POPULATION GROWTH AND ECONOMIC DEVELOPMENT IN THE U.S.S.R.

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It has now been thirty years since the start of the industrialization drive in the Soviet Union and the launching of the First Five-Year Plan; and it will be just fifteen years more, according to the official view, before the Soviets overtake the leading capitalist countries in per capita production and establish the "material-technical" basis for communism.[1] Without challenging the realism or meaning of this prospect, but acknowledging the rapidity of change which has taken place so far, it would seem that enough time has passed for there to begin to be evident basic relationships between population growth and economic development under Soviet conditions. I would like to outline for you briefly what these relationships seem to be to the present, and also to consider some future possibilities.

First, on a technical note, I shall use as population and labor force data, Soviet figures themselves and also estimates which I have made at some length and laboriously on the basis of fragmentary information in Soviet sources. The length of the paper precludes description of methods or discussion of possible magnitudes of error, except in a few cases; and for details I refer you to the usual unpublished manuscript.

The need to understand relationships between population growth and economic and social change is apparent to Soviet social scientists. "Population growth and changes in its structure," wrote Riabushkin at the World Population Conference in 1954, "are determined by socio-economic conditions; while, on the other hand, the planning of socio-economic measures must certainly take into account population indices and trends."[2] At the same time, available materials have been notably weak in offering any discussion or analysis of such relationships. This shortcoming is compounded for us by the fact that since 1928 there has been published what is clearly only a portion of the data on the population and labor force available to the Central Statistical Administration of the U.S.S.R.

Nevertheless, the materials which are available give us something to go on, and I propose to examine the evidence under the following four headings: first, changing population size and structure under changing economic and social conditions; second, implications of changes in population growth for the pattern of economic development; third, relationships between population growth and labor force trends; and fourth, implications of changes in population growth and labor force trends for changes in labor policy. Please forgive me if, in the time at my disposal, I am something less than comprehensive under each of these headings.

I. Changing Population Size and Structure Under Changing Economic and Social Conditions

In the period as a whole since 1928, the demographic aspects of Soviet population growth have assumed the following general pattern: first, a lowered rate of increase of the total population, including lowered birth and death rates; second, a relative decline in the population age 0-15, a relative increase in the population age 16-59, and constance to moderate relative increase in the population age 60 and over; and third, a reduction in the number of males relative to females.

If preplan peacetime characteristics of population growth had been maintained, one would have expected many, if not all, of these indices to have remained essentially unchanged or even to have moved in the opposite direction. The socio-economic forces which operated to change established growth patterns seem to have been of both a temporary and more long-lasting nature.

Starting from a peacetime growth rate of 2 per cent or more per year, with a birth rate in excess of 40 per thousand and a death rate near 20 per thousand, the first of the temporary forces we can locate as having transpired immediately after the start of the plans, during the early 1930's. The data are not complete, but they indicate a sharp fall in the rate of population increase during 1931-1934, and perhaps even an absolute decrease in the population during one or more of these years; they also suggest that this was more a question of higher death rates than lower birth rates. The temporary if rather acute nature of these forces is suggested by the fact that birth and death rates by the later 1930's, when general conditions were more stable, were near preplan levels.

We can only speculate on the nature of the forces affecting population growth in this way during the early 1930's, but the following characteristics of the period would seem to be relevant: the rapid collectivization of agriculture and the reported violent reaction of the peasants; the rapid rate of rural-urban migration; the reformation of regulations concerning marriages and divorces and birth control; and the widespread food shortages of 1932-1933.

The second force of a temporary nature affecting population growth since 1928 is, of course, World War II. If Soviet estimates of their total population in the postwar period are anywhere near correct, the implication for population losses during World War II verges on the incredible. This itself makes some analysts both here and in the Soviet Union feel that when the total population from the forthcoming all-Union census of population of January 15, 1959, is known, it will reveal a higher total than that implied by the official estimate of 200 million as

of April, 1956. In any event, these and other data taken at face value suggest population losses in excess mortality and reduced fertility during World War II and the years immediately thereafter of an order of 40 million.

