based on the shaping of parts by the cutting method, i.e., the removal of shavings. In order to perform such processes, many turning lathes are indeed necessary. But if we were able to obtain precision billets, in many cases they could be ground directly. This is why we have a small percentage of grinders, and even these machine tools are underutilized.

Such "shaving" technology results in considerable losses

of metal. The use coefficient of metal is frequently 60 to 75%. What is more, turning lathes are overloaded while other, more productive machine tools cannot be fully utilized, even during two entire shifts. Therefore, the shift operation of the machine-tool park is also relatively low.

Why, then, do we not use precision billets in order to preclude "skinning" parts on machine tools? Can it be that we do not know how to make precision billets? To the contrary, we make excellent precision billets and even sell licenses for precision casting to foreign countries. There is also casting by the lost-wax method, skin (shell) casting, pressure casting, etc. But the problem is that all these processes are slow in being put into operation, since when billets are made in small batches according to the rule of "every plant for itself," these and other types of precision billets become disadvantageous and more costly than simple, primitive sand casting.

Real organizational measures are required for the creation of specialized enterprises. Thus far, such measures have been undertaken only by the USSR Ministry of the Machine-Tool and Instrument Industry, which has created an administration and institutes for the development of specialized interbranch enterprises. Moreover, the same ministry is preparing for the intrabranh specialization of plants based on the standardization of the range (dimensional series) of machine tools, which will make it possible to produce high-precision machine tools using the flow-line method on the basis of the production of standardized units and parts at specialized plants. This is an interesting example of item-by-item specialization of an intrabranh nature.

In our opinion, the organization of interbranch service in the broader sense of the word can be accelerated through the creation of a special union-republic ministry (and pos-

sibly several ministries in the future) providing services on an interbranch basis. This ministry should be given direct charge of territorial production associations depending on the type of service or the nature of the technology of production of billets and parts. (In essence, bearing plants already belong to this type of production.) New associations should develop gradually.

Here it is fitting to state that on the basis of initiative from below, much can be done to organize territorial cooperation and reciprocal services without waiting for the total implementation of projects requiring long periods of time and large capital investment. For example, party organizations in Leningrad and Moscow enthusiastically supported the initiative of many plants to create specialized production processes, and preparations have begun for the creation of the interbranch production of billets, parts, and assemblies. The aid of collectives of enterprises subordinate to different ministries and agencies has been enlisted in this work. It is assumed that individual shops and sectors will produce standardized items not only for themselves but also for other enterprises, regardless of the branch subordination of the plants. The branch principle of management should not be a barrier to the effective collaboration of enterprises belonging to different ministries and agencies if such collaboration leads to an overall increase in the effectiveness of production.

Let us see how, in our opinion, the interbranch specialization of the production of, for example, gears (cogwheels) can be organized. Let us assume that a decision has been made to organize production associations for the manufacture of cogwheels by progressive methods (knurling) in a large machine-building center. First the needs must be studied. Production must commence on the cogwheels of those modules that can safely be produced by knurling

rather than milling. We standardize, for example, cylindrical cogwheels of certain modules and we begin pilot production of them in such batches as will fully load an automated line and will be sufficient to supply purchasers in a given economic region. We approach the purchasers and offer them a free trial of the cogwheels, which they can subsequently order. We do not eliminate the decentralized production of cogwheels of a given type until the new production proves in actual fact that it is capable of supplying the needs of purchasers on schedule, with items of higher quality, and at lower cost than small-batch production. Then we begin buying up the idle equipment from purchasers and we continuously build up capacities for the step-by-step but rapid development of mutually advantageous manufacture of cogwheels. The expenditures will unquestionably pay off. Enterprises will come to believe in the guarantee of high-quality deliveries. Thus, not only nationwide interests but the interests of enterprises as well will compel them to abandon the extremely disadvantageous system of self-supply.

Production associations of this type should gradually be created to satisfy the needs of enterprises in major machine-building regions. Certain associations may serve several economic regions. There can be no single territorial scheme. This in no way excludes but, to the contrary, presupposes the intensification of both intrabrand and international (within the framework of COMECON), specialization and cooperation in the production of original, complex assemblies, parts, instruments, and apparatus.

Despite the great importance of production specialization, one should not lose sight of the problem of the fundamental improvement of production not of standardized but of original parts and units as well as aggregates. Even at enterprises with large-series production, under the influence of rapid technological progress, the need arises for con-

tinuous modernization and fundamental improvement of the implements of labor produced.

No matter how large the series or how well they might be developed, it is necessary to review designs and types of machines with relative frequency. The method of solution is suggested by the development of technology: the creation of those machines that will permit the rapid, large-scale readjustment of the design of implements of labor for altered parameters of parts, units, and aggregates. One of the important factors is the increasingly extensive use of machine tools (production aggregates) with programmed control.

Centralized management occupies a large part in the introduction of technological advances and in the creation of specialized production processes. Indeed, based on the orders of individual enterprises, it is in no way possible to determine the actual need for parts and aggregate machine tools manufactured at specialized enterprises. Frequently, the orders are compiled in such a way that the enterprise is left with the opportunity to serve itself. Only on a centralized basis can all needs be fully considered and all the latest technological advances be utilized.

Thus, the impetus for a system of organization of inter-branch services, as well as for the all-round introduction of new technology, must come from the planning organs. Methods of exerting economic influence on purchasers must also be widely applied: scientifically substantiated price level, guaranteed delivery of required products on schedule, higher product quality, and full servicing. Only through the combination of cost-accounting principles and centralized economic management can this problem—which is extremely important for the effectiveness of all socialist production—be resolved. This will promote the successful resolution of many key technological and economic problems posed by the Communist Party and Soviet Government.

Notes

- 1) K. Marx and F. Engels, *Soch.*, Vol. 18, p. 57.
- 2) V. I. Lenin, *Poln. sobr. soch.*, Vol. 35, p. 57.
- 3) *Ibid.*, Vol. 35, p. 204.
- 4) *Ibid.*, Vol. 42, pp. 153–154.
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CHAPTER 4

ECONOMIC METHODS OF INFLUENCING PRODUCTION

1. Economic Incentive
2. Certain Problems in Price Formation

1. *Economic Incentive*

The principle of harmony of social, collective, and personal interests is inherent in the very essence of the socialist system. Society is just as concerned with observing the interests of each collective and of each working person as are collectives with the overall prosperity of social production. But this principle is not implemented spontaneously. There must be uninterrupted operation of the mechanism which confirms in actual fact that the attainments of each collective and each working person in the interests of society are justly rewarded morally and materially and that any possible errors, inaccuracies, or deviations along this road will

be corrected with the participation of the producers themselves.

The task of satisfying the social, collective, and personal needs of the working people is in turn divided into: (1) the task of producing high-quality products required for personal and productive consumption, and (2) the task of securing high production effectiveness in the process.

Let us examine how this task is subdivided in the course of the production process and how economic incentives are effected.

An important principle in incentives is the need to evaluate the continuous improvement in output quality through higher production profitability, which in turn requires a flexible price policy. First, purchasers must actively participate in the actual price formation process and, second, they must continuously exert an influence to raise the quality of production—consumer goods and means of production.

We have already overcome shortages in a number of branches of production and for many individual items. As the transition is made from an economy of shortages to an economy of "sufficiency," the need for the social recognition of products through the act of their sale becomes more and more appreciable. This function of the circulation sphere should exert a reverse economic impact on the quality of output and on bringing prices into correspondence with the qualitative level of output. The reform stipulates reductions in the prices on slow-moving commodities at the expense of the profits of the producing enterprises. Of course, in a planned economy we can and must make advance provision for a price level such that in the sales process, all that remains to be done is to eliminate the inevitable, maximally negligible deviations between planned and actual relationships in the quantity of goods and the prices of the goods. Feedback through purchase or refusal to purchase is an ac-

tive method for influencing the quality of output and proportionality in the development of production.

Output must be of high quality and must be delivered on schedule. This is promoted by the development of a contractual system and by measures for increasing the liability of production collectives through economic sanctions. At all levels, beginning with the planning organs, ministries, main administrations, supply and sales organizations, territorial supply administrations, wholesale bases, and stores, and ending with enterprises, people must be rewarded for the strict observance of reciprocal obligations, of established production schedules, and of delivery schedules, and must bear material liability for their disruption. Of course, this involves a large program of work. In particular, it is necessary to refine the statutes on arbitration and on the procedure for personal liability of personnel at all levels of the official hierarchy.

The stimulation of the growth of output volume and the product-mix is an important matter. Today, increased sales volume is being encouraged, and this is a considerable step forward compared with the stimulation of increased gross output.

In order that the potential of enterprises may be used to the fullest, it is essential that the production collectives themselves have an interest in disclosing all reserves. Today, incentive norms are reduced for the overfulfilled part of the plan based on fund-forming indices just as they are reduced in the same measure for the underfulfillment of the plan. Let us see which is more advantageous for an enterprise: to adopt an unduly low plan, thereby insuring itself against any contingency, in a manner of speaking, and to overfulfill this plan but lose part of the reward for overfulfilling an unduly low plan; or to adopt an intensive, realistic plan and risk losing part of the reward for the underfulfillment of the plan.

The equality of stimuli providing an impetus to avoid the adoption of unduly low plans or the underfulfillment of plans is illusory, since the enterprise loses much more from the nonfulfillment of an intensive plan than it does from the overfulfillment of an unduly low plan.

Indeed, when will the management and the entire collective of an enterprise feel better from a moral standpoint? When an unduly low plan is fulfilled and overfulfilled or when an intensive plan is not fulfilled, with an equal loss of part of the incentive fund in both cases? The answer is clear: most frequently an enterprise prefers to adopt an unduly low plan rather than adopt a plan that is too intensive and risk its nonfulfillment. From the material standpoint, the losses resulting from the nonfulfillment of the plan are much more keenly felt than the losses resulting from its overfulfillment.

Let us cite one of the numerous examples of such a situation. F. P. Matveev, Chief Bookkeeper at the Iaroslavl "Red Echo" Factory relates: "Last year we overfulfilled the sales plan by 7%. . . . We 'punished' ourselves by approximately 100,000 rubles. But if we had adopted a higher plan and had fallen short by 5%, for example, the material incentive fund would have been reduced by 126,000 rubles. Judge for yourself which is more in our interest: an intensive or a somewhat slack plan? The figures show that underfulfillment is more costly than overfulfillment." (1)

Nonfulfillment of the plan, and hence nonfulfillment of contractual deliveries, also entails the payment of penalties, forfeits, and even (based on the decisions of arbitration agencies) reimbursement of the sum total of losses from the part of profits used to form incentive funds. But that is not all—when plans are not fulfilled, all managerial personnel of an enterprise lose their right to receive bonuses entirely or to a considerable extent.

The experience of the Kharkov "Miner's Light" Plant

is characteristic for evaluation of the system of incentives for the fulfillment of volume and product-mix plans. After its conversion to the new conditions, the plant frequently did not fulfill its plan for sales volume and for the product-mix of the most important items (the number of which was raised to ten by Glavuglemash instead of two as proposed by the plant). In this case the reasons for the nonfulfillment of the plan do not play any particular part, since regardless of them, in accordance with the standard instructions, managerial personnel of the plant did not receive bonuses even though there was an incentive fund and shop personnel received bonuses from it. In a period of more than a year, managerial personnel were awarded bonuses one time. Under such conditions there is no incentive to adopt intensive plans in the future.

Similar facts can be cited from the work practice of the Kiev Stroidormash Plant. The plant has been operating under the new conditions for more than three years, and it must be noted that it is working well and the reform is producing an appreciable result. But nonetheless, shortcomings, specifically in the sphere of economic incentive, are rather acutely felt. A. Dolenko has written: "The economic reform should arouse the interest of the collective in adopting an intensive plan. But the bonus statute is organized in such a way that the nonfulfillment of an adopted higher plan, if only by 1 or 2%, deprives part of the collective of its bonuses." (2) The same article goes on to say that "the very method of forming the fund (incentive fund—*E. L.*) prompts the enterprise to obtain the largest possible planned wage fund and this hinders the growth of labor productivity."

What direction should be taken? Of course, it is essential to improve the bonus statute and to secure the right for managerial personnel to receive bonuses if the right to form an incentive fund is granted, that is to say, plant

managerial personnel should not be placed in a position inferior to that of the personnel in shops and services.

But this still does not entirely solve the problem. Every possible means must be used to arouse the enterprise's interest in utilizing all reserves, and all obstacles along this path must be removed. There is sense in reducing the size of bonuses for the overfulfilled part of the plans. Perhaps the upper limit of this type of sanction should even be raised: the incentive norm for the overfulfilled part of the plan should be reduced not to 30–40% but, let us assume, to 50% on the basis of a regressive scale so that unduly low plans would be accompanied by a more appreciable level of material incentives to the collective. The softening of sanctions for the nonfulfillment of the plan could be a rational way of removing obstacles to the more complete utilization of reserves. After all, the nonfulfillment of the plan is in itself punishment for the enterprise, since the bonus norms are established for each percentage point of planned or normative increase in sales (or profits) and in the level of profitability.

The norms for the underfulfillment of the plan should also be reduced on a regressive scale, i.e., depending on the degree of underfulfillment of plans. It is one thing to mete out punishment for the unfulfillment of the plan by, let us say, 0.2%, but it is another matter to impose a penalty for the unfulfillment of the plan by 20%.

There is fear that if enterprises adopt plans that are too high, the result may be disproportions. But if the plans are not coordinated with the suppliers, they cannot be adopted. Overproduction is disadvantageous to the producer since unsold output is not counted toward the fulfillment of the plan and is discounted at the expense of the enterprise.

Let us now examine the question of stimulating enterprises to improve their product-mix and assortment. As we

know, the most important types of products in physical terms are defined and confirmed for the enterprises by higher-echelon organizations. Orders from trade organizations are taken into account in establishing the product-mix in light industry. But as contractual relations develop, the centrally determined product-mix must gradually diminish. Occasional instances in which ministries and main marketing boards try to increase rather than reduce the number of items planned for the plants must be regarded as inevitable costs connected with the restructuring of the work of ministries.

The enterprise itself must exert a substantial influence on the formation of the portfolio of orders. To this end, incentives must be organized in such a way that the enterprise will have an interest in producing the product-mix that is optimal, not only from the standpoint of the enterprise but chiefly from the standpoint of the entire national economy. Clearly, there should be a system of preferential choice of the most essential orders and especially those connected with the introduction of new technology. And this task cannot be resolved solely by administrative methods—perceptible economic influence is also required.

The accepted methods of offering incentives on the basis of two obligatory criteria—*increase in sales volume or higher profits and profitability levels*—must be evaluated specifically from this point of view.

On the basis of a study of the experience of a number of enterprises operating under the new system, P. Bunich has written concerning incentives for volume indices and for profitability indices: "The awarding of bonuses for increased sales inspires a number of enterprises to use more expensive raw materials and hinders the substitution of Dacron for natural wool and the introduction of inexpensive component parts in machine-building." (3) Bunich goes on to say that the awarding of bonuses for increased

sales irrespective of profit should not be the rule. The growth of sales is sufficiently stimulated by awarding bonuses for profits. Where necessary, the fulfillment of the sales plan can be used as an additional condition for the granting of bonuses.

R. Belousov expresses similar ideas: "Most enterprises (approximately 60%) choose sales volume rather than profit as one of the fund-forming indices. As evidenced by the work experience, many such enterprises are altering production in favor of items made of relatively expensive types of raw materials and supplies. Such a situation has even been observed at the Nevskii Machine-Building Plant. . . . Therefore, it is not advisable to use the sales index to stimulate the production activity of enterprises unless consideration is given to the fulfillment of the product-mix plan. In our opinion, the profit and profitability index is more in keeping with the demands that the enterprises be oriented toward maximally economical operation." (4)

However, application of the index of output sold with only the condition that the product-mix plan be fulfilled can lead to a sharp increase in the centrally planned product-mix, which contradicts the principles of the reform.

On the other hand, incentives for profit and profitability—especially in light industry—frequently lead to changes in the direction of increasing more profitable and generally more costly products. A check of a number of sewn goods enterprises in 1968 revealed that the average price of goods was increasing due to the use of more costly fabrics. (5) This type of situation must be avoided. The real way lies in the strict observance of commercial orders.

Notwithstanding a number of difficulties connected with the use of two criteria (or fund-forming factors) in providing economic incentive, it must be admitted that it is not advisable to be restricted to one criterion in all cases. Increased production volume must be stimulated, especially

in the extractive branches as well as in a number of manufacturing branches in which constraints on raw materials and supplies can be surmounted. It is hardly possible to use profit alone as the incentive for increasing both the volume of production and the effectiveness of production everywhere. Both the author of the present work and certain other economists who have participated in the economic discussions are guilty of exaggerating the role of profit as a stimulus for increasing production.

But in those cases when total profit takes the place of sales volume as a fund-forming factor, it is entirely possible in our opinion to combine incentives for total profit and for the profitability level into a single incentive system, which will be examined in greater detail below.

As a result of the objective conditions of reproduction and the development of interbranch relations, in many instances it becomes economically inexpedient to offer incentives for increased production volume. There is no need to prompt an enterprise to adopt plans for increasing the production of mining machinery since, in view of changes in the structure of the fuel balance, the need for coal-mining equipment is not increasing.

Nor should an increase in sales volume be encouraged in many other instances. For example, there is no economic sense in encouraging an increase in the sales volume of hard household soap since its consumption is diminishing with the rise of production and household use of synthetic detergents and washing machines. There is no sense in encouraging increased working of exhausted mineral deposits in the extractive industry if the capital investments in preparing the levels or wells have already been recovered and if further extraction would lead to an increase in the enterprise cost of production and to a lower profitability of production (assuming the existence of more effective, proved, and prepared reserves).

Here it should be noted in passing that payments for funds [fixed and working capital—*Ed.*] should be based on the residual value of funds rather than on their initial value. If this is not done, it will become disadvantageous to continue working mineral deposits that have only been worked halfway, since the payments for funds will always be high and will be a heavy burden on the successively diminishing volume of output or on the diminishing yield of wells.

The same thing can also happen in the manufacturing branches of production when obsolete but still suitable equipment must be used to the end at a given enterprise. But this can be made economically expedient if the payments for funds are calculated on the basis of the residual rather than the initial value of fixed capital. At those enterprises in the manufacturing industry that are continuously renovating their funds, payments for funds based on initial value will not substantially differ from payments based on residual value, and the national economy will suffer no loss whatsoever from the changeover to payments for funds based on their residual value.

One of the most complex and, at the same time, most urgent questions in improving the system of economic incentives is that of securing the stability of norms and their genuinely extended effect, without which the important task of inspiring enterprises to make full disclosure of their reserves cannot be resolved. At present, incentive norms are frequently changed. Already in the second year of work under the new system, the norms were revised. In his report presented at the All-Union Economics Conference in May 1968, N. K. Baibakov, Chairman of USSR Gosplan, noted: "The substantial 1967 revision of norms confirmed in the preceding year of 1966 cannot be called normal."

We should discuss numerous proposals concerning the

need to simplify calculations of the formation of economic incentive funds.

In the same report, N. K. Baibakov stated: "Ministries and enterprises are raising the question of improving the existing practice for forming economic incentive funds. It is indeed true that the calculations for the formation of these funds are still complex, while the size of the funds is frequently subject to sharp fluctuations not reflecting real changes in the level of the enterprises' work." (6)

Proposals are being made concerning the formation of a single economic incentive fund which subsequently, in the actual process of utilization—within certain regulated proportions—would be distributed among the material incentive fund, the fund for sociocultural measures and housing construction, and the production development fund.

Imagine how this will simplify all preparatory, planning, *ex post*, and other work. After all, at present it is necessary to make approximately 12 calculations (for two criteria and for three funds which are formed on the basis of different norms with 100% fulfillment or with the overfulfillment and underfulfillment of plans) for each planned and *ex post* period. The more diverse the calculations, the more difficult it becomes to foresee what form these things will take in actual practice. In the event a single economic incentive fund is created, all budgetary planning will also be simplified. Naturally, simplicity is inadmissible here if it runs counter to economic substantiations and expediency. More simple methods of forming economic incentive funds must be verified and tested.

Let us now turn to the next part of the problem entailed in improving economic incentive—that which relates to the distribution of profits.

In itself, the new procedure for distributing profits serves to improve the utilization of fixed and working capital. Here, payments for funds—the amount of which ranges be-

tween 3 and 9% of their value (1969)—play the main part. At present, two other types of regulatory payments are being used: fixed (rent) payments and payments to the government budget from the free profit remainder.

Fixed payments should equalize operating conditions, and hence the possibility for the formation of a free profit remainder should be virtually eliminated.

Nonetheless, in 1968 the free profit remainder at enterprises in RSFSR light industry ranged between 45 and 50% of total balance-sheet profits. In Saratov Region, three-fourths of the payments to the budget are from the free profit remainder. (7)

Fixed payments in the extractive industry are inevitable due to differences in natural conditions. But the elimination of such payments as the transfer of the free profit remainder to the government budget would be a good thing. It seems to us that the distribution of profit can be substantially simplified while the stimulating role of profit and increasing budget revenues is simultaneously intensified. To this end, calculated profit should be distributed between the government budget and enterprises. But it should be distributed in such a way that the share paid into the budget would increase more rapidly than total profits. This will be more advantageous to society than taxation of the free profit remainder since, as many practical workers admit, such taxation reduces the incentive for higher profitability.

Incentives based on profits must meet two requirements:

1. Norms should be constructed in such a way that the size of the incentive funds corresponds to the effectiveness of production and the amount of labor inputs.

2. The increase in effectiveness (profitability) should always ensure an increase in the size of the reward per employed person, but in such a way that the share of profit paid to society rises rather than declines in the process.

Generally speaking, the first condition evokes no objection whatsoever. And this condition is now being met, since the norms governing the formation of the material incentive fund are established in percent of the wage fund for each percentage point of increase in the volume of sales (profits) stipulated in the plan for a given year compared with the preceding year and for each percentage point of profitability stipulated in the enterprise's annual plan.

Nor is there any doubt concerning the proposition that, as the effectiveness of social production increases, the average size of the reward per employed person (or per ruble of wages) should increase. But objections are sometimes raised against the proposition that the share of the part of profit realized by society out of the overall profit should increase. The objections are motivated by the belief that such a demand is incompatible with the condition of increasing incentives for each ruble of wages.

But there is no contradiction whatsoever in this case. We believe that in accordance with the demands of the economic laws of socialism, the share of profit realized by society should increase. As we know, the growth of labor productivity should surpass the increase in wages. But ultimately the growth of profits expresses the effect of increased labor productivity. For this reason, the rate of profit growth should also surpass the growth rate for incentive funds, whose resources are used to reward working people responsible for higher net income under specific social conditions.

Does this not contradict the principle according to which the reward for creating net income per ruble of wages should increase? We are convinced that it does not. Moreover, both of the key aspects of economic incentives are entirely compatible if the incentive is offered not for the increase but rather for the total profit and level of profitability. Furthermore, norms cannot be calculated as ele-

mentary linear dependences or proportional norms (fixed percentages). They should be constructed on the basis of a declining increase in the percentage of incentives vis-à-vis the wage fund with a simultaneous progressive increase in the share of the budget in total profits.

We shall attempt to explain how both of these demands can be combined. The incentive fund must be formed according to a criterion which can be any of the key relative values but which ideally would be profit in percent of the wage fund.

In determining the size of the reward, one must employ not a single proportionate rate but rather a scale which encompasses a broader range of possible fluctuations and relationships. In this case it is simpler to group enterprises that can fit one scale whereas other proposed features for grouping generate such fractionated groups that it virtually becomes necessary to establish individual norms.

In its general form, the scale is a tabular expression of such a function:

$$y = b \log (x - c),$$

where y is the part of the profit for forming the total enterprise fund in percent of the wage fund (or in rubles per employed person), i.e., the *incentive norm*; x is the criterion or the factor for which the incentive is offered. The percentage of profit vis-à-vis the wage fund is subsequently used by way of example; moreover, net or calculated profit is taken, i.e., that which remains after payments for the use of productive capital and after bank and rental payments; b and c are parameters determined empirically for a given branch or group of enterprises on the basis of economic analysis and through the relatively simple procedure of building a model on the assumption that the share of

the enterprise in the overall profit will be within certain limits.

In order to clarify the substance of our proposal, we shall first present a simplified scale which is calculated for the given function (Table 7).

TABLE 7

Groups	Calculated (net) profit in % of wage fund	Amount paid into budget in % of total net profit	Amount left to enterprise in % of total net profit	Amount of profit received by enterprise in % of wage fund
1	Under 120	84	16	16
2	From 120 to 140	85	15	18
3	From 140 to 160	86	14	19.6
4	From 160 to 180	87	13	20.8
5	180 and above	88	12	21.6

Thus, when profit increases, the reward for profit also increases. So if the net profit is 100% of the wage fund, the enterprise's reward amounts to 16% of the wage fund, but if profit increases 1.8 times and equals 180% of the wage fund, the enterprise's reward does not increase 1.8 times but only 1.3 times and amounts to 21.6% of the wage fund. Hence, both demands are combined: the enterprise is rewarded for increasing profit, and budget revenues increase but to a relatively greater degree. The data in Table 7 show that with an increase in profitability and incentives per ruble of wages, the share of the enterprise in overall profits declines while the share of the budget increases.

We must now explain how the profit is distributed if the calculated profit (in percent of the wage fund) occupies an intermediate position, rather than the lower or upper

position, within any interval on the scale (for example, if it equals, let us say, 150% rather than 140%). We must determine what share of profit will additionally go to the budget and what share will be left to the enterprise. These shares are related to the difference between the profit actually received and the profit corresponding to the lower boundary of the profitability interval. By way of clarification, we shall present the same scale in full form (Table 8).

TABLE 8

Groups	Calculated (net) profit in % of wage fund	For attaining the lower boundary of the interval				In addition, for the difference between profit actually received and profit corresponding to the lower boundary of the interval	
		Paid to the budget		Left to the enterprise		Paid to budget in % of additional profit	Left to the enterprise in % of additional profit
		In % of total net profit	In % of wage fund	In % of total net profit	In % of wage fund		
1	From 0 to 100	—	—	—	—	84	16
2	From 100 to 120	84	84	16	16	90	10
3	From 120 to 140	85	102	15	18	92	8
4	From 140 to 160	86	120.4	14	19.6	94	6
5	From 160 to 180	87	139.2	13	20.8	96	4
6	From 180 and above	88	158.4	12	21.6	98	2

The intensiveness of the progressive increase in budgetary income in the case of a very rapid rise in the ratio of profit to the wage fund is now more readily apparent. In the first interval (from 0 to 100%), there is a direct pro-

portion (linear dependence) and the enterprise receives 16 kopecks per ruble of profit. In this instance the enterprise must be prompted to attain a normal level of profitability more rapidly.

The budget taxes 84% of the net profit in this interval. But when the profitability is higher (let us say, in the fourth interval), payments to the budget will be 120.4% of the wage fund for attaining the lower boundary of the interval plus another 94% of the difference, or 9.4% of the wage fund. A total of 129.8% profit will be paid into the budget. Accordingly, the enterprise will be left with 20.2% of the profit vis-à-vis the wage fund. Thus, the total profit distributed amounts to 150% of the wage fund (129.8 + 20.2). But it is easy to see that when profit increases by 50% (from 100 to 150%), the budget's income increased by 55% while the enterprise's funds increased by only 27%. (8)

One outstanding feature is the high percentage of taxes on profits exceeding 180% of the wage fund: 98% of this part of the profits are taxed by the budget. In this process, two important conditions are realized: (1) the incentive to increase the total profits is retained since 2% of large profits going to the enterprise constitutes a large sum; (2) the introduction of mechanical or arbitrary upper limits on the incentive norms is not necessary.

As a result, the normative scale for a given group of enterprises can be made a stable and genuinely long-term norm, and the enterprises can be confident of an unchanging base for incentives and thereby can be encouraged to make more complete use of their reserves.

Moreover, under these conditions it is possible to abandon taxation of the free profit remainder of highly profitable enterprises. When such scales are applied, there can be no excessive "enrichment" of enterprises even when they have a very high profitability level. When the economic

incentive fund is large, the share of expenditures on socio-cultural measures and on housing construction can be increased.

In the case of enterprises that are developing new technology or that are undergoing reconstruction, a good incentive would be to offer temporary benefits by increasing the incentive rates during the period of development of new technology.

Evidently, the aforementioned principle is the most substantiated one for the organization of economic incentives. It permits a better combination of the interests of society and of the enterprise as well as the regulation of the proportions between accumulation and consumption.

One of the important attainments of our reform is not only the force of personal and collective interest that has been manifested but, first and foremost, the force of responsibility of personnel for production progress. However, it is generally admitted that up to now the only reserves that have been used have been those lying on the surface. In order to move forward confidently, we must create uninterrupted and extended norms that stimulate technological progress.

The reasonableness of providing incentives based on scales for the direct distribution of net profit lies specifically in the fact that the need for frequent revisions of norms is obviated and in the fact that enterprises will have an interest in disclosing deep-seated reserves for growth and for improving production.

Of course, the scale described above is not suitable for immediate use in a given branch until it has been verified. Here the range of profitability is rather great. In reality, this range can probably be distributed over a number of scales for various branches or subbranches. But within the framework of branches, the grouping of enterprises will actually require very few scales (two or three) and hence

the number of groups of enterprises will also be small. The grouping principle is obvious: enterprises will be grouped according to the ratio between calculated net profit and the wage fund. In our opinion, this principle is very important for determining the initial size of the reward.

For branches, the amplitude of this ratio may vary. Differentiated levies in favor of the enterprise are determined on the basis of the scale in such a way that the remaining part of the net profit would go to the budget. Independently, on the basis of prescribed or recommended share proportions, the enterprise must distribute its fund into shares for awarding bonuses to personnel, for satisfying collective needs, and for the development of production. Of course, the scale can also be used for deductions paid to the budget, while the remaining part of the profit can be channeled into the incentive fund.

The proposed principle can also be applied for the organization of incentives based on gross income, i.e., for establishing payments to the budget per ton of output or per ruble of sales.

A number of scientists and practical workers have already spoken out in favor of basing incentives on the ratio of profits to the wage fund. Thus, B. M. Sukharevskii has written: "Study should be devoted to proposals to pay profit taxes to the government in a certain proportion of the wage fund. This would make the use of machines in place of manual labor more advantageous." (9)

G. Kulagin, General Director of the Sverdlov Machine-Tool-Building Association, has noted the necessity for the direct distribution of profits. He has developed the idea that the incentive norms should finally become norms with an extended effective period since, in his opinion, it is simply impossible to offer incentives for an annual increase in sales volume and for profitability; after all, under this procedure, the same "gross output" and the same plan based

on the "attained level" are advanced to the forefront in veiled form. Kulagin has also written of the need for a simple and clear type of incentive in the form of a percentage of profits. (10)

While one cannot but agree with all these comments, nonetheless in our opinion the distribution of profit should be based not on a fixed percentage of deductions from profits but rather on a percentage of payments to the budget depending on the ratio of profit to the wage fund.

Some persons (Kulagin, in particular) believe that the measurement of profit on the basis of its percentage relationship to the wage fund will prompt the enterprise to increase the size of the wage fund. But under the given conditions, this is specifically not the case: the relatively smaller the wage fund is, the higher profit will be as a percent of wages and the greater the total incentive per ruble of wages will be. At the same time, the share of payments to the budget from total profits will also be higher.

In 1968, there was a rather extensive discussion of proposals to offer incentives to enterprises through the direct distribution of profits by establishing a percentage for paying part of the profits to the enterprise (or to the budget). The authors of such proposals believed that they were thereby eliminating any dependence between the size of the reward and the size of the wage fund.

However, this question merits closer examination. After all, even when profit is directly distributed, the percentage of payments from profits must be varied for groups of enterprises. And how will these groups be formed? Evidently according to the ratio between total profits and the wage fund for the past year or, at best, for the past three to five years. But nonetheless, such groupings will prove to be unstable. Enterprises will strive to move into more favorable groups in which the ratio of profits to wages will be lower and hence the percentage of deductions from prof-

its in favor of the enterprises will be higher. The easiest way to make such a move will specifically be to increase the wage fund.

Some believe that this will not happen, since when the wage fund is increased, the enterprise cost of production increases and profitability declines accordingly. However, a simple example can be used to show that under certain conditions a decline in profitability for this reason does not preclude a higher incentive payment.

Let us assume that wages equal 1,000 units; profit, 2,000; and productive capital, 20,000 units. In such a case, profitability will be 10% $[(2,000 \div 20,000) \cdot 100]$. Let us assume that the incentive fund must be 10% of the wage fund, i.e., 100 units $(0.1 \cdot 1,000)$ and that half of this fund will be formed as a function of the profitability level. Then, for each percentage point of the profitability level, 0.5% of the wage fund must be deducted from profits $(5 \div 10 = 0.5\%)$. Hence, at the planned level of profitability, the enterprise will obtain 50 units $(1,000 \cdot 0.005 \cdot 10)$ for its fund.

Let us now assume that the enterprise has increased its wage fund by 100 units. Other things being equal, the enterprise cost of production will increase correspondingly and profit, which will equal a mere 1,900 units rather than 2,000 units, will decline. Hence, profitability will decline from 10 to 9.5% $[(1,900 \div 20,000) \cdot 100]$. Since an amount equal to 0.5% of the wage fund must be deducted for every percentage point of profitability in order to form the incentive fund, the latter will become 52.25 units instead of 50 units according to the plan $(1,100 \cdot 0.05 \cdot 9.5)$. In other words, the incentive fund will increase by 4.5% $[(52.25 - 50) \div 50 \cdot 100]$. Nor does a reduction in the norm for the nonfulfillment of the planned level of profitability compensate for this increase in the incentive fund.

The use of the methods for constructing norms proposed

by the author precludes the possibility of an artificial growth in the reward through increasing the wage fund, since when the wage fund is increased there is a decrease in the profits as a percentage of the wage fund, which also results in a reduction in the norm for payments to the incentive fund.

It should also be noted that incentives based on scales as norms with an extended effective period will promote the more complete use of reserves for increasing profitability by enterprises themselves in the planning process. It will become advantageous for the enterprises to obtain greater output and profit without increasing the wage fund and without calling for additional manpower. There will be a stable incentive to increase the volume of output with lowest production outlays.

The assertion is sometimes made that the principle of offering incentives through the direct distribution of net profit is convenient and progressive because it promotes the best combination of the national economic and local optimum by stimulating a maximum increase in profit directly at each enterprise.

However, it must not be forgotten that the amount of profits and the wage fund must still necessarily dovetail, since we have enterprises which, by virtue of the fact that equal conditions have not yet been attained in all cases, receive several times more profit (per ruble of wages) than other enterprises in the same branches even after the price reform. For this reason, the norms governing deductions paid from profits to the incentive funds should be established for groups of enterprises and should take into account the ratio between profits and the wage fund.

The All-Union Economics Conference (1968) recommended the verification of various methods of forming the incentive fund on an experimental basis. It was deemed essential to elaborate methods for calculating norms in

such a way that it would be possible to pay deductions from profits directly into the incentive funds.

A decision of the Joint Commission entitled "On the Procedure and Deadlines for Elaborating and Confirming Stable Norms Governing Deductions from Profits to Be Paid into Economic Incentive Funds" was published in April 1969.

The elaboration of incentive norms must necessarily precede the elaboration of long-range plans, and not vice versa. In this connection, V. Ivanchenko, a deputy division chief of USSR Gosplan, has written that the norm must give rise to good draft plans—otherwise, the plans will only average out the modest rates of the five-year plans. (11)

An indispensable condition to progress in production is the relatively more rapid growth of labor productivity compared with the increase in average wages, including bonuses from the incentive fund.

The importance of maintaining a growth in labor productivity that is relatively more rapid than the growth of average wages requires no special proof. It need only be emphasized that under the new conditions of management, the proper proportions between these indices are especially important. The point is that the remuneration to working people in the form of bonuses is now substantially increasing, and even though this remuneration is paid from profits, essentially it constitutes a form of distribution of material goods depending on the amount of labor expended. Therefore, our bonuses from profits are part of the earnings, and this is entirely justified in principle. After all, under socialism the surplus product after distribution can be part of the necessary product since it belongs to all society and is distributed both for personal and social needs in keeping with the economic interests of society. But an increase in wages due to bonuses must be justified from an economic standpoint. This means that the growth rates of labor pro-

ductivity must surpass the growth rate of average wages, including bonuses, or at any rate must not lag behind them.

The Shchekino experiment is based on the encouragement of the relatively more rapid growth of labor productivity without an increase in the wage fund. Such rewarding stimulates the introduction of effective new equipment and technology, improvements in the organization of labor, and improved utilization of all resources.

However, in 1968-1969, at a number of enterprises the increase in labor productivity lagged behind the growth in the average wage, and this prompted the enactment of restrictive measures. On September 30, 1968, the USSR Council of Ministers adopted a decree entitled "On Measures for Improving the Practice of Applying the New System of Planning and Economic Incentives for Production." Point 8 of this decree states: "When the growth of the average wage at enterprises converted to the new system of planning and economic incentive surpasses the growth of labor productivity, the corresponding part of the resources of the material incentive fund must be paid into the reserve fund for further increasing labor productivity and the effectiveness of production or must be paid into the fund for sociocultural measures and housing construction in the current year."

However, the question arises of how to determine labor productivity at enterprises. In our opinion, the measurement of labor productivity on the basis of gross output per employed person without regard to reduced outlays of past labor distorts the true proportions between growth of labor productivity and the average wage.

Clearly, in determining the growth rate of labor productivity at enterprises, one must not ignore the influence of the effectiveness of labor inputs not only with respect to the relative saving of live labor but also with respect to the relative saving of past labor embodied in the savings of

raw materials, supplies, fuel, and implements of labor per unit of output. Accordingly, in order to monitor the proportions between the growth of labor productivity and the growth of the average wage at enterprises, the transition must be made to those methods of determining labor productivity that would consider the effectiveness of live labor, both in the sense of increasing output per unit of working time and in the sense of making optimal use of past labor in the process. We know of several such methods, but the methods of net and conditionally net output deserve the greatest attention.

The thrust of the conditionally net output method is that the cost in constant prices of all material resources used (material expenditures), with the exception of the amortization of fixed capital, is subtracted from the cost of gross output in comparable enterprise wholesale prices. In order to do this, material expenditures in current prices (in current accounting) are converted into material expenditures in constant prices. In the case of excessively multi-item materials used in production, the conversion of material expenditures becomes the Achilles' heel of the conditionally net output method.

Naturally, instead of making an across-the-board conversion of all material expenditures in current prices into material expenditures in constant prices, one can employ some type of generalized indices, but in the case of major structural changes, the accuracy of the count will be questionable. Moreover, it is difficult to monitor such calculations, and in the situation under discussion this is very important. For this reason, we must have a sufficiently reliable, simple, and economically substantiated method of monitoring the proportions between the growth of labor productivity and the growth of average wages at enterprises by determining net output and, if possible, without converting

material expenditures in current prices into material expenditures in constant prices.

The crux of the net output method is that the cost of raw materials, fuel, and auxiliary supplies, electric power, and amortization of fixed capital (material expenditures) in current enterprise wholesale prices is subtracted from the cost of gross output in the same prices.

Hence, we are not concerned with using the net output method to determine labor productivity by branch of production or to calculate the indices of labor productivity, which are presently determined on the basis of gross output indices, on the national economic scale. We are concerned with the use of the net output method only for determining labor productivity at enterprises, since it is specifically at enterprises that the effectiveness of the economic incentive system will be diminished if the gross output method, which has many shortcomings, continues to be used.

Let us enumerate some of the shortcomings of this method. First, the initiative of enterprises in the search for optimal combinations of expenditures of live and past labor is hampered. Second, instead of economizing on expenditures of embodied labor, enterprises use the most costly materials and components, which simultaneously promotes both an increase in sales volume and a "favorable" state of the labor productivity index. Third, indices such as the number employed and the gross output volume gradually cease to be accounting indices and become centrally regulated indices, which undermines the basic principles of the economic reform. These things are specifically undesirable at enterprises where the question of the size of bonuses is being resolved on an objective basis and where the determination of labor productivity according to the gross output method leads not only to errors but also to the diminution of the effect of the economic incentive system.

Many statisticians approach apprehensively the net out-

put and conditionally net output methods and view them as a departure from Marx's understanding of the nature of labor productivity. As we know, Marx stated that labor productivity is "the amount of products produced in the course of a uniform working day. . . ." (12) Accordingly, we approach the precise measurement of labor productivity when we measure the output as the number of units of use values per unit of working time. Therefore, the best method is to calculate output in physical terms. If this is impossible, it is acceptable to determine labor productivity on the basis of the cost of gross output in constant prices. But the use of net or conditionally net output is a departure from the physical output volume and means the transition from its measurement to the assessment of the effectiveness of labor expenditures in terms of the enterprise cost of production or the profitability of production. But it must not be forgotten that the enterprise cost of production is not the total cost, and therefore the enterprise cost of production and labor productivity frequently have opposite signs. As for profit, when taken separately it merely expresses society's labor expenditures.

It must also be borne in mind that in the course of a given period of time, labor productivity increases in such a way that the rate of reduction in the expenditures of live labor surpasses the rate of reduction in the expenditures of past labor. Moreover, the overall amount of labor expenditures per unit of use value declines, while the share of expenditures of past labor increases. We must not lose sight of this fact, since it follows that the concept of productivity of live labor includes the saving of live as well as embodied labor per unit of output. But can the latter point be compatible with what was said earlier concerning the measurement of labor productivity on the basis of output per unit of working time? It can be made compatible if one takes into account the fact that Marx began his historical and logical analysis

of commodities with simple commodity production in which, more often than not, commodities were produced from start to finish directly from gifts of nature with the aid of primitive implements of manual labor. Then, the use of past labor was not of decisive importance and, most significant, the technology of production was more stable. Under such conditions the amount of homogeneous output per unit of working time is indeed an adequate yardstick to labor productivity.

This definition also remains valid for modern machine-based industry, which has a high degree of specialization, cooperation, and reciprocal servicing of branches of production. However, we must think of the aggregate worker rather than the individual worker in any branch or at any enterprise. As we know, in this instance labor productivity is determined as the amount of national income in physical volume per employed person. In other words, the determination is specifically made *according to the net output method*, which also takes into account the saving of expenditures of embodied labor (since the relatively lower the fund for compensating the consumed means of production, the greater the national income).

We are by no means closing our eyes to the imperfections of the labor productivity index determined according to the net output method. This yardstick fluctuates greatly due to changes in the level of profitability for individual items and groups of items. Therefore, one must be cautious in recommending the use of the net output method to determine labor productivity by branches of industry. But for social production as a whole, in calculating national income in terms of its physical volume, such a measurement is the only true one, in our opinion. As regards enterprises, in the day-to-day monitoring of the proportions between increased labor productivity and increased average wages, the

net output method makes it possible to avoid those accidental features that would retard movement toward technological and organizational progress.

In order to avoid the conversion of material expenditures, we propose to test the method of calculating net output at enterprises by a direct route, i.e., to add v and m . Moreover, as will subsequently be explained, it is desirable not to convert net output in current prices into net output in constant prices. In this connection, we recall first of all that the proportions between the growth of labor productivity and the growth of average wages can be replaced by the proportions between the growth of output volume and the growth of the wage fund. In order to prove the foregoing with a formula, we introduce the following denotations:

I_r is the index of relatively more rapid growth of labor productivity over the growth of average wages;

I_o is the index of the output volume (irrespective of how this volume is determined—according to the gross or net output method);

I_p is the index of profit (excluding the material incentive fund);

I_f is the index of the wage fund (including the material incentive fund, social insurance deductions, and other monetary outlays);

I_w is the index of the number employed (personnel in industrial production);

γ_p is the share of profit in the volume of net output (during the base period); and

γ_f is the share of the wage fund in the net output volume (during the base period).

$$I_r = \frac{I_o}{I_w} \div \frac{I_f}{I_w} = \frac{I_o}{I_f}. \quad (1)$$

Thus, the proportions between the growth of labor productivity and the growth of average wages can be replaced

by the proportions between the growth of output volume and the growth of the wage fund. Instead of accounting indices of the number employed and the average wage, one can use the centrally planned indices of output volume and wage fund; in other words, the monitoring process is simplified and is confined to established indices.

Proceeding from equality (1), we can write:

$$I_r = \frac{I_o \text{ (referring to the growth of profit and wages)}}{I_f} \quad (2)$$

Here the net output is considered in the numerator and the wage fund is considered in the denominator. Social insurance deductions and 74% of other monetary outlays must be included in the wage fund since all these expenditures are related to net output. As for the specific type of profit that should be adopted—balance-sheet profit, profit from the sale of commodities produced, or profit per unit of commodity output—in our opinion, profit per unit of commodity output should be used. This profit can be determined either through the index of expenditures per ruble of commodity output or through profit derived from the sale of commodity output. The latter must be made to correspond to profit per unit of output, taking into account changes in profit contained in inventories of finished goods in the warehouse and products shipped but not yet paid for by purchasers. However, some planners consider it more expedient to use balance-sheet profits so as to prompt a reduction in the gap between indices relating to the work of the enterprise with respect to the volume of production and to the total volume of production and circulation. Experimental verification is necessary in order to determine which type of profit should be adopted.

If profit (excluding the material incentive fund) increases more rapidly than the wage fund (including the material incentive fund, deductions for social insurance, and

other monetary outlays), the volume of net output will also increase more rapidly than the wage fund. This means that the proper proportions between the growth of labor productivity and the growth of average wages will be observed. If $I_r > 1$, the growth of labor productivity will surpass the growth of average wages. In order to prove this, we express I_r by the formula

$$I_r = \frac{I_p \gamma_p + I_f \gamma_f}{I_f} \quad (3)$$

Regardless of what values γ_p and γ_f assume in order that $I_r \geq 1$, the following condition is necessary and sufficient:

$$\frac{I_p}{I_f} \geq 1. \quad (4)$$

We also consider that

$$\gamma_p + \gamma_f = 1. \quad (5)$$

Hence

$$\gamma_p = 1 - \gamma_f. \quad (6)$$

By substituting the latter value of γ_f in equality (3), we obtain:

$$I_r = \frac{I_p}{I_f} - \gamma_f \left(\frac{I_p - I_f}{I_f} \right). \quad (7)$$

We take into account the fact that γ_f can only be within such limits:

$$0 < \gamma_f \leq 1, \quad (8)$$

although never reaching these limits (enterprises operating at a loss are not considered here).

What, then, are the limits to the index of relatively more rapid growth when γ_f tends toward its extreme values? Recalling that $\frac{I_p}{I_f} \geq 1$, we assume that γ_f tends toward unity, that is, the share of profit in net output volume is very small. Then

$$\begin{aligned} \lim_{\gamma_f \rightarrow 1} I_r &= \lim_{\gamma_f \rightarrow 1} \left[\frac{I_p}{I_f} - \gamma_f \left(\frac{I_p - I_f}{I_f} \right) \right] \\ &= \frac{I_p}{I_f} = 1. \end{aligned} \quad (9)$$

Let us now examine the opposite case in which γ_f tends toward zero, that is, when the share of profit in net output volume is very great. Then

$$\begin{aligned} \lim_{\gamma_f \rightarrow 0} I_r &= \lim_{\gamma_f \rightarrow 0} \left[\frac{I_p}{I_f} - \gamma_f \left(\frac{I_p - I_f}{I_f} \right) \right] \\ &= \frac{I_p}{I_f} \geq 1. \end{aligned} \quad (10)$$

Thus, for any proportions of profit and wages in the net output volume, it is sufficient that profit (excluding the material incentive fund) increase more rapidly than the wage fund (including the material incentive fund, social insurance deductions, and other monetary outlays). In turn, this will mean that labor productivity increases more rapidly than average wages (or at least does not fall below wages). If the growth of profits lags behind the growth of the wage fund, some of the resources of the material incentive fund should be held in reserve. When this method of monitoring is used, it is important to recognize that we are confined solely to the principal and fund-forming indices and specifically to the indices of profit and wage fund.

Let us examine whether profit and wages must be recalculated on the basis of a constant evaluation. In our opin-

ion, this is not necessary. After all, when the price of a commodity is formed, profit is established as a constant value in price. What can cause a change in the amount of average profit calculated in terms of total output volume? If profit has increased as a result of the economy of material expenditures per ruble of output volume, this is a "legal" increase in profit which we are seeking when we apply the net output method. Naturally, in the given instance profit need not be adjusted. If profit has increased as a result of the economy of wages, this means that one part of the net output volume has increased as a result of a reduction in another of its parts, but the overall net output volume has not changed. Nor is it necessary to recalculate profit in this case. Profit need be adjusted only if it has increased "illegally" as a result of incorrectly established prices, unduly high temporary prices on new items, or the production of more profitable items (nonfulfillment of assortment plan).

The point is that incorrectly established prices create an income subject to payment into the budget. "Superprofits" from the production of more profitable items are also paid into the budget. As for unduly high prices on new items, the temporary price is, after all, the first constant price. Hence, in the case of inadequate monitoring, an undue increase in temporary prices will be reflected equally in both the net output method and any other method based on the evaluation of output according to constant values.

In our view, the "cleansed" actual profit can serve as a good yardstick to part of the net output volume without being reevaluated. Naturally, this principle requires verification and confirmation on the basis of a sufficiently broad experiment.

Another part of the net output volume is the wage fund. If wages increase, there is a decline in the index of the relatively more rapid growth of labor productivity over the growth of average wages. Indeed, both the numerator and

the denominator in the expression in equality (2) include the wage fund, but the numerator also includes profit. Hence, if the wage fund increases, the denominator increases more than the numerator and I_r declines. But if wages have risen and the index of relatively more rapid growth is still greater than unity, this means that even when wages remain constant, I_r will be greater than unity. In other words, if

$$\frac{I_p}{I_r} \geq 1,$$

wages need not be recalculated. Let us assume that wages have declined. In such a case the proper proportions between labor productivity and wages are observed as a result of higher or at least undiminished profits.

A certain statistical verification of the proposed hypothesis has been made on the basis of data from a manufacturing industry trust including 29 enterprises of average and small size, of which 14 are located in the Kharkov, 8 in the Sumy, and 7 in the Poltava regions. For all enterprises, data were compared on the gross output volume in constant prices, on the number of personnel engaged in industrial production, on the wage fund, and on profits. On the basis of these data, dynamic indices of labor productivity and average wages were calculated for individual enterprises, and weighted aggregate indices were calculated for a group of enterprises in one region and for the trust as a whole. If the monitoring of the proportions in which we are interested is based on the comparison of indices calculated according to the gross output volume in constant prices (according to the gross output method), it must be said that, compared with 1967, the situation was very unfavorable in 1968. Even though the index of labor productivity growth throughout the trust was 1.073, which in itself is not so very bad, the wage index was 1.147. As a result, the index of rela-

tively more rapid growth was lower than unity—0.935. In practical terms, this meant that the trust had to hold 6.5% of the material incentive fund for the year in reserve. This is approximately 80% of the monthly material incentive fund.

At individual enterprises, the index of relatively more rapid growth fluctuated between 0.845 and 1.073. Out of 29 enterprises, only 4—or less than 14%—of the enterprises had an index of relatively more rapid growth higher than unity.

The proportions between the labor productivity growth and the increase in wages were next verified according to the net output method (which used two variants for determining net output). In the first variant, total material outlays were subtracted from the cost of gross output in constant prices, and, in addition, new prices instituted for materials as of July 1, 1967, were taken into account. In the second variant, the wage fund and profits were summed up and payments from the material incentive fund were subtracted from profit and added to the wage fund. Furthermore, social insurance deductions and 74% of other monetary outlays were added to the wage fund. Profit was "cleansed" of illegitimate income.

It is no simple matter to subtract total material expenditures from the cost of gross output even if material expenditures in current prices are not converted into material expenditures in constant prices. The point is that determining material expenditure specifically relating to gross output means considering the write-off of materials for nonproductive accounts as well as changes in inventories for the accounts labeled "Production," "Expenditures in Future Periods," and "Forthcoming Expenditures" for the base year and the year under study for all enterprises and on the average for enterprises in one region and for the trust as a whole.

As a result, it developed that the net output method represented by two variants for determining net output showed better results than the gross output method. According to the first variant, the index of relatively more rapid growth was 1.014, and under the second variant it was 1.002. Thus, monitoring according to the net output method by determining net output through subtracting total material expenditures from the cost of gross output (first variant) is somewhat more "liberal," even though it differs slightly from the method of totaling actual profit and the wage fund (second variant). It must be noted that under the first variant for determining net output, 10 enterprises had an index of relatively more rapid growth lower than unity, while under the second variant this was true of 12 enterprises; in addition, according to both variants, this index coincided for only 6 enterprises.

On the basis of an experiment of such a limited scale, it is naturally difficult to say which variant for determining net output is more reliable and at the same time sufficiently simple. Nevertheless, even now it is evident that the summation of profit and of the wage fund produces better results. Thus, when total material outlays are subtracted from the cost of gross output, the index of relatively more rapid growth fluctuates between 0.305 and 1.602—more than 1:5—while in the case of the summation of profit and the wage fund, the fluctuation was from 0.730 to 1.215, or less than 1:2. A more precise evaluation of fluctuations was made with the aid of standard deviations. In the first case, the standard deviation was 21.3%, and in the second, 10.2%, or more than two times less. But the main issue is not the selection of the mode of determining net output but rather why the net output method produces better results than the gross output method for monitoring the proportions between the growth of labor productivity and the growth of average wages. Evidently the basic reason for this is that the

trust and its enterprises converted to the new system of planning and economic incentives largely during 1967, and bonuses based on the results of the work for the year had not yet been paid. In 1968, bonuses were paid for the results of the work for 1967. These bonuses were included in the wage fund for 1968. Strictly speaking, the average wages for these two successive years are not comparable, since the growth of wages in 1968 began to surpass the growth of labor productivity, which increased to a lesser degree.

However, the net output method proved to be less sensitive to such incomparability since the higher wages in 1968 became a part of the net output volume. To be sure, one must not forget here that the very same increase in wages was subtracted from profits. Accordingly, no manner of increase in bonuses from the wage fund, even if justified by an increase in profit, influenced the average wage. If at all those enterprises where wages increased more rapidly than net profits the proper percentage of the material incentive fund had been temporarily held in reserve, the index of relatively more rapid growth throughout the trust would have increased to approximately 1.012.

It is desirable to increase the number of experiments relating to the use of the net output method to monitor the proportions between the growth of labor productivity and the growth of average wages by also incorporating in them the verification of the method of totaling profits and the wage fund. (13)

2. *Certain Problems in Price Formation*

It is a necessary condition that the methods of exerting an economic influence on socialist production be based on an expediently constructed system of planned price formation. The economic reform is inseparably linked to the

improvement of price formation, and notwithstanding a successful revision of wholesale prices, there are still unresolved problems in this area.

In recent years, USSR scholars have advanced a number of new price formation concepts which have provided a basis for substantive discussions.

Champions of the conception of optimal planning prices believe that the plan for the output of goods and prices on goods should be born in the single process of elaborating optimal plans. One can agree with this principle. Further, champions of this conception proceed from the maximization of the satisfaction of the population's needs. And this does not evoke essential objections as long as the question of how to measure the degree of satisfaction of these needs is not broached.

The main point of divergence between champions of the concept of the optimal planning price and representatives of other viewpoints is the following: the former maintain that prices on the products of labor must be based on their "social utility" and not on production outlays. Social utility stems from the correspondence between prices on commodities and their "shadow prices." (14)

In any problem of the optimum, "shadow prices" are construed to mean partial derivatives of an extremal objective function, taken with respect to the free values of conditions-constraints. The maximum value of the consumption function is specifically the criterion of social utility of total output.

In applying economic categories, "shadow prices" can be said to be the increments that the optimality criterion (for example, the value of the consumption fund or national income) obtains per unit of increase in evaluated resources. The limited nature of resources is a condition-constraint in the model of the optimal plan.

Many economists believe that the determination of prices

on the basis of measurement of the social utility of commodities is impossible and even vicious, since it means a departure from Marx's theory of labor value and an approximation of bourgeois theories of the subjective "marginal utility" school. Let us examine these questions in greater detail.

Champions of the concept of prices in an optimal plan seek a universal quantitative measure of the social utility of commodities outside the framework of their substitutability. They do not attempt to find this measure in physico-chemical properties, i.e., in the caloric content of fuel or in the nutritive value of foodstuffs, but rather in the general property of commodities to be useful and thereby to increase the level of satisfaction of needs as the criterion of optimality.

The possibility of measuring the relative utility of various substitutable commodities is indisputable. The boundaries of substitutability are greatly expanded with progress in technology. The same needs can be satisfied by several different items taken from branches of production that are very remote from one another. For example, the task of increasing the production of grain crops can be resolved by ploughing new land. But this goal can also be achieved through the more intensive utilization of existing cultivated land. The cultivation of new land would require many additional tractors, whereas an increased level of intensiveness in the use of existing land presupposes the necessity for increasing the norms for fertilizer applied to the soil. Thus, tractors can be "replaced" by fertilizers.

Of course, there must be certain relationships between various resources. But if we are discussing the values of resources as conditions-constraints, and additional investments in the production of one or another type of product, then resources can be evaluated on the basis of the effect that the increased production of a given type of product

yields for the final result, i.e., for the increase in the consumption fund or in national income.

The thesis of champions of the optimal planning price concerning limited resources has evoked many doubts. It would seem that this thesis confirms the constancy of limited resources. But this is not the case. To the contrary, the system of optimal planning prices stimulates the overcoming of the scarcity of resources. The transition from a scarcity of a number of commodities to a sufficiency must be made through the optimal use of resources with the aid of an important economic lever such as price. Only under this condition can supply optimally exceed demand in a given period of time. But such an excess still does not mean the elimination of the constant relative scarcity of resources. We say "relative" because we are discussing the scarcity of resources in the face of constantly increasing needs.

Academician A. M. Rumiantsev has written that "even at the highest level of development of productive forces, society is always faced with limited material and manpower resources and the expediency of their use cannot be decided from the standpoint of the branch." (15)

Attempts to construct prices in the process of optimal planning are very enticing. Prices have been based directly on labor value only in the case of simple commodity production. But even then, fluctuations in supply and demand on the market were the regulator of the price level. Upon the transition to capitalism, prices gradually underwent modifications and began corresponding not to labor value directly but to production prices. But can it be said that such a redistribution of the entire value of the gross social product is a violation of demands or a negation of the law of value? No. Such a redistribution took place exactly on the basis of the law of value. Even deviations in the form of monopolistic prices do not provide a reason for doubting the effect of the law of value.

It is entirely natural that another modification of this law is inherent in planned socialist production. The law of planned development is manifested not only in the form of creation of the system of planned centralized management—profound changes in the nature of economic categories are also involved.

This also applies to the category of price. In addition to their old functions, prices must play the role of a key measure of correspondence between production and consumption and must become a planning instrument not only as a unit for calculating value but also as a means for determining and maintaining optimality. This is why the redistribution of value in prices on the products of labor in terms of their effect on consumption by no means reflects anything that is historically unexpected. And the law of value is not refuted since the object of redistribution is the aggregate value created by labor equal to the sum of prices. If we analyze in depth the structure of prices in the optimal plan, we see that the price on any product contains value created by labor, diminished or increased depending on the effect of the given product in satisfying society's needs. In our opinion, such a price modification is entirely justified by the economic interests of society under socialism.

Little basis has existed for attempts to determine the objective function in the model of an optimal plan as the degree of satisfaction or even "pleasure" of consumers, and hence these attempts have been subjected to just criticism. They were manifestations of the influence of the subjective school of political economy and the theory of "marginal utility."

It is entirely sufficient in optimal evaluations to maximize not the aggregate of individual, unmeasurable consumer "preferences" but rather the total consumption fund. But it is contemplated to determine the structure of the consumption fund in terms of items (resource vectors) on

the basis of a well-organized assessment of consumer demand and to make corrections with regard to norms of need satisfaction. In this way we depart from subjective evaluations and attempt to take into account the collective experience of consumers.

Thus, the task of elaborating an optimal plan and corresponding prices is resolved in approximately the following way: the objective function is established in the form of a consumption fund which is to be maximized; its structure is determined by type of product on the basis of public demand, consumption goods not on the market, and corrections according to the scientific norms of consumption; and constraints on material and labor resources as well as technological norms are introduced. The resolution of the multi-dimensional—both basic and dual—problem should produce an optimal plan for the production of resources and products as well as optimal evaluations of resources and consumer goods corresponding to this plan. “Thus, optimal plans for dual problems are harmonious in the sense that the optimal plan of relative prices, according to which the applied technologies are profitable while unapplied technologies are unprofitable and vice versa, corresponds to the optimal production plan.” (16)

Value is redistributed through deviations between prices and value in accordance with the significance of each item in the consumption fund. In our price formation practice, we do not use average outlays on an item but rather corrected prices which consider the effect in consumption or in utilization. And the more rapidly the technology of production is improved, and the higher the level of automation of production, the more do such corrections become increasingly widespread. Even now we are essentially redistributing value through prices in that we have abandoned the strict observance of the principles of price formation based on average labor inputs. The issue at stake is that these cor-

rections in prices on items be made not on a random basis but rather on the basis of a stricter system.

At the same time, it cannot be denied that the methodology of determining the prices in an optimal plan has not been elaborated fully. Many difficult and unresolved questions remain in this area. The structure of final demand is, in principle, determined on the basis of studies of consumer demand. But this demand is the function of present prices on commodities and of the income level of various population groups. Thus, in determining future optimal prices, one must proceed from existing nonoptimal prices. It is a closed circle. In his substantive criticism of the methodology of compiling the optimal plan, A. Ia. Boiarskii referred to the existence of such a circle: “The ascertaining . . . of prices requires finding the partial derivatives of a function measuring the total utility of the entire bulk of consumer goods. It is a closed circle: in order to ascertain this function, there must be prices, and in order to establish prices, one must know this function.” (17)

In principle, modern mathematical techniques make it possible to break open this circle. The first step can be taken with the aid of existing nonoptimal prices but according to the algorithm for determining optimal programs of production and improved prices. Then it is necessary to determine how the structure of demand will change in the face of the changed prices following the first step. Further, a second approximation (iteration, etc.) must be made. In this way we can arrive at zero price increments and halt further updating. But in what space of time will the desired results be obtained? After all, the study of demand is not a one-time poll. Demand must be studied over years rather than months. From this it follows that the first solution can only approach the optimum. But if the system is continuously operative, in a number of years it will be refined

and will lead to a value sufficiently close to the optimal variant.

Some champions of the concept of optimal planning prices are attempting to go beyond the confines of the circle with the aid of such different, clever mathematical constructs as "preference curves" or "indifference hypersurfaces," etc., but any unprejudiced reader will understand that the influence of existing prices cannot be overcome with a solution for one period. The redistribution of value is a gradual process and hence a process requiring many years.

In general, resolving a multidimensional problem on such a scale as the creation of an optimal national economic plan is very difficult. Essentially, it is possible to solve a model which greatly oversimplifies the conditions of complex reality. The model rather than the national economy is subjected to optimization, and this is far from being one and the same thing from a practical standpoint.

Nonetheless, methodology for establishing the prices of a single optimal plan must be elaborated. Evidently, it will be necessary to abandon the search for a function measuring the degree of satisfaction of needs and to apply another objective function—the growth of the consumption fund. But it will also be necessary to abandon the idea of a single optimality criterion. Probably the growth of national income will have to be optimized initially and, to this end, cosubordinated criteria will have to be established—the period of optimization and the proportions between the accumulation fund and the consumption fund in order to ensure stable growth rates for national income and the consumption fund. In other words, it will be necessary initially to optimize the one-product or two-product model and to arrive at values of the size of the consumption fund in value form both "from above" (as part of the national income) and "from below" (as a solution to the problem of maxi-

mizing the consumption fund through optimal resource utilization).

Since the expression of the consumption fund in value terms, i.e., the simple sum (scalar), will serve as the objective function, criticisms that the degrees of satisfaction of needs are vectors and cannot be transformed into scalars will vanish. Incidentally, in an article entitled "A Model of Optimal National Economic Planning," A. Ia. Boiarskii himself shows how magnitudes presented in the form of vectors can be converted into total value through coefficients superimposed on the vectors. (18)

Some economists doubt the legitimacy of applying "marginal values" of variables since this supposedly corresponds to the theory of "marginal utility" in all cases. But then it would be necessary to reject all problems of optimum, since optimization always consists in finding extremal values, i.e., "marginal values." A number of economists have for a long time been applying the method of "marginal values" without always being aware of the specific implications involved. Thus, official instructions on the definition of the effectiveness of capital investments have long contained such concepts as the relationship between increases in the annual volume of national income and the capital investments in the material production sphere that give rise to such growth. (19) Just what does this mean? It is none other than the "marginal value" of an increment in function. Hence, not every "marginal value" is associated with the theory of "marginal utility."

Let us now examine the question of prices on items based on the outlays of marginal enterprises. In the first approximation, these prices are specifically the prices of the optimal plan. At first glance, it appears that the application of evaluations based on marginal enterprises must be rejected. After all, such an evaluation does not correspond to the

principle of price formation based on socially necessary outlays.

But we are already employing such evaluations and we cannot do without them. This applies, for example, to the output of industrial mining branches. Such evaluations should be extended to the output of the fishing and lumber-processing industries—in a word, to all areas in which there are rent relations due to the inequality of the natural conditions of production. But according to the methodology of price formation in the optimal plan, extension of the rent approach to the reproducible resources as well, i.e., to all fixed and working capital, is contemplated. A number of economists raise substantial objections to such a mixture of reproducible and nonreproducible resources. If we are not discussing static (single-period) models but rather dynamic models of national economic plans, we must begin not from scratch but rather from accumulated social wealth. Accordingly, such economists maintain that within the expenditures of social labor, we must consider initial wealth and its subsequent growth and reduction, including physical wear and obsolescence, and that we must ultimately arrive at the value for the end of the period to be optimized. Prior to being worked, nonreproducible resources in the form of reserves that have not been proved or that have only been mapped by geological prospecting are not subject to obsolescence or physical wear. For this reason, the uniform mode of evaluating reproducible and nonreproducible resources as an instrument for optimizing evaluations is unacceptable.

This question is a complicated one, and at the present time it is hardly possible to find a single-valued answer to it. However, it seems possible to find intermediate variants in the concrete construction of models. It must be taken into account that even now many economists are inclined to think that nonreproducible resources (land, water,

proved mineral deposits) should be evaluated not only in terms of outlays on prospecting and development but also in terms of potential profitability, which opens the door to a single system of evaluation of natural and produced resources.

In principle, output should be evaluated in terms of socially necessary labor inputs. But society needs all those enterprises that can satisfy the need for a given type of output. Hence, the expenditures of all enterprises whose output was included in the production plan are socially necessary. But these enterprises have different technological levels and their production expenditures per unit of output are not identical. And these circumstances are just as objective for any enterprise as are various natural conditions for the mining branches. Therefore, in principle, "equipment rent" is just as realistic as mining and agricultural rent. Naturally, in this area we must not confuse objective factors (degree of technological sophistication) with subjective factors (level of production management, etc.).

Let us now examine the practical side of evaluations based on marginal enterprises. The marginal price will coincide with the amount of expenditures characteristic for an enterprise that operates at a relatively poor level but whose work is still needed to satisfy planned needs. Thus, an enterprise which does not conform to this price is producing output that society does not need. Conversely, all enterprises whose outlays are equal to or lower than those of marginal enterprises must operate since we cannot do without their output. Marginal enterprises are by no means the very worst. The very poorest may not be included in the optimal plan, and therefore they must be reorganized or modernized or their product-mixes must be altered. Enterprises which are marginal with respect to the optimal price must be recognized as socially necessary. In other words,

they must be recognized as normally functioning production units, and hence they must operate profitably.

But many practitioners and scholars maintain that marginal prices are not suitable. And this is the reason: if we take total output and multiply it by the prices of marginal enterprises, we obtain a distorted and, in the given instance, exaggerated value for total output. This would upset all planning and calculation of production.

But value should also be redistributed under prices based on average costs. Let us demonstrate this point with a very simple example. Assume that there are three enterprises with the same output volume within a branch. The first, newer enterprise operates with such low costs that its production is profitable at a price of 10 units for the total output. The second enterprise, of the average type, operates in such a way that a price of 12 units is acceptable for it. And finally, the third enterprise, which satisfies the marginal need for a given output, operates in such a way that a price of 14 units must be established for it. Under the conventional methodology of average outlays, the price should be set at 12 units. Then the total output would cost 36 units. However, it is necessary to consider subsidies in the amount of 2 units paid to the third enterprise, which operates at a loss, and naturally these subsidies can be at the expense of the superprofits of the first enterprise. Thus, value must be redistributed.

Let us now assume that we are using the price of a marginal enterprise operating at 14 units; then total output will cost 42 units. But the fixed rental payments of the first two enterprises in the amount of 6 units ($4 + 2$) must be subtracted, and then the real value of the output following redistribution will equal the same 36 units.

Thus, if the methodology of constructing prices in the optimal plan is freed of shortcomings associated with subjective assessments of utility based on the summation of the

individual "degree of satisfaction" of needs, much that is of value will remain in it. The idea of constructing prices in an optimal plan must be criticized constructively and on an economically substantiated basis. Moreover, it is essential to bear in mind that this theory is not ready for immediate practical use. Even its proponents note this fact.

In an article entitled "Price and Optimal Planning," Academician N. Fedorenko wrote (20): "It should not be assumed that this theory can be incorporated into practice quickly and without special effort. Besides, the theory itself still lacks entirely complete, consummate form." In an article entitled "Price Formation and the Comparison of Different Variants of Economic Measures," A. Lur'e noted: "The question of the possibility of constructing in the near future—in five to ten years—an all-encompassing optimal or nearly optimal plan for the development of the national economy and of calculating shadow prices on the basis of this plan is debatable at the present time." (21) It is without question unrealistic to hope to make this kind of calculation in the next two to three years. But after all, practice cannot wait. What is to be done? We must, it seems, embark on a policy of making partial decisions so as to arrive at the prices of the optimal plan gradually as theory develops.

All attempts to combine the theory of the interbranch balance (which we are already practically compiling and using in planning calculations) with optimal planning seem useful. They will help to establish regional, zonal, and branch prices which take into account rent payments and payments for the use of productive capital (based on the rental approach). It is essential to continue attempts at "imposing" prices established according to the method of labor inputs on the prices of the optimal plan.

Not every combination of different theories should be immediately classified as antiscientific eclecticism. Let us draw an analogy. Physicists do not believe that the amalga-

mation of the Newtonian theory of gravity and the Einsteinian theory of relativity into a single field theory is an example of eclecticism. Frequently science develops in such a way that various theories are combined without contradiction in accordance with the demands of practice and the development of science. This is also true of the science of economics. Many prominent USSR representatives of the science of economics consider it possible to combine the theory of labor value with the principles of constructing prices of the optimal plan. One must agree with A. I. Pashkov, a Corresponding Member of the USSR Academy of Sciences, that in such attempts there must, of course, be no subjectivism and no psychological evaluation of goods in terms of their "utility" in the manner of the Austrian school. (22)

Attempts to organically combine the theories relating to the formation of prices based on value and based on the optimal plan seem to be productive. Internally, both theories should not be more contradictory than economic reality itself.

In one of their articles, Academician N. Fedorenko and S. Shatalin wrote: "Together with the construction of an optimal plan, a corresponding system of prices which are partial derivatives of the national economic criterion of optimality with respect to the constraints of the problem (material, labor, and natural resources) is found mathematically." (23) Together with this position, the same article emphasizes the need for a connection between the prices of the optimal plan and the production and labor approach to the analysis and planning of the socialist economy. Furthermore, the need for bringing prices closer to socially necessary expenditures is recognized. But it is emphasized that these expenditures must be expressed in prices that are constructed as marginal prices of the optimal plan, that is, on the basis of the expenditures of "marginal" enterprises.

A number of prominent Soviet economists have made more resolute pronouncements in favor of the possibility and the necessity of combining both principles. A. G. Aganbegian considers that under socialism the modification of value into differential inputs is inevitable. The optimal price is the monetary expression of value under socialism. Initially, the costs of an enterprise or branch are formed and ultimately consideration is given to feedback between branches, and all these things, taken together, form the socially necessary labor inputs which serve as the basis for optimal prices. (24)

As already noted, in stating national economic problems, it is possible simultaneously to solve reciprocal problems relating to the maximization of the satisfaction of needs and to the increased productivity of social labor. This is one of the avenues to combining the methodology of the optimal plan and the theory of labor value. In this same discussion, Professor V. V. Novozhilov acknowledged the necessity of combining the solution of problems pertaining to the maximization of the well-being of the population and problems pertaining to the minimization of labor inputs, and hence prices and evaluations must be derivatives of labor inputs.

Even opponents of prices in the optimal plan admit that if the substance of price is to be considered the value of the product (expenditures of socially necessary labor), the "useful effect" of a product, coupled with other factors, will influence the deviation between price and value. (25) Thus, there is essentially no negation of the possibility of imposing the optimality criterion on the labor basis of price. The entire problem is how to put these ideas into practice.

It should be admitted that the construction of prices on the basis of an optimal plan, but in combination with the law of value and the methods of interbranch balances, seems to be a very promising way of developing planned price formation.

In this connection, the price structure recommended in the works by the Scientific Council on Price Formation of the USSR Academy of Sciences can be adopted as transitional. This structure is presented in articles by V. P. D'iachenko, Corresponding Member of the USSR Academy of Sciences, and, in particular, in an article entitled "Improvements in the System of Prices and Price Formation in the USSR." (26) This article proposes the following structure for a price formula:

$$T_s = MI + OT(1 + n') + e \cdot k \cdot F + R,$$

where T_s is price; MI are material costs; OT are wages; n is the norm of net income incorporated in prices proportionate to wages; e is the norm of net income in price, proportionate to the value of productive capital; F is productive capital; R is fixed rent payment (or markups with plus or minus sign with respect to the criterion of optimum increment); and k is the coefficient of differentiation of capital-output ratio depending on the composition of capital and its economic effectiveness. Such a price construct is in agreement with the proposal made in the section of the present work relating to economic incentives to tax part of the net income from enterprises in favor of society according to the amount of profit per ruble of wages.

It will take time to become convinced of the acceptability of methods for determining prices on the basis of combining prices in the optimal plan with prices established on the basis of average labor inputs. In our view, this problem can be approached from two directions.

In the case of consumer goods, prices can be improved by granting rebates and markups based on demand, novelty, and fashion. Prices should be used to promote the consumption of items that are useful for the reorganization of the population's way of living or for improving the population's

taste and at the same time to curb the sale of such items as alcoholic beverages and tobacco.

With respect to the means of production, prices should be established either by additions or reductions, depending on their effectiveness. The rates of payments for productive capital or rent payments should be correspondingly increased or decreased. Natural resources should be evaluated in calculations of capital investments. Prices constructed at the level of groups of marginal enterprises should be used not only in branches of the extractive industry, as is already partially the case, but also in branches of the manufacturing industry when sharp fluctuations in profitability are occasioned by differences in the technological level and novelty of equipment. It would seem to be more expedient to obtain rental income from highly profitable enterprises than to pay subsidies to enterprises operating at a planned loss.

In the matter of price formation, the procedure and the place for establishing prices are also very important. On one hand, prices should be uniform and planned. But on the other hand, they must be flexible and must react rapidly to technological progress. In all probability it will be impossible to unite these demands at once, but, in practical terms, coming close to their combination through a differentiated approach to commodities depending on the nature of their economic turnover will prove possible.

There are certain commodities that we shall designate conditionally as commodities of the first type—mass commodities, which are more or less homogeneous in terms of their quality. They are manufactured not to fill orders from individual enterprises or purchasers but rather for "the warehouse," that is, for subsequent distribution to an unknown customer. Uniform list prices, stable for a more or less extended period, should be established for such commodities. Qualitative variations of commodities can be reflected in the actual price lists on the basis of grades as well

as on the basis of rebates and additional charges. This type of commodity includes the bulk of raw materials, fuel, power, standard metals, chemicals and fertilizers, building materials, and lumber, as well as all of the most important food products—bread, sugar, salt, meat, fats, etc. The economic turnover of these commodities is such that no direct relationship is required between the producer and the consumer (or sales organization) to determine the prices. Branch models of the optimal plan can especially be applied in this instance.

There is a second type of commodities—standard commodities, which have a large number of variants (varieties) and for which uniform list prices cannot be determined in advance. For example, electric engines are produced according to serial standards of dimension and power. But within the limits of such standards, highly diverse variants may be encountered with respect to the different combinations of the number of revolutions, the voltage, the number of armatures and ends of the shaft, the use or nonuse of flukes in assembly, special requirements for heat and moisture resistance, etc. In such cases the only basis is a uniform aggregate price, but variations of prices, depending on the type of electric motor, must be determined on the basis of contracts between purchasers and suppliers. Of course, individual plants and branch associations can be given price lists for various combinations of their basic output, and, in addition, correlation methods of determining prices for items in terms of their parameters can be broadly utilized. A considerable amount of the components, implements of labor, and consumer goods must fall under the heading of this type of commodity.

We also have in mind the case in which a new item must not replace an entire existing series or parametric series of items but, to the contrary, must be entered into this series without violating the price relationship. In this instance the

State Committee on Prices of the USSR Council of Ministers should confirm a procedure for forming prices on items depending on their basic parameters.

This method is acceptable not only for machines (motors, machine tools, etc.). Sewn items, too, can be evaluated according to the expenditure of fabrics and the complexity of sewing based on the parameters of the goods. This will make it possible to centralize the “aggregate” (i.e., the rule or formula) of price formation and to decentralize the calculation of the actual prices. In this way, the prices on identical items can be made uniform, regardless of where they are produced.

As for a series of new items replacing obsolescent ones, their prices should be determined on a centralized basis, probably not for all items in a series but rather for standard items, so that the variations of prices would be calculated by the parametric method.

In addition, prices should take into account the effectiveness of new items as compared with that of the items they replace. Naturally, the effect is divided between producers and purchasers in such a way that the producers have an interest in the development of new technology while the purchasers, in spite of the price markup, also obtain a certain advantage. Essentially, such prices will be close to the optimal planning prices, assuming, of course, that at first the plan will incorporate the most effective items in the substitutable groups.

Finally, there is the third type of commodities, those which are ordered individually, either in the form of a pilot model (series) or in the form of a custom-built item. Here it is essential to apply the method of establishing prices on the basis of bilateral contracts between suppliers and purchasers according to certain confirmed norms and methods. This would not be a violation of the principle of constructing prices on the basis of socially necessary outlays because

in this case the individual expenditures of the producer are also socially necessary, since the given item is not produced at any other enterprise. Of course, if a new item is included in a series or goes into production at a number of plants, the one-time price must be replaced by a permanent price.

In all cases, the condition and guarantee of the correspondence of prices to socially necessary outlays will be:

1. Mutual control over prices by suppliers and purchasers on the basis of their cost-accounting interests.
2. A gradual but maximally rapid transition from scarcity to a "sufficient economy."
3. A government-confirmed procedure—known to purchasers—for calculating the enterprise cost of production and prices.
4. The right of any party to appeal to the State Committee on Prices of the USSR Council of Ministers or to an appropriate territorial agency of this committee.

Complex problems in the area of price formation will be resolved with increasing success to the degree that the new system of planning and economic incentive is more fully implemented. Many believe that the economic reform will not yield the proper results without the establishment of "ideal" prices. But it must not be forgotten that even an "ideal" price cannot fully even out the differences in profitability. These differences must be overcome not only through the price system but also through technological progress and through the effective economic stimulation of reduced outlays and higher production profitability.

* * *

Within the scope of the present work, the author has not had the opportunity to examine in the required detail many important methods of exerting influence on social production. This is primarily true of the scientific organization of

management, including the use of cybernetics and mathematics of finite sets. These problems are being extensively researched by large collectives of special institutes in our country.

With respect to the relationship between the economic methods of management and cybernetics, I wish only to say the following. Cybernetics cannot be understood solely as control based on data processing; cybernetics is control based on the processing of minimally necessary and, at the same time, entirely sufficient information. Attempts to process flows of massive but redundant information simply because electronic computer systems can process everything very quickly must be eliminated. The scientific, cybernetic control of complex systems is the most economical control. Such control does not exclude ability, intuition, or the individual initiative of those engaged in the organization of control. The social and psychological aspect of the management problem and, in particular, questions pertaining to the ethics and tactics of management under socialism are of no little importance. All these factors require special, broad investigation.

Notes

- 1) B. Kuz'michev, "Psikhologicheskii bar'er," *Pravda*, June 3, 1968.
- 2) A. Dolenko, "Dolg platezhom krasen," *Izvestia*, March 12, 1969.
- 3) P. Bunich, "K polnomu khoziaistvennomu raschetu," *Kommunist*, 1966, No. 12, p. 33.
- 4) R. Belousov, "Mekhanizm planovogo upravleniia," *Ekonomicheskaiia gazeta*, 1969, No. 3, pp. 17-18.
- 5) See *Ekonomicheskaiia gazeta*, 1969, No. 9, p. 15.
- 6) N. K. Baibakov, "Zadachi sovershenstvovaniia planirovaniia i uluchsheniia ekonomicheskoi raboty v

narodnom khoziaistve," in *Sovershenstvovanie planirovaniia i uluchshenie ekonomicheskoi raboty v narodnom khoziaistve (Materialy Vsesoiuznogo ekonomicheskogo soveshchaniia)*, Moscow, "Ekonomika" Publishing House, 1969, p. 25.

7) See N. Volkov and M. Nazarov, "Pribyl' i ee ispol'zovanie," *Ekonomicheskaiia gazeta*, 1969, No. 11, p. 11.

8) At the request of the author, a model of the scale was built by Docent V. P. Khaikin with the assistance of A. G. Litvinenko. The data on Kharkov machine-building enterprises for 1960-1965 were used.

9) *Ekonomicheskaiia gazeta*, 1967, No. 41, p. 15.

10) G. Kulagin, "Rezervy reformy," *Pravda*, August 9, 1967.

11) See *Pravda*, January 14, 1969.

12) K. Marx and F. Engels, *Soch.*, Vol. 26, Part 3, p. 455.

13) The ideas expressed here concerning the relationship between the growth of labor productivity and average wage were developed in conjunction with A. Kotsiur.

14) See Academician L. V. Kantorovich, *Ekonomicheskii raschet nailuchshego ispol'zovaniia resursov*, USSR Academy of Sciences Publishing House, 1960.

15) *Nauka i zhizn'*, 1970, No. 1, p. 22.

16) S. I. Zukhovitskii and L. I. Avdeeva, *Lineinoe i vypukloe programmirovaniie*, Moscow, "Nauka" Publishing House, 1964, pp. 83-84.

17) A. Boiarskii, "Kritika odnoi modeli optimal'nogo planirovaniia," *Voprosy ekonomiki*, 1969, No. 8, p. 111.

18) A. Boiarskii, "Model' optimal'nogo planirovaniia narodnogo khoziaistva," *Voprosy ekonomiki*, 1969, No. 10, p. 14.

19) "Standard Methods for Determining the Economic Effectiveness of Capital Investment," *Ekonomicheskaiia gazeta*, 1969, No. 39, p. 11.

20) *Kommunist*, 1966, No. 8, p. 93.

21) *Voprosy ekonomiki*, 1966, No. 7, p. 67.

22) See A. I. Pashkov, "Ekonomicheskaiia nauka i khoziaistvennaia praktika v SSSR," *Kommunist*, 1966, No. 9.

23) Academician N. Fedorenko and S. Shatalin, "K probleme optimal'nogo planirovaniia sotsialisticheskoi ekonomiki," *Voprosy ekonomiki*, 1969, No. 6, p. 109.

24) See L. Levshin, "Diskussiia ob optimal'nom planirovanii i tsenoobrazovanii," *Voprosy ekonomiki*, 1967, No. 5.

25) See V. Dunaeva, "K voprosu o matematicheskom metode v 'Kapitale' K. Marksa," *Voprosy ekonomiki*, 1967, No. 8.

26) See V. P. D'iachenko, "Sovershenstvovanie sistemy tsen i tsenoobrazovaniia v SSSR," *Kommunist*, 1966, No. 7.

GLOSSARY

“Cost-accounting” [*khozraschet*]-see “economic accountability.”

“Department I and II” [*I, II Podrazdelenie*]-the division of “gross social product” into “means of production” and consumer goods. All goods in process, including consumer goods, are part of the output of “Department I.”

“Economic accountability” [*khozraschet*]-generally meaning that the enterprise or organization has its own profit-and-loss statement. However, in some contexts the term simply means “cost accounting” and is so translated.

“Enterprise collective” [*kollektiv*]-all those employed at a given enterprise.

“Enterprise cost of production” [*sebestoimost'*]-generally corresponds to cost of production (f.o.b. factory and net of enterprise profit). This term has a more specific meaning than *stoimost'*, usually translated as “cost.” However, when used in the context of Marxist economic theory, *stoimost'* is translated as “value,” i.e., labor time expended in production.

“Gross social product” [*sovokupnyi obshchestvennyi produkt*]*—*a global concept including the output of all productive economic units in industry as well as agriculture. This is not a “value added” concept. Due to double counting, it is always greater than “national income.”

“Group ‘A’ and ‘B’” [*Gruppa A, B*]*—*analogous to Department I and II, but this classification refers exclusively to industrial output.

“Implements of labor” [*orudiia truda*]*—*generally all “means of production” except “objects of labor.”

“m,” “v,” “c”*—*following Soviet usage, we use Marx’s original symbols. “m” is “Mehrwert” or surplus value, which, in a most general sense, corresponds to profit. “v” is variable capital paid in the form of wages. “c” refers to the “embodied” labor utilized in the productive process, i.e., basically raw materials and depreciation.

“Live” labor [*zhivoi trud*]*—*usually labor inputs measured in terms of wages. See “embodied” labor.

“Embodied” labor [*oveshchestvlennyi trud*]*—*labor that had been expended in the production of raw materials or capital goods utilized in the productive process, i.e., Marx’s “c.”

“Means of production” [*sredstva proizvodstva*]*—*a general term including land as well as raw materials and capital goods.

“Objects of labor” [*predmety truda*]*—*raw materials or semi-fabricated goods which are “transformed” into finished or more highly fabricated goods during the productive process.

“Productive capital” or “productive funds” [*proizvodstvennyi kapital, fondy*]*—*the enterprise’s fixed [*osnovnoi*] and working [*oborotnyi*] capital. The former includes only that which is considered “means of production,” excluding “means of consumption” such as workers’ housing belonging to the enterprise.

“Productive consumption” [*proizvodstvennoe potreblenie*]*—*utilization of raw materials or semi-fabricated goods in productive processes.

“Profitability” [*rentabel’nost’*]*—*as currently used, the term refers to enterprise profit expressed as a percentage of the enterprise’s fixed and working capital. Prior to 1965, the term usually simply meant the difference between enterprise cost of production and price. In some cases, it simply means economically advantageous.

“Skill group” [*razriad*]*—*in the determination of basic wage rates, workers are classified according to skill groups. Generally, there are six skill groups, and the ratio of basic wage rates between the first (least skilled) and sixth (most skilled) is about 1:2.

“Workers” [*rabochie*], “employees” [*sluzhashchie*], and “engineering and technical personnel” [*inzhenerno-tekhnicheskie rabotniki*]*—*workers refer to “blue collar workers” who are generally paid according to an hourly wage rate. Employees are “white collar” clerical and sales personnel paid according to a monthly salary. Engineering and technical personnel includes engineers and supervisory personnel above the level of foreman. The Russian phrase “workers and employees” includes all those employed and and is so translated.

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