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USSR Report

HUMAN RESOURCES

(FOUO 6/82)

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LABOR

NEW LABOR PRODUCTIVITY INDICATORS FOR CURRENT PLAN

Moscow VOPROSY EKONOMIKI in Russian No 3, Mar 82 pp 23-32

/Article by R. Gavrilov: "Rates, Factors and New Indicators of Labor Productivity Growth"/

/Text/ Labor productivity has always been in the center of attention of the Communist Party and the Soviet Government, which follow V. I. Lenin's directive to the effect that "rise in labor productivity forms one of the fundamental tasks, because without this a final transition to communism is impossible."[1] Lenin considered labor productivity growth the key prerequisite for social progress and the main condition for the victory of socialism. "Basic Directions in the Economic and Social Development of the USSR for 1981-1985 and for the Period Until 1990" state the following: "To increase the productivity of national labor by 17 to 20 percent and, as a result, to obtain no less than 85 to 90 percent of the increase in the national income."

Rates of Growth and Increase

The planned rates of growth and increase in labor productivity, volumes of output and number of workers in key sectors of material production in the USSR for 1981-1985 are higher as compared with the actual rates during the 10th Five-Year Plan (see table 1).

Labor productivity in material production during the 10th Five-Year Plan grew less than envisaged. This was one of the reasons for the fact that the planned increase in the national income was not attained. Unfortunately, it was not possible to fully avoid the effect of a number of objective and subjective factors hampering production growth, that is, movement of mining and fuel sectors to relatively more inaccessible and expensive deposits of natural raw materials; incomplete loading of fixed capital; higher scale of incomplete construction and so forth. It should also be noted that many industrial, agricultural, construction and transport enterprises did not cope with the planned assignments for an increase in labor productivity owing to work time losses, labor turnover, a slow introduction of new methods of labor organization and a tardy mastering of the planned capacities of new equipment. A number of enterprises permit mismanagement, wastefully use raw materials and violate the policy of economy and thrift. Obsolete gross indicators, which aimed at increased expenditures of means of production and did not make it possible to commensurate the results of management with expenditures and resources with sufficient accuracy, were not last among the factors negatively affecting the level of labor productivity.

Table 1. Planned Rates of Growth and Increase in Labor Productivity, Output and Number of Workers in Key Sectors of Material Production in the USSR for 1981-1985 (in %)*

Sectors and subsectors of material production	Output		Labor Productivity		Number of Workers	
	rates of growth	rates of increase	rates of growth	rates of increase	rates of growth	rates of increase
I. Industry--total including:	126-128	4.73-5.06	123-125	4.23-4.56	102.44-102.40	0.48-0.475
electric power	120-124	3.70-4.40	118-120	3.37-3.70	101.70-103.33	0.34-0.66
gas industry	138-147	6.65-8.00	133-135	5.86-6.19	103.76-108.89	0.74-1.72
ferrous metallurgy	114-117	2.66-3.19	112-114	2.29-2.66	101.79-102.63	0.36-0.52
chemical and petro-chemical industry	130-133	5.39-5.86	128-130	5.06-5.39	101.56-102.31	0.31-0.46
machine building and metal working	140	6.96	131-135	5.55-6.19	106.87-103.70	1.34-0.73
construction materials industry	117-119	3.19-3.54	116-119	3.01-3.54	100.86-100.00	0.17-0.00
timber, pulp-paper and wood working industry	117-119	3.19-3.54	116-118	3.01-3.37	100.86-100.85	0.17-0.16
light industry	118-120	3.37-3.70	116-120	3.01-3.70	101.72-100.00	0.34-0.00
food industry	123-126	4.23-4.73	121-123	3.89-4.23	101.65-102.44	0.33-0.48
II. Agriculture	112-114	2.29-2.66	122-124	4.06-4.40	91.80- 91.94	-1.70; -1.67
III. Railroad transport	114-115	2.66-2.84	110-112	1.93-2.29	103.64-102.68	0.72-0.53
IV. Capital construction (in volume of utilization of capital investments)	112-115	2.29-2.84	115-117	2.84-3.19	97.39- 98.29	-0.53; -0.37
Material production as a whole (according to the national income)	118-120	3.37-3.70	117-120	3.19-3.70	100.00-100.86-102.56 (according to the entire plan "fork")	0.00-0.17-0.51

*Calculated according to "Materialy XXVI S'yezda KPSS" /Materials of the 26th CPSU Congress/, Politizdat, 1981, pp 38, 103, 108, 112, 113, 139, 141, 147, 149-151, 153, 155, 160-162, 164, 169-171 and 174-175.

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The actual rates of labor productivity growth calculated according to the national income and volumes of output in the sphere of material production were lowered during the last three five-year plans (see table 2).

Table 2. Labor Productivity Growth During 8th, 9th and 10th Five-Year Plans in the USSR National Economy (in % during a 5-year period)*

Labor Productivity	1966-1970	1971-1975	1976-1980
In industry	132	134	117
In agriculture (average annual calculation for a five-year plan)	137	122	115
In railroad transport	127	124	100.5
In construction	122	129	111
National labor productivity	139	125	117

*See "Narodnoye Khozyaystvo SSSR v 1975" /USSR National Economy in 1975/, Statistical Yearbook, Izdatel'stvo Statistika, 1976, pp 50, 52 and 54; "SSSR v Tsifrakh v 1980 Godu" /USSR in Figures in 1980/, Short Statistical Collection, Izdatel'stvo Finansy i Statistika, 1981, pp 27, 33 and 35.

With the purposeful intent of acceleration of the rates of increase in labor productivity and their actual reduction the following question arises: How should the rates of labor productivity growth change objectively at the present stage of intensification of public reproduction? Economic theory and economic practice answer it in different ways.

First, as a result of the sharp growth of industrial output, construction work and freight transport, in which their planned amounts are correlated with the vast attained base and the rates of enlistment of additional workers are not lowered, the annual rates of increase in output will be reduced. Despite the fact that the increasing amount is added each time, the rates of increase are lowered. Under these conditions the economic significance of increases rises. Now the economic yield of 1 percent of increase in the productivity of national labor increases steadily. Its national economic evaluation in billions of rubles of the national income and in the form of the relative saving of the number of workers becomes weightier: 1 percent of increase in the productivity of national labor is now equivalent to the saving of 1 million annual workers.

Second, the level of labor productivity is calculated in the form of a fraction in which the numerator is output and the denominator is the number of workers. Now it is more advantageous to raise the rates of increase in the productivity of national labor and labor productivity in key material production sectors as a result of the disengagement of the superfluous number of workers with their redistribution in the nonproduction sphere.

Increase in Output Created as a Result of Rise in Labor Productivity

An increase in the volume of output of the national economy and its individual sectors and subsectors is attained as a result of the growth of output and the number of workers (except for agriculture, where the number of employees decreases constantly). At many associations and enterprises most commonly their simultaneous

growth occurs and less commonly output increases only as a result of a rise in labor productivity (primarily at enterprises operating by the Shchekino method or successfully applying brigade forms of labor organization). The following pattern is inherent in the entire national economy and its main sectors: The rates of labor productivity growth are higher than the rates of enlistment of additional groups of workers.

G. Sorokin, corresponding member of the USSR Academy of Sciences, writes the following with good reason: "Intensive factors in expanded reproduction (production growth) can be measured reliably with output obtained as a result of labor productivity growth."[2] In fact, the increase in output is the decisive criterion of expanded reproduction and the part that is obtained through an increase in the productivity of labor of material production workers, within it. At the same time, it is necessary to strive for a decrease in the capital-output ratio. According to our calculations, during the current five-year plan more than 90 percent of the increase in industrial output, more than 73.5 percent of the increase in railroad transport and 100 percent of the increase in the output of capital construction and agriculture is to be obtained as a result of labor productivity. The construction materials, structures and parts industry, light industry, coal industry, nonferrous metallurgy and fish industry, when the upper "fork" of national economic directives is fulfilled, will ensure increasing volumes of output primarily as a result of labor productivity growth.

At present the theory and practice of economic measurements, in particular the calculations of the proportions of increase in industrial output, construction work and freight transport, are improved constantly. In our opinion, it is advisable to refine the formula of calculation recommended in "Methodological Directives for the Preparation of State Plans."[3] The point is that the formula ($\Delta П$--increase in output; $\Delta Ч_р$--increase in the number of workers)

$$Д_{пр.тр.} = \frac{\Delta П - \Delta Ч_р}{\Delta П} = (1 - \frac{\Delta Ч_р}{\Delta П})$$

"worked" quite accurately as long as in most sectors $Д_{пр.тр.}$ did not exceed 75 to 80 percent. Now this proportion has risen to 90 or 95 percent and an inaccuracy of even 0.3 to 0.8 percent obtained during its use leads to an error in the calculations of the saving of workers from 1 to 1.5 million people.[4]

A rise in labor productivity plays a decisive role in the formation of increases in industrial output in the USSR. During the years of the Seventh, Eighth and Ninth Five-Year Plans the proportion of the increase in industrial output created as a result of a rise in labor productivity increased to 85 percent. The 26th party congress again adopted the policy of further increase in the proportion of the increase in output as a result of labor productivity. By the end of 1985 it will reach 90.1 to 91.4 percent. In the last year of the current five-year plan the gross output of USSR industry will exceed its volume at the end of the 10th Five-Year Plan by 163 to 175 billion rubles. At the same time, 146 to 158 billion rubles will be created as a result of labor productivity growth (see table 3).

Table 3. Dynamics of Output, Labor Productivity, Number of Workers and Proportion of Increase in Industrial Output as a Result of Rise in Labor Productivity (1913=1)

Indicators	1928	1932	1937	1950	1960	1970	1975	1980	1985 (plan)
Gross industrial output	1.32	2.67	5.88	13.3	40.32	91.5	130.85	162.25	204.4-207.7
Labor productivity in industry	1.2	1.7	3.0	5.5	11.10	18.5	24.8	29.02	35.7-36.3
Size of industrial production personnel	1.1	1.571	1.960	2.418	3.632	4.946	5.277	5.592	5.72-5.73
Proportion of increase in output created as a result of rise in labor productivity (in %)	67.2	49.9	67.0	67.2	71.8	71.9	84.3	75.2	90.1-91.4

Calculated according to the following: "Sotsialisticheskoye Stroitel'stvo SSSR" /Socialist Construction of the USSR/, Central Administration of the Statistical Survey of the National Economy of the USSR State Planning Committee, Moscow, 1935, p XL; "Narodnoye Khozyaystvo SSSR v 1956 g." /USSR National Economy in 1956/, Gosstatizdat, 1957, pp 40 and 51; "Promyshlennost' SSSR" /USSR Industry/, Gosstatizdat, 1957, p 9; "Dostizheniya Sovetskoy Vlasti za 40 Let v Tsifrakh" /Achievements of Soviet Government in 40 Years in Figures/, Gosstatizdat, 1957, pp 26-28; "Strana Sovetov za 50 Let" /Land of the Soviets in 50 Years/, Izdatel'stvo Statistika, 1967, pp 28, 51 and 112; "Narodnoye Khozyaystvo SSSR v 1970 g." /USSR National Economy in 1970/, Izdatel'stvo Statistika, 1971, pp 55 and 65; "Materialy XXV S'yezda KPSS" /Materials of the 25th CPSU Congress/, Politizdat, 1976; "Materialy XXVI S'yezda KPSS" /Materials of the 26th CPSU Congress/, Politizdat, 1981.

The change in gross industrial output is presented in the prices and according to the methodology of calculation of the corresponding years: for 1913-1950 in the prices of 1926/27; for 1950-1955 in the wholesale prices of enterprises on 1 January 1952; for 1955-1967 in the wholesale prices of enterprises on 1 January 1955; after 1967 in the wholesale prices of enterprises on 1 January 1967; for 1913-1937 within the borders of the territory until 17 November 1939 and for 1940-1980 within the present borders of the USSR.

A big relative saving of manpower will be attained throughout the national economy during the current five-year plan. Without labor productivity growth material production sectors would additionally need 17 to 19 million workers, including 8.7 to 9.4 million people in industry. All this has as its ultimate goal a rise in labor productivity to a level in which it is not only not necessary to enlist additional workers in material production, but it becomes possible to lower their absolute number.

Factors in Labor Productivity Growth

The USSR State Planning Committee modified the single classification of factors in the dynamics of labor productivity, putting the factor "structural shifts in production" in the first place. For the 11th Five-Year Plan in contrast to previous five-year plans the change in the proportion of individual types of products and industries in the grand total of management is taken into account in the plan and the report as the basic factor in labor productivity growth at ministries, associations and enterprises.

Ministries plan and report on structural shifts in subsectors and associations, associations, on structural shifts among enterprises and the latter plan them among individual types of products and operations. The relative saving of the number of workers is the final characteristic of this factor. In calculations of the labor intensiveness of the production program the saving of manpower is recalculated in terms of the saving of work-hours or man-hours.

The concept "structural shifts" used in labor economics is derivative from the broader concept of "rates and proportions of reproduction." Ultimately, structural shifts in the gross national product lead to the regrouping of labor resources in favor of the nonproduction sphere. During the preceding five-year plan the factor of structural shifts in production did not give a full return. The output of economical products was not accelerated properly. Sectors developing economical rolled metal products, quality cement and nonmaterial-intensive metallurgical equipment remained indebted to the national economy. The advancement during this five-year plan of the factor of structural shifts as determining as compared with such factors as rise in the technical level of production and improvement in the management and organization of production and labor is the consequence of progressive changes of key national economic proportions (increase in the share of the consumption fund in the national income, more rapid growth of group "B" in industry and change in territorial proportions and in the structure of the fuel balance). The reorientation of the economic significance of factors in labor productivity growth as a result of the advancement of structural shifts to the first place aims at a preferential increase in the volumes of output for which there are the most favorable possibilities of lowering labor expenditures.

Technical progress is the basis for labor productivity growth. At the same time, the method of calculating the share of scientific and technical progress in an increase in labor productivity needs to be further developed, because, according to the calculations of various researchers, it ranges from 30 to 60 percent. In particular, in our opinion, the view that the determination of this share at the level of 30 percent is obviously understated is substantiated. About 40 percent of the increase in labor productivity in the national economy was attained as a result of the rise in the machine-worker ratio in 1966-1970.[5] No less than 60 percent of the increase in the productivity of national labor is to be obtained as a result of scientific and technical progress and the introduction of labor-saving equipment and technology during the 11th Five-Year Plan.[6]

Planning the effect of technical progress on labor productivity growth, it is not enough to limit ourselves only to its labor-saving function. The full national economic return of scientific and technical progress is manifested not only and

not so much in labor productivity growth understood in the narrow sense of the word (saving of live labor) as in a rise in labor productivity in the broad sense of the word (saving of total expenditures of live and embodied labor). The dynamics of this indicator during 3 years of the past five-year plan in the RSFSR industry can be judged from the data in table 4 (in %).

Table 4*

Indicators	1976	1977	1978	1976-1978
Share of increase in labor productivity in RSFSR industry as a result of introduction of all new technology measures	58.8	50.2	59.0	55.6
including as a result of measures: increasing the productivity of live labor	47.1	39.1	48.1	44.4
ensuring the saving of embodied labor	11.7	11.1	10.9	11.2

*PLANOVOYE KHOZYAYSTVO, No 3, 1981, p 110.

The correlation of the expenditure of live and embodied labor per unit of output under the effect of technical progress changes differently at different times and in different sectors, but a simultaneous reduction in both (with a more rapid reduction in the expenditures of live labor) remains the general trend.[7]

Two stages in the development of expanded reproduction of the intensive type are distinguished in the economic literature.[8] The second occurs on the basis of the aspects of technical progress in which full expenditures per unit of output are reduced. From the point of view of the theory and practice of labor productivity growth this presupposes that an increase in output per worker is necessarily accompanied by an absolute or relative reduction in production costs. An absolute reduction in production costs occurs primarily in new types of products for production or personal consumption. A relative reduction in production costs occurs in all types of products and, primarily, those whose price rise is due to natural and climatic conditions. Without such a relative reduction in full expenditures, which is the consequence of labor productivity growth on the basis of technical progress, most traditional and new types of products would cost much more as compared with actual costs.

The rates of growth of the capital-labor ratio at the first stage of expanded reproduction of the intensive type are much higher than the rates of growth of output per worker at the second stage. The same pattern is also characteristic of the dynamics of the output-capital ratio, that is, the capital intensiveness of output grows more slowly during the introduction of technical facilities increasing labor productivity not only as a result of the saving of live labor, but also as a result of the reduction in full expenditures of live and past labor per unit of output.

The beginning of the five-year plan shows that many enterprises again fulfill the planned volumes of output, construction work and transport operations with nonobservance of the planned rates of labor productivity growth and this means that

the number of workers at them is higher than planned. A hidden surplus of personnel of 10 to 15 percent of all the employees was formed at many enterprises.[9] Basically, this occurs at enterprises where there is no brigade form of labor organization and the Shchekino method of work and the Aksay experience in labor standardization are not introduced. The long-condemned practice of correction of plans for labor productivity growth toward a reduction is revived at such enterprises. At the same time, it is characteristic that cases of a simultaneous correction of plans for products and output are much less frequent than cases of corrections of the planned assignment for the growth of output alone. In practice, this leads to the output of the necessary volumes of products at "any price."

The experience of the country's advanced enterprises indicates that a full utilization of the potentials for labor productivity growth is attained where the introduction of new equipment, technologies and materials is accompanied by a parallel improvement in the organization of production, labor and management. At the same time, not only an improvement in the forms and methods of labor, but also an observance of elementary discipline and personal responsibility, is important. In their absence mismanagement and a lack of initiative arise. Labor intensity lags behind the normal level. On the average, about 1 million workers are idle at work places in industry and construction every day.[10] As a result, new equipment, advanced technological processes and progressive materials do not give the proper effect owing to the different types of violations of labor organization. The main potential for labor productivity growth is connected with a group of social and economic factors and with an elimination of the lack of coordination in work.

It is advisable to solve another problem, that is, to enable the administrations of enterprises and associations to establish the number of workers in accordance with changing production conditions and within the limits of the planned wage fund or standard of wage expenditures per ruble of output (commodity and standard net output). Now the management of enterprises cannot change the correlation of the number of workers in basic and auxiliary shops, lathe operators and repairmen, time and piece-rate workers, engineers, technologists and workers owing to rigid tables of organization. The management of enterprises has no freedom of maneuvering positions. Hence the cases of employment of workers in operations not corresponding to their positions and salaries. When it is impossible to increase the number of workers of one category at the expense of another, enterprises seek additional rates in the scarce category, maintaining the surplus in other categories of workers.

New Labor Indicators

The directive assignments for an increase in labor productivity for the 11th Five-Year Plan are higher than the actual rates of increase in this indicator during the 10th Five-Year Plan. Therefore, it is necessary to utilize all the existing potentials and to improve the mechanism of labor management. First of all, this applies to planning according to the new indicators determined by the decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality" (1979).

During the 11th Five-Year Plan the economic activity of processing industry enterprises will be evaluated not according to "gross output," but according to standard net output. In its economic nature it represents a standard evaluation of the

labor intensiveness of the production program. It fully reflects the necessary product, because standards take into account the entire wage fund and a significant part of the surplus product, since the profitability established in standards, in practice, does not reflect only the turnover tax on articles of group "B." With such an approach the effect of the value of means of production transferred to the output of enterprises is leveled. Not the labor of supplier enterprises, but internal labor, is put in the forefront. In 1981 more than 2,500 enterprises used this new indicator[11] and in 1982 a total of 42 Union ministries will adopt it.[12]

The methodological directives for the procedure of development and application of standards of net output are now made more specific and sectorial methods are prepared on their basis. Average sectorial standards are developed in most of the industrial sectors transferred to the use of the new indicator. A creative approach to standard net output presupposes an observance of the basic principles of calculation of standards on the basis of average sectorial expenditures of live labor for the same articles. At the same time, it is advisable to use different methods of calculation of individual standard elements. Experience shows that the development of standards in machine building has its differences from their development in the chemical and petrochemical industry. Distinctive characteristics are also noted in metal working and at pharmaceutical enterprises. The sizes of cooperated deliveries and the nature of production (custom, series and mass production) greatly affect the methods of calculation.

The introduction of the new economic indicator, on the basis of which several derivatives are calculated, into the practice of management is connected with certain methodological and organizational difficulties. Now in the course of the mass transfer of enterprises to planning according to standard net output it is necessary to maximally approximate standards to socially necessary expenditures of live labor, to correctly determine the amount of wages of personnel for the management and servicing of production in standards of net output per article and to recalculate the amount of profit on articles for which its amount is established according to the level of profitability with respect to full production costs. The establishment of standards of net output for consumer goods not having approved wholesale prices requires special attention.

The task of realization of the overall object program for a reduction of manual labor, whose amount in industrial sectors and construction still remains within 30 to 50 percent, is formulated in the decree on an improvement in the economic mechanism. A reduction in the share of manual labor occurs slowly. Its imperfect calculation is one of the reasons. With the growth of mechanization and automation (increase in the capital-labor ratio) the number of highly skilled workers servicing modern machine tools, machines and equipment grows. However, according to the existing classification of occupations and jobs this category of workers belongs to workers in manual labor with machines. Therefore, when labor mechanization is objectively accompanied by an increase in workers in such positions, a reduction in the share of manual labor does not occur.

In the plan for economic and social development long-term (for 5 years with an annual breakdown) standards of wages per ruble of output are approved for industrial ministries, associations and enterprises. The more output is created with a

smaller number of workers, the higher the average wages will be, because the wage fund is determined through this standard with respect to the value of output. The saving on the wage fund remains at the disposal of the enterprise. It can be spent on incentives for a high occupational skill at the rate of 4, 8 and 12 percent of the wage rate. Thirty-percent increments for the quality of work were introduced for engineering and technical personnel. For holding two jobs and fulfilling the volume of work with a smaller number of people the amount of the increment for workers was increased from 30 to 50 percent of the wage rate.

The industry's wage fund, being the main source of wages, now also predetermines the dynamics of average wages. The planning of the wage fund on the basis of the level attained during preceding periods did not interest enterprises in reducing the number of workers, because the increase in average wages was planned with due regard for the increase in workers. However, the standard planning of this fund makes it possible to more closely connect it with the end results of management and promotes a reduction in the number of workers. By the beginning of the current five-year plan the standard planning of the wage fund was introduced at the enterprises of the Ministry of Tractor and Agricultural Machine Building, the Ministry of Chemical and Petroleum Machine Building, the Ministry of Instrument Making, Automation Equipment and Control Systems, the Ministry of Timber and Wood Working Industry and the Ministry of Heavy and Transport Machine Building. The experiment produced positive results. The use of standard net output with averaged profit in combination with the standard planning of the wage fund makes it possible to more fully take into account the change in the labor intensiveness of output.

"Basic Statutes on the Formation and Expenditure of the Material Incentive Fund and the Fund for Social-Cultural Measures and Housing Construction (Incentive Funds) in 1981-1985" approved by the USSR State Planning Committee, the USSR Ministry of Finance, the USSR State Committee for Labor and Social Problems and the All-Union Central Trade-Union Council stipulate that the total number of fund forming indicators for each individual association and enterprise should not exceed two or three. They include the assignment for labor productivity growth, for whose stimulation no less than 50 percent of the annual incentive fund will be assigned. The Interdepartmental Commission under the USSR State Planning Committee approved as fund forming indicators labor productivity growth and the proportion of output in the superior-quality category for 18 ministries (the Ministry of Machine Tool and Tool Building Industry, the Ministry of Power Machine Building, the Ministry of Heavy and Transport Machine Building, the Ministry of Machine Building for Light and Food Industry and Household Appliances, the Ministry of Tractor and Agricultural Machine Building and so forth) and labor productivity growth and increase in the volume of output for seven ministries (the Ministry of Gas Industry, the Ministry of Maritime Fleet, the Ministry of Food Industry, the Ministry of Fish Industry, the Ministry of Railways and so forth). Ministries and departments can also establish other fund forming indicators, that is, saving of material resources, increase in the output-capital ratio, reduction in production costs and increase in the shift coefficient, for individual subsectors, associations and enterprises with due regard for the characteristics of their work.

FOOTNOTES

1. V. I. Lenin, "Polnoye Sobraniye Sochineniy" /Complete Works/, Vol 38, p 97.

2. G. Sorokin, "Intensive Factors in Economic Growth" (PLANOVOYE KHOZYAYSTVO No 4, 1981, p 12).

3. See "Metodicheskiye Ukazaniya k Razrabotke Gosudarstvennykh Planov Ekonomicheskogo i Sotsial'nogo Razvitiya SSSR" /Methodological Directives for the Preparation of State Plans for the Economic and Social Development of the USSR/, Izdatel'stvo Ekonomika, 1980, pp 515-516.

4. See "Voprosy Izmereniya Proizvoditel'nosti Truda v Otraslyakh Narodnogo Khozyaystva SSSR" /Problems of Measurement of Labor Productivity in the Sectors of the USSR National Economy/, Institute of Economics of the USSR Academy of Sciences, Moscow, 1976, pp 41-64.

5. See VOPROSY EKONOMIKI, No 7, 1975, p 82.

6. See SOTSIALISTICHESKAYA INDUSTRIYA, 17 May 1981.

7. See "Obshchestvennaya Proizvoditel'nost' Truda. Metodologiya Izmereniya" /National Labor Productivity. Methodology of Measurement/, Minsk, Nauka i Tekhnika, 1980, pp 22-24; G. Sorokin, "Intensive Factors in Economic Growth" (PLANOVOYE KHOZYAYSTVO, No 4, 1981, p 11).

8. See A. Notkin, "Type of Expanded Reproduction Under Developed Socialism" (VOPROSY EKONOMIKI, No 8, 1975, pp 10-11).

9. See P. Shumenkov, "Labor Resources Must Be Utilized Rationally and Economically" (SOTSIALISTICHESKIY TRUD, No 4, 1981, p 109).

10. SOTSIALISTICHESKAYA INDUSTRIYA, 17 May 1981.

11. See V. Ivanchenko, "Place of Control Figures in the Organization of Planning" (VOPROSY EKONOMIKI, No 3, 1981, p 66).

12. See D. Karpukhin, "Economic Mechanism and Labor" (VOPROSY EKONOMIKI, No 3, 1981, p 133); EKONOMICHESKAYA GAZETA, No 32, 1981, p 11.

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LABOR

COORDINATION OF WORK PLACES WITH MANPOWER RESOURCES

Moscow VOPROSY EKONOMIKI in Russian No 2, Feb 82 pp 51-61

/Article by V. Cherevan', Leningrad: "Coordination of Reproduction of Work Places With Labor Resources"/

/Text/ The economic and social program for the further development of the national economy worked out by the party for the 11th Five-Year Plan envisages a dynamic and balanced development of the economy and a proportional growth of all sectors, every Union republic and region. At the same time, much attention is paid to the attainment of a balance of existing and newly created work places with labor resources and the provision of newly commissioned enterprises with personnel.

A planned maintenance of the correspondence between labor resources and means of labor is one of the most important conditions for the proportionality of socialist reproduction and the economic basis for an increase in the effectiveness of capital investments, fixed capital and new equipment and for the accomplishment of urgent social and political tasks.

An organic connection of means of labor and manpower--physical and personal factors in production--is characteristic of every stage in economic development and each social and historical structure. K. Marx noted that "no matter what the social forms of production may be, workers and means of production always remain its factors."[1] However, the nature and method of establishment of the correspondence between private and physical factors in production are determined in each social and economic structure by its characteristics and the operation of specific economic laws.

In unity with the basic economic law and the law of planned and proportionate development under socialism a change in the correlation of personal and physical factors is affected, among others, by the laws of population, accumulation and change of labor. These laws are called upon to ensure a quantitative and qualitative correspondence between personal and physical factors in production.[2]

Objectively, under socialism economic laws make it possible to ensure a proportionality between means of labor and manpower. However, the possibilities for a planned utilization of these laws for a balance of personal and physical factors in production in economic practice are not realized quite fully. In particular, the data on the availability of superfluous work places not provided with labor resources in the national economy indicate this. More than 2 million new work places were created in industry during the Ninth Five-Year Plan and more than 1 million, during the 10th Five-Year Plan. These places were not fully provided with labor resources.[3]

The problem of noncorrespondence between manpower and places of application of labor is especially acute in large industrial centers--Moscow, Leningrad, Kiev, Sverdlovsk, Novosibirsk and so forth. Investigations show that the lack of provision of work places with cadres of workers in cities with a population exceeding 1 million is approximately 60 percent higher than in cities with a population of up to 500,000.

A violation of the proportionality between means of labor and manpower hampers a normal functioning of the national economy, lowers the effectiveness of capital investments and leads to intolerable losses. For example, an analysis of the planned and actual effectiveness of capital investments in the most important directions of scientific and technical progress in machine building in Leningrad during the 10th Five-Year Plan disclosed that, as a result of an incomplete utilization of new equipment due to the lack of provision of cadres of workers, on the average, annual output worth 15 million rubles was not obtained.

The noncorrespondence of the number of work places to the number of workers does damage not only to the economy, but to the social development of the individual as well and has a negative effect on the socialist nature of labor. On the one hand, confidence in the "scarcity" of their occupations promptssome workers to break labor discipline and intensifies personnel turnover. On the other hand, it forces enterprise managers, in order to compensate for this "scarcity," to give unsubstantiated rewards for labor, that is, to increase bonuses and to grant other privileges.

The reduction in the shift coefficient of equipment operation is the direct reflection of the availability of work places. At present in our country this indicator is one of the lowest among economically developed countries throughout the world.

In the economic literature in the last few years serious attempts have been made to uncover the reasons for the formation of the noncorrespondence between the number of work places and the size of manpower. Often, however, the problem of a balance of personal and physical factors in production is connected with the reduction in the increase in the able-bodied population, decline in the birth rate and so forth. Not belittling the importance of and need for the control of demographic processes, primarily through the stimulation of the population's reproduction, nevertheless it does not seem possible to ensure a full occupation of existing and newly created work places at the expense of this factor at present and, moreover, in the very near future. The main reasons for such a noncorrespondence are economic and,primarily, the slow reorganization of the reproduction of fixed productive capital, weak coordination between sectorial and territorial planning and insufficient control of this process on the part of planning and party bodies.

The insufficient consideration of the territorial characteristics of formation of labor resources during the substantiation of sectorial plans for industrial production and the development of production capacities is a concrete manifestation of the poor coordination. As a rule, the planned rates of growth of output outstrip the real possibilities for a rise in labor productivity through measures of scientific and technical progress (development of production capacities) and the real increase in the number of labor resources in a region. The need for manpower, like the balance of labor resources, is calculated on the basis of the indicators of the sectorial plan for output and the development of production capacities. For

example, for industrial enterprises in Leningrad the number of workers and employees planned by ministries and departments exceeded their expected increase by 52,000 people in 1977, by 41,000 people in 1978 and by 39,000 people in 1979.

There is a similar situation in the country's other industrial centers. Taking advantage of their high prestige, they attract additional contingents of manpower, which hampers the possibilities for a restriction of the growth of big cities and greatly impedes the solution of social problems, that is, it creates tension in housing construction, the service sphere, transport and so forth. For example, the population growth envisaged by the master plan for the economic and social development of Leningrad until 1980 was exceeded in 1971. The master plan for the economic and social development of Moscow envisaged a population of 8 million by 1990, but in 1978 it was already 7.9 million.[4] During the 9th and 10th Five-Year Plans the rates of population growth in 21 of the biggest cities in the country were 2.5 times as high as the average Union indicators.[5] Whereas throughout the country in 1970-1980 the population increased by 10.3 percent, in Moscow, by 15.6 percent, in Kiev, by 37.7 percent, in Leningrad, by 16.2 percent and so forth. The significant percent of enlistment of additional contingents of manpower "elsewhere" in cities in Central Asia and the Transcaucasus, which have labor resources not involved in the public sector, cannot fail to evoke concern.

The tasks of economic development for the 11th Five-Year Plan set by the 26th CPSU Congress place new demands on a planned management of a balanced reproduction of fixed capital and labor resources. An outstripping growth of final national economic results as compared with an increase in labor and material expenditures is envisaged during the new five-year plan. Special tasks are set for industry in Moscow and Leningrad, where outstripping rates of labor productivity growth as compared with the growth of the production volume are envisaged. It is a matter of fulfillment of planned assignments with a smaller number of workers. A solution of this complex problem requires the development of a set of measures to overcome the lack of departmental coordination, to more fully combine sectorial and territorial principles of planning, to improve the coordination of the activity of sectorial and local management bodies and to eliminate the shortage of manpower in order to ensure the correspondence between the existing number of labor resources and places of application of labor.

The maintenance of a correspondence between personal and physical factors in production is connected with the solution of a wide range of regional and intersectorial problems of formation of new and closure (reduction) of inefficient superfluous work places and of provision of a proportionate reproduction of fixed productive capital in accordance with the expected number of labor resources and the development of improved indicators and standards making it possible to strengthen the effect of the economic plan on a balance of the reproduction of fixed capital with manpower.

The development of indicators and standards characterizing the change in the technical structure of production and its personal and physical factors plays a fundamental role in the attainment of a balance of the plans for the reproduction of fixed capital and manpower. At present such indicators and standards are absent. The applied aspects of the social and economic essence of the concept "work place" have not been developed. Work places are not taken into account or planned. This

does not make it possible to substantiate the need for manpower, capital investments and material resources with sufficient accuracy in sectorial plans, to affect in a planned manner the processes of creation of new and reduction of obsolete work places and an absolute disengagement and redistribution of manpower among the country's sectors and regions and to form occupational-skill structures. Moreover, it is complicated to connect the need for manpower with sectorial plans for the development of production capacities and territorial balances of labor resources. In our opinion, an underestimate of physical-material proportions during the solution of the problem of balancing fixed capital with labor resources is unjustified. A direct link of workers with means of production occurs at the work place. In our view, a cost evaluation of the change in the technical structure of production on the basis of a comparison of the dynamics of fixed capital and the number of workers, as well as an evaluation of the efficiency of interchangeability of live and embodied labor by means of indicators of the capital-labor ratio and of labor productivity, does not give a true idea of the balance of work places with the size of manpower. This often leads to incorrect conclusions when the rates of growth of the volume of industrial production, labor productivity, the capital-output ratio and so forth are substantiated.

It is well known that the higher the capital-labor ratio, the higher labor productivity and the output-capital ratio should be. However, as data indicate, in the last few years the capital-labor ratio has begun to increase more rapidly than labor productivity, while the output-capital ratio has declined. For example, whereas in Leningrad's machine building during the Eighth Five-Year Plan the increase in labor productivity per percent of the increase in the capital-labor ratio was 1.44 and during the Ninth Five-Year Plan, 1.21, during the 10th Five-Year Plan it was 0.96. The rates of increase in the output-capital ratio were lowered respectively from 13 percent in 1965-1970 to 0.6 percent in 1976-1980.

The decline in labor productivity and the output-capital ratio at existing enterprises should be connected not with the insufficiently high rates of increase in the capital-labor output, but with the fact that, on the one hand, its increase is attained at high rates of accumulation of fixed capital and slow rates of withdrawal of obsolete and inefficient means of labor and production and, on the other, fixed productive capital is replaced without regard for the need for working personnel.

An analysis of sectorial industrial plans at 74 enterprises in Leningrad in 4 years of the 10th Five-Year Plan showed that, as a result of the implementation of technical progress measures connected with the replacement of production capacities owing to the reconstruction and new construction of enterprises, the machine tool pool of metal cutting equipment increased by 8,900 units. A total of 1,870 machine tools were eliminated during this period. The number of workers with machine tool specialties at these enterprises increased by only 0.7 percent. With such proportions of replacement of the production capacity the number of workers disengaged as a result of the elimination of obsolete equipment along with the mechanical increase in working personnel could not meet the need for full employment, which led to the formation of more than 6,000 superfluous work places.

In order to change over to a direct assessment and coordination of the resources of live and embodied labor in the physical-material form, first of all, it is necessary to introduce a recording of the number of work places at enterprises, in a

sector and in a region and to develop standards of the shift coefficient of equipment utilization as applied to various national economic levels. Essentially, in the economic literature there is no generally accepted clear definition of the indicator "work place." For example, it is suggested that scientists measure work places quantitatively by means of indicators of labor intensiveness and the available work time, through indicators of the volume of net output, labor productivity and the number of employed individuals with a correction for the shift coefficient[6] and so forth. Not rejecting the proposed approaches as a whole, it is necessary to note their main shortcoming, which lies in the fact that the indicator "work place" is identified with the indicator "need for workers." In their form these indicators are close, but not identical. The difference is that the need for manpower is always a value derivative from the number of work places. Furthermore, whereas the shift coefficient has an effect on the need for manpower, the magnitude of this indicator is not reflected in an increase in the number of work places. Moreover, a quantitative evaluation of the number of work places by means of production capacities is impossible, because this indicator is planned not for all the installed equipment, but only for the part that is at key sections and production facilities. For example, in 1977, when the production capacity was calculated, only 60 percent of the equipment installed in basic production was taken into account in the heavy machine building sector, 66 percent, in light and food industry and 70 percent, in transport and agricultural machine building.[7] If we take into consideration that a significant part of the implements of labor is still in auxiliary production, it is obvious that with such a method of calculation of work places they will be taken into account and planned only for the part of equipment installed at enterprises.

In our view, nor does a cost evaluation of work places by means of indicators of labor productivity and the volume of net output reflect the actual situation with regard to the installed number of work places, because the price policy, structural changes in the assortment of output, overtime work and so forth can have a great effect on these indicators, as well as on the dynamics of work places.

Thus, errors committed in the calculation of work places can give rise to shortcomings when the need for manpower, material resources, production areas, capital investments and so forth is substantiated.

In our opinion, a work place should mean the sphere of employment in public production, or, in K. Marx's expression, the "arena of labor," which in accordance with the established norm of equipment servicing and the work regime requires the application of labor of a worker with the appropriate skill and education for the production of a product (or performance of a certain type of operation) of the established quality with the planned productivity or economic effect. In our view, such a definition of a work place makes it possible to evaluate the need for manpower for an efficient utilization of material-physical elements of production.

With all the diversity of material-physical forms and differences among work places of individual sectors and administrative regions the sphere of employment of workers in public production is characterized by a certain mass of means of production (their number), by a cost evaluation--the capital-labor ratio--by the degree of mechanization and automation, by the level of labor organization and by social, economic, physiological, hygienic and other criteria. Accumulating these

changes, the "work place" is of special significance for the solution of such social and economic problems as a rise in the level of the meaningful content and improvement in the conditions of work, refinement of the training of personnel and formation of their occupational-skill structures and elimination of intersectorial and interregional differences in the level of technical equipment, the age structure of fixed capital and efficiency of utilization of live and embodied labor.

In the practice of recording, analysis and planning it is advisable to differentiate work places according to two classification criteria, that is, social-economic and technological. The social and economic criterion of the structure of work places is determined by the type and nature of production, the degree of division and cooperation of labor, the regime of work, the level of mechanization and automation, working conditions and so forth. The technological criteria of a work place are determined by the structure of equipment, the nature of output or operations, the functions of servicing of production facilities and the degree of utilization of communication and control equipment.

Quantitatively, the totality of work places as applied to the pool of equipment of any national economic level can be determined as the ratio of the amount of installed equipment (Y) to the norms (zones) of servicing of implements of labor (H^o) with a correction for the coefficient characterizing the part of equipment for whose servicing the attachment of a worker (K^3) is required, that is, according to the formula:

$$P_M = \sum_{i=1}^{n} \frac{y_i \times K_{3i}}{H_{oi}}$$

where i are the types of equipment in the corresponding equipment pool.

Depending on the structure of equipment and the level of mechanization work places can be subdivided into nonautomated, automated, special-purpose, specialized and so forth and depending on service norms, into individual, multimachine-tool and collective. If in accordance with the planned service norms there are three machine-tools per worker or one machine-tool for three workers, this is one work place. Nor does the operation of a machine tool in two or three shifts affect an increase in the number of work places. The work place as an integral part of fixed productive capital is a dynamic concept and under the conditions of improvement in the technical base of production constantly undergoes changes. The use of machine tools with numerical program control, automated equipment and so forth is accompanied by progressive changes in the quantitative and qualitative structure of work places manifested in an increase in multimachine-tool and collective work places. In turn, this expands the possibilities for the development of brigade forms of labor organization.

The coordination of personal and physical factors in the process of reproduction of work places is also of great importance for the attainment of a balance of fixed capital and manpower in the physical-material form. It is a question of the coordination of the processes of formation of the additional need for and the absolute disengagement of manpower with the transformation of obsolete and creation of new work places on the basis of the physical replacement of equipment and production expansion.

The effect of the physical factor on the movement of manpower is the material prerequisite on the basis of which the law of change of labor operates.

At the preceding stages of socialist construction the high rates of population growth led to an increase in labor resources, which had to be rapidly involved in production. Under these conditions the predominant part of new equipment was assigned for an increase in the total number of work places, while obsolete implements of labor, which served their standard time, remained in operation. Such a practice of expanded reproduction of work places, which was necessary and effective for preceding periods, came in conflict with the new demographic situation. At present the possibilities for involvement of individuals not employed in public production in production have been almost fully exhausted. The territorial redistribution of labor resources from large industrial centers for the development of new construction projects in the country's eastern and northern regions is the characteristic of the forthcoming period. With the full employment and comparatively low rates of population growth there is a need for a radical turn to an intensive reproduction of fixed capital. The replacement of equipment under the conditions of production intensification is not only to contribute to an increase in the volumes of production, but also to serve as the material basis for an absolute disengagement of manpower, which makes it possible to ensure a two-shift operation of all work places at existing enterprises and to fully meet the need for additional workers in various spheres of employment. Only under this condition are the possibilities of scientific and technical progress realized in full measure.

Planning bodies have accumulated a wealth of experience in the area of a quantitative evaluation of the effect of scientific and technical progress on the relative saving of labor. At present almost all industrial enterprises report on the conventionally disengaged size of manpower to superior organizations. Labor productivity growth, or a reduction in the labor intensiveness of output, is the basic factor in the potential disengagement of workers. At the same time, as a rule, an increase in the volumes of output is envisaged without an additional number of workers. However, methods of a quantitative evaluation of the additional need for and the absolute disengagement of manpower depending on the qualitative improvement in work places in the process of their reproduction are not used in economic practice.

The disengagement of manpower or the additional need for it are due to the change in proportions, in accordance with which new equipment is used for the formation of new and elimination of obsolete work places. For example, a physical replacement of nonautomated equipment with machine tools with numerical program control, which have a higher service norm, denotes a qualitative refinement of work places leading to an absolute disengagement of workers. However, the creation of new work places as a result of the expansion of production capacities and the reconstruction and new construction of enterprises is accompanied by the emergence of an additional need for them.

These factors, as well as the standards of the shift coefficient of equipment utilization, have an effect on the additional need for and the absolute disengagement of manpower. When this indicator rises, the need for manpower increases and, when it drops, the need for it decreases. Therefore, it is necessary to know what the socially normal length of equipment utilization should be with due regard for economic and social factors and how the shift coefficient will change during the immediate and long-term period. Without a solution of these problems it is difficult

to control migratory processes, to form new and to close obsolete work places and so forth. This problem is not only of theoretical, but mainly practical, importance. An increase in the shift coefficient will play an ever greater role during the 11th Five-Year Plan. Factors determining multishift work are dictated by the patterns of scientific and technical progress. The vast all-increasing expenditures on research and development lead to the appearance of expensive automated and mechanized lines, electronic equipment, machine tools with program control, manipulating robots and so forth, which increase labor productivity both at industrial enterprises and in the sphere of management. The new theoretical developments and technical discoveries, as well as the growing scarcity of capital investments, objectively require an increase in the time of productive utilization of fixed capital.

The standards of the shift coefficient can be different with respect to individual types of equipment, enterprises and administrative regions. Such a difference is due to the nature of production (individual, series and so forth), to the regulated idle time of equipment (planned repairs, modernization and so forth) and to the regime of work of enterprises. For example, a four-shift regime of work is planned for coal and metallurgical industry enterprises, a two-shift regime of work, for machine building enterprises and a one-shift regime of work, for experimental production enterprises. Therefore, the greater the share of enterprises or equipment in a given administrative region or city in which the three- or four-shift regime of work is established, the higher the average standard value of the shift coefficient and, thereby, the need for additional workers increases to a greater extent. For example, for nonautomated metal-cutting equipment the standard of the shift coefficient is 1.89 and for special-purpose and expensive equipment and machine tools with numerical program control, 2.61. Standards determined with respect to individual sectors and regions in the country are differentiated. In heavy machine building the standard of the shift coefficient in the pool of metal-cutting equipment is 1.97, in instrument making, 1.89, in the machine-tool industry, 1.95 and so forth. For industry in Moscow this standard is 1.86, in Leningrad, 1.72, in Sverdlovsk, 1.82, in Donetsk, 1.94 and so forth.

Thus, the additional need for and the absolute disengagement of manpower in the process of expanded reproduction of fixed capital are formed under the effect of three factors, that is, creation of new work places by means of new capital construction and reconstruction of enterprises; qualitative transformation of work places on the basis of a physical replacement of obsolete implements of labor with new equipment; rise in the norms of servicing and the shift coefficient of utilization of equipment.

The number of workers disengaged owing to the installation of new equipment at old work places ($Ч_В$) and the additional need for them generated by the formation of new work places as a result of the expansion, reconstruction and new construction of enterprises ($Ч_Д$) can be calculated according to the following formulas:

$$Ч_в = П_э \cdot К^н_с \left(\frac{Н_н - Н_с}{Н_н \cdot Н_с}\right) \quad ;$$

$$Ч_д = \frac{П_р}{Н_н} \cdot К^н_с \ ,$$

where $П_э$ and $П_р$ are the total amount of equipment received during the planned period for the replacement of obsolete and the formation of new work places; $Н_с$ and $Н_н$ are the norms of servicing of the equipment removed from operation and newly received for the reproduction of work places; $К_с^н$ is the standard (planned) shift coefficient of equipment utilization.

The country's different regions require differentiated approaches to the coordination of personal and physical factors in the process of reproduction of work places. Such a differentiation is determined, first, by the regional characteristics of the reproduction and utilization of fixed capital. Investigations show that the intensity of replacement of means of labor in big cities should be 15 to 20 percent higher than, on the average, in the sector and the country as a whole. This is dictated not only by the fact that the shortage of working personnel is much more acute here, but also by the fact that, owing to historical circumstances, in big cities the capital-labor ratio is low and the age structure of productive capital is unfavorable. Whereas in the country's industry about 15 percent of the equipment is more than 20 years old, in Moscow, Leningrad, Kiev and a number of other cities its proportion is much higher.[8]

Second, local characteristics of the formation of labor resources have a great effect on the scale and rates of reproduction of work places. The study of the tendencies in the development and distribution of the population throughout the country's territory is due to the significant regional differentation of the processes of reproduction of labor resources. Statistical data indicate that in Moscow during the 10th Five-Year Plan the average annual natural population growth was 0.15 percent, in Leningrad, 0.28 percent, in Kiev and Chelyabinsk, 0.8 percent, in Kharkov, 0.5 percent, in Odessa, 0.75 percent, in Tashkent, 1.19 percent, in Yerevan, 1.53 percent and so forth.[9]

With a balanced reproduction of work places for the coordination of personal and physical factors in production the size of the manpower disengaged as a result of a physical replacement of obsolete implements of labor with new equipment and the natural growth of the able-bodied population in a region should be sufficient for the provision at the standard (planned) level of the shift coefficient of work places newly created as a result of the expansion, reconstruction and new construction of enterprises. This dependence can be expressed as follows:

$$П_э \cdot К^н \left(\frac{1}{Н^с} - \frac{1}{Н^н}\right) - \frac{Ч_п \cdot Н^с}{К^н_с} = 0,$$

where $Ч_п$ is the natural growth of labor resources in a region.

In the process of reproduction of work places it is important that the volumes of new equipment assigned for a qualitative refinement of obsolete means of labor ensure an absolute disengagement of the number of workers necessary not only for the provision of newly, but also previously, created work places if socially normal levels of the shift coefficient are not attained during the base period, as well as for the purpose of disengagement of manpower for its utilization in other units of the national economy.

In this case the size of the manpower disengaged as a result of a physical replacement of work places should be higher than the additional need for it in connection with the creation of new work places at enterprises in a region, that is, it should meet the following condition:

$$П_э \cdot К^н_с \left(\frac{1}{Н^с} - \frac{1}{Н^н}\right) - \frac{П_р \cdot К^н_с}{Н^н} - Ч_д = 0 ,$$

where $Ч_A$ is the planned size of manpower in relation to an absolute disengagement beyond the limits of a region (city) for the purpose of its productive utilization in other units of the national economy.

The process of reproduction of work places presupposes its coordination with the development of production capacities and indicators characterizing final production results so that, along with the establishment of planned assignments for the rates of growth of the volumes of production and labor productivity for enterprises and regions, assignments for an absolute reduction in the number of industrial and production workers are established.

Since, in our opinion, the work place should be the first object when personal and physical factors are coordinated, the cost (capital-labor ratio) of a work place, as well as an evaluation of the efficiency of interchangeability of live labor with embodied labor in the process of reproduction of fixed capital, should be differentiated depending on the creation of work places as a result of new capital construction, the expansion of production, reconstruction of enterprises and qualitative transformation of work places as a consequence of their physical replacement.

With such an approach in big cities characterized by an unfavorable age structure of capital and a low shift coefficient of equipment utilization the growth of labor productivity and of the capital-output ratio should not always be connected with a rise in the capital-labor ratio. High production results can also be attained here at relatively low and even declining rates of growth of the capital-labor ratio. The data of surveys of a group of industrial enterprises in Leningrad indicate this.

	Rise in Indicators in 1979 in % of 1976				Increase in labor productivity per percent of growth of capital-labor ratio
	capital-labor ratio	labor productivity growth	shift coefficient	capital-output ratio	
Nevskiy Zavod Association imeni V. I. Lenin	8.3	21.5	4.6	12.6	2.59
Machine Tool Building Association imeni Ya. M. Sverdlov	21.9	24.4	8.1	2.1	1.11
Okhtinskoye Plastpolimer Scientific Production Association	25.8	44.2	6.2	14.9	1.71
Hoisting Transport Equipment Plant imeni S. M. Kirov	17.8	22.3	4.3	3.8	1.25
Carburetor Fittings Plant imeni V. V. Kuybyshev	11.7	16.9	5.2	4.5	1.44

It follows from the data in the table that at the relatively low rates of growth of the capital-labor ratio, which at the examined enterprises, on the average, were 20 to 25 percent lower than the rates of growth of this indicator throughout the city industry, a significant rise in labor productivity and in the output-capital ratio was observed. The rates of labor productivity growth greatly outstripped the rates of growth of the capital-labor ratio. High production results were ensured as a result of an intensive replacement of obsolete implements of labor with a total reduction in the number of work places and a rise in the shift coefficient at existing, more productive equipment, which did not require additional capital investments for the development of the passive part of fixed capital and the production infrastructure and was accompanied by a reduction in expenditures on capital and current repairs of equipment.

Naturally, the problem of coordination of work places with labor resources arises not only in the sphere of reproduction of fixed productive capital and depends not only on the possibilities of scientific and technical progress. The saving of manpower both through intraproduction and intersectorial sources of production intensification is another important means of providing all work places with personnel under intensification conditions. Reduction in unproductive work time losses, expansion of equipment service zones, development of brigade forms of organization and stimulation of labor and so forth are such sources. At the same time, it is important to take into consideration such a major source of the saving of manpower, which has not yet been activated, as intersectorial cooperation of the utilization of production capacities. Industry in big cities is noted for the multispecialization of production. For example, enterprises subordinated to more than 100 ministries and departments are located in Leningrad. Owing to different reasons connected primarily with the growing volumes of work on the mastering of new types of products, shifts in the assortment of output, the accelerated frequency of commissioning of new equipment and so forth, there is a signifiant number of work places, which may not always be fully loaded with the production assignments of their ministry and department. Therefore, temporary reserve work places systematically appear at the enterprises of one department, while there is an acute shortage of them at enterprises of another departmental subordination. In our opinion, it is advisable to form the production program not only for the production capacities subordinate to the sector's enterprises, but also for the entire totality of work places in various sectors in the city--the regional capacity. The functions of inclusion of these types of reserves in sectorial plans should be entrusted to territorial planning bodies.

The further improvement in the balance method of reproduction and utilization of fixed productive capital should become an important tool of solution of the problem of coordination of personal and physical production factors. It is necessary to introduce into practice a systematic development of current and long-term regional balances, that is, reproduction of work places and their withdrawal and increase; utilization of work places according to productivity and time.

The long-term program for the formation, reproduction and utilization of work places will make it possible to maximally combine sectorial and territorial interests during the coordination of work places with labor resources, on the one hand, and the substantiation of the rates of growth of industrial production and labor productivity, on the other, to make more competent decisions in the area of capital construction and the organization of the cooperation of production capacities,

to concretize the solution of social problems connected with a rise in the level of the meaningful content and improvement in the conditions of work and to ensure an optimal occupational-skill training of working personnel.

FOOTNOTES

1. K. Marx and F. Engels, "Soch." /Works/, Vol 24, p 43.

2. Of course, such an approach does not belittle the role and significance of other laws in the process of planned management of a balanced reproduction of fixed productive capital and labor resources.

3. See KOMMUNIST, No 18, 1980, p 32.

4. See "Krupneyshiye Goroda--Ikh Nastoyashcheye i Budushcheye" /Biggest Cities--Their Present and Future/, Izdatel'stvo Statistika, 1979, p 5.

5. Cities with a population of more than 1 million are examined.

6. See V. Ya. Churakov, "Problemy Regional'nogo Balansa Trudovykh Resursov" /Problems of the Regional Balance of Labor Resources/, Izdatel'stvo Nauka, 1977, p 50; VOPROSY EKONOMIKI, No 10, 1979, p 45.

7. See "Effektivnost' Ispol'zovaniya Osnovnykh Fondov i Kapital'nykh Vlozheniy v Regional'nom Aspekte" /Efficiency of Utilization of Fixed Capital and Capital Investments in the Regional Aspect/, Moscow, 1979, p 50.

8. See "Machine Tools in Vacancies," (PRAVDA, 16 June 1981).

9. See VESTNIK STATISTIKI, No 12, 1977, p 81; No 11, 1978, p 87; No 11, 1979, p 70; No 12, 1980, p 67.

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