If the Soviets were to publish their own estimates of the population by age and sex we would undoubtedly see the effects of World War II, and we could chart some of the subsequent demographic and economic effects with respect to the population of working and reproductive ages. In the absence of such data, I have tried to estimate the population by age and sex assuming the mutual interconsistency of the major pieces of statistical information, such as birth and death rates, average life expectancy, etc., and using also a modified "projection" from a 1940 base population. The result as of 1955 compared to 1939 is a sizeable relative decrease in the population age 0-15, from 38 per cent to 29 per cent of the total; a corresponding increase in the population age 16-59, from 55 to 63 per cent of the total; and a slight increase in the population age 60 and over, from 7 to 8 per cent of the total.

The smaller share of children reflects the wartime conditions and the fact that the peacetime birth rate is now less than in prewar years. This appears in spite of the effect of high military losses during the war toward lowering relatively the group age 16-59. The wartime and peacetime birth-rate effect thus outweighs, so to speak, the effect of military losses on the age structure of the population. This is reinforced by the fact that there entered the working ages between 1950 and 1955 the persons born during the period 1935-1939, when the birth rate was high -- persons who, moreover, were of an age during the war to escape military service. The number of males per 100 females, according to my estimates, declined from 92 to 88, between 1939 and 1955. (The corresponding ratio as of 1945 is estimated to be 85.)

Before tracing some of the implications of these wartime changes in population structure for the future growth of the population, let me give some attention to what is apparently a more fundamental change in the pattern of population growth under Soviet conditions. I refer to the lower peacetime birth and death rates and increased life expectancy revealed by annual data for the 1950's. These data show a crude birth rate of about 25 per thousand compared to more than 40 per thousand on the eve of the plans; a death rate of about 8 compared to 18; and average life-expectancy of 67 years compared to 44 years. Standardization for changes in age structure since preplan years would lower the recent birth rate and raise the death rate, which is to say that birth and death rates can be said to be now about one-half of the corresponding preplan rates.

Soviet sources have not provided in any sense a real analysis of these changes. With respect to the lower death rate, a number of sources refer simply to "the growth of public health measures and the improvement of the well-being of the workers."[3] We really can say more than that. It may be shown by a hypothetical calculation that approximately one-half of the decline in the crude death rate from 18 to 8 per thousand is due to the decline in infant mortality, which is reported for 1957 at 45 deaths per one thousand births. Incidentally, this extremely rapid decline in infant mortality, from a level of about 184 in 1940, is rapid enough to cause some to raise a question about the comprehensiveness of the recent figure, a question also raised with respect to other vital statistics. Unfortunately the evidence is very obscure and its examination beyond the scope of this paper, although it may be noted that in conversations with Soviet statisticians, these data were said to be quite comprehensive. In any event, whatever doubts we may have, the evidence does not seem enough on which to base substantial adjustments.

In addition to the effect of infant mortality on the decline in overall mortality, several additional points per thousand in the decline may be ascribed to the aforementioned changes in the age structure of the population, insofar as this reflects the lower birth rate itself. Fewer children born means that fewer children are subjected to the hazards of mortality in the early years.

Finally, the remaining points of the decline in the death rate would represent increased chances of survival for members of the population past the very young ages.

Only one recent source has come to my attention which includes any attempt to explain the decline in the crude birth rate.[4] Even in this case a prewar date is selected for comparison (1940) which minimizes the extent of the decline, which is then ascribed to (1) the lower rate of infant mortality (leading, we can presume, to the need or desire to have fewer children), (2) the increase in the proportion of urban residents, and (3) changes in the sex ratio resulting from war-time population losses. It may be shown, again, by hypothetical calculations, that in all probability these factors fall considerably short of explaining the full extent of the decline. The calculations imply that married women in urban and probably also in rural areas now are having significantly fewer children than formerly, a condition which, as far as it is apparent in reduced average size of families, is confirmed by recent visitors to the Soviet Union.

In the absence of interpretations of the lower birth rate in available Soviet sources, we are forced to speculate on the underlying reasons by relying heavily on analogy with experience in other countries. This subject is also beyond the scope of this paper, although the following factors in the Soviet case which suggest themselves may be listed: the rapid rate at which the educational level of the population has been raised; the larger share of work falling on women, in the cities as well as in the countryside; and the continuation of the shortage of urban housing.

II. Implications of Changes in Population Growth for the Pattern of Economic Development

I should like to be very brief in this section of the paper, having in mind what remains to be said in the third and fourth sections.

The fact that the rate of population growth, starting almost with the beginning of the plans, has been considerably lower than preplan, is of considerable interest with respect to the "population dilemma" facing many of the other industrializing countries of the world. This is the dilemma of achieving a given rate of growth of production, the effectiveness of which on a per capita basis is reduced or even eliminated by an increased rate of population growth due to lower death rates with high or only moderately declining birth rates. The Soviets have not experienced such a dilemma, although the transferability of their experience to other countries is questionable. The initial, sharp decline in population growth rates was of a temporary nature, and with several undesireable implications. The effects of World War II are unique, and the net result in per capita growth rates from this source must also take into account the destruction of plant and equipment.

With respect to longer-run considerations, perhaps forces of a universal nature are implied by the presently lower birth and death rates, in which case the fact that this has taken place in a relatively short period of time is very important. However, until we know the underlying reasons for this trend, and in particular can isolate the effects of World War II itself on the timing of the decline in the birth rate, we may not be justified in seeking general applicability of the Soviet case.

Finally, it would seem that economic growth in the Soviet Union has been enhanced by the trends since 1928 in the age distribution of the population. The larger share of the population of working ages has tended to reduce relatively the demands for consumption on production. The effect has been to permit a higher share of productive effort relative to the given population of working ages to go for investment (nonconsumption) than would have been the case if the preplan pattern of population growth had been maintained.

III. Relationships Between Population Growth and Labor Force Trends

Changes in the size and composition of the labor force result from changes in the size and composition of the population and from changes in the labor force per cent of population by age and sex. A relatively broad definition of "labor force" is convenient for interpretting Soviet data, so as to include persons "having an occupation," but without specific time reference such as the census week in use in the United States. The effect of this definition, essentially one according to "usual occupation," is to include "in the labor force" those working full-time in industry as well as those with a seasonal pattern of work in agriculture. Under this definition, Soviet conditions on the eve of the plans supported a relatively high percentage of the population "in the labor force."

Specifically, more than half of the total population was classified as "having an occupation" in the 1926 census -- including 91 per cent of urban males and 97 per cent of rural males age 16-59, and 45 per cent of urban females and 85 per cent of rural females age 16-59. Unfortunately, the Soviets have published virtually nothing since the beginning of the plans on the percentage of the population in the labor force; but it would seem from indirect evidence that the percentage is only moderately if at all lower. What would otherwise be a downward effect due to rural-urban migration, together with a declining percentage of children and young people in the labor force, has apparently been partly compensated for by a higher percentage of urban males and females in the labor force. Even the downward effect with respect to young people is modified by the fact that, under the broad definition of "labor force," virtually all rural youths and many urban youths 12 years of age and older, despite increased school attendance, would continue to work on farms in the summer, and would therefore be considered to "have an occupation."

At the same time, the yearly average number of persons actually working or employed has increased per cent of the total labor force. The reason is the large-scale migration of labor from rural to urban areas, i.e., from areas where many months of the year were typically spent idle, to more or less full-time employment.

The direct effects of population changes on the labor force include the following: (1) The lowering of the sex ratio as of the early 1930's and due to World War II has tended to increase the number of females per cent of the labor force. (2) The changing age composition has tended to increase the total labor force per cent of the total population. This latter effect has been the stronger in the 1950's, when there entered the labor force persons born during the later 1930's, when the birth rate was relatively high and infant mortality lower than in preplan years.

By the same token, the rate of increase of the labor force can be expected to be slowed down drastically in the coming five or ten years as persons born during World War II -- when the birth rate was low and infant mortality high -- enter the working ages. In the past, the population of working ages 16-59 has increased by about 1 or 2 million persons per year, including increases of more than 2 million per year in the most recent period, 1950-1955. Between 1955 and 1960 the rate of increase will continue high, at about 1.5 million persons per year. However, between 1960 and 1965, according to my projections, the increase will be of an order of only a few hundred thousand persons per year. Only thereafter, when groups born after World War II come of age, will effective growth be resumed, with an increase of about 1.5 million per year to 1970 and 2 million to 1975.

Even this is a slower rate of increase than in earlier years, due to successively higher numbers in the labor force. The deficit of males over the next twenty years, of course, will be gradually reduced.

The rate of flow of new labor into production in the Soviet Union in the near future will thus have rather different characteristics from the past. The Soviet planners must certainly not be unmindful of these impending changes, but official data on the subject have not been released, and there is almost no discussion of the subject in available materials. One response to the sharply declining rate of increase of the population of working ages would be to attempt to increase the percentage of the population in the labor force, especially with respect to females. There is some evidence of thinking along these lines, at least by academic people. However, if I am correct in assuming that the percentage of the population in the labor force is already very high, the possibility for compensation in this direction is limited.

This is to say that the Soviets will be under mounting pressure to treat labor as an increasingly "scarce" commodity, a development, now accentuated by demographic forces, related to the continuously rising stock of capital.

This is also to say that the Soviets must face a serious alteration of the age-group "balance" within the labor force. As the next decade passes, the following pattern of distribution by age will develop:

(1) The senior group in the labor force, from which, in addition to others, are drawn top managerial personnel, as well as technical and skilled personnel with accumulated years of experience, is the group born anywhere from about 1895 to 1920. Some of the males in this group were old enough at the time to have been subjected to the military hazards of World War I; some were born during the Civil War, when the birth rate was low; and almost all were of an age to have been subject to military service in World War II. For all of these reasons, the population in these age cohorts is relatively small.

(2) The middle group in the labor force over the next decade will include persons born between the early 1920's and World War II. For most of these years, birth rates were relatively high, and the majority of males in this group were of an age to have escaped military service during World War II. These are the members of the labor force in the next decade who are "in transition" to positions of responsibility, and who are otherwise acquiring experience in all types of jobs. For the reasons listed, this will be a relatively large group in the labor force.

(3) The junior group in the labor force over the next decade, those entering the labor force, will comprise persons born during years of relatively low birth rate and high infant mortality rate (1940-1950), and will therefore be of relatively small number.

The impact of these developments in the matter of planning for labor utilization will be considered below.

IV. Implications of Changes in Population Growth and Labor Force Trends for Changes in Labor Policy

Several major directives have been issued recently by the Soviet government which affect the recruitment, training and utilization of labor. The directives cover, first, the transformation of the educational system and the establishment of priority in full-time advanced training for those with production-line experience; and, second, the reduction of the work-day from seven to six (and in some cases five) hours, without reducing per-man productivity. Although there is no space in this paper to examine the official reasons given for the policy changes, I would like to examine what appear to be rather substantial demographic considerations. These considerations seem important enough to merit our attention, even though there is virtually no discussion of this aspect of the question in Soviet materials.

The essence of the reorganization of the educational system is to create eight-year schools, in a sense (but not literally) to replace the present seven-year schools, and to make eight-year education obligatory for all; and to create eleven-year schools, in a sense (but not literally) to replace the present ten-year schools. Although eight years of education are now obligatory, the number who may avail themselves of the 9th, 10th and 11th years on a full-time basis is strictly limited and on the condition of merit. Furthermore, priority for entrance into higher training (universities and institutes) is now to be given to those who not only have completed eleven years but who also have had production-line experience. This is to say that many who complete eleven years without interruption will be forced to go to work before continuing their education full-time; and that those who go to work after eight years will have to achieve the 9th through 11th years while they work. Widened facilities, particularly within factories, are being developed.

The formula for priorities in entrance to higher education is yet to be worked out. In discussions which I had recently with Soviet educators, following the publication of Khrushchev's thesis in November, a figure of some 80 per cent was mentioned in several instances as the proportion who would be entering given institutions of higher education with not only eleven years of secondary training but also at least two years of experience in production. This compares with a present proportion of an order of 20 per cent, and the transition to the new system will take place within a period of a few years. The entrance procedure in each case, I am told, will be altered to achieve the desired proportion in favor of persons with work experience.

The effect of this program is not to change

the overall rate of increase of the labor force, except to delay entrance into full-time work by one year or so due to the fact that eight-year schooling is now obligatory. Younger persons forced to work before entering advanced training will simply replace the older ones who leave for training.

For this reason the program will serve to increase the average age of the body of students receiving advanced training in universities and institutes. In the first place, it will attract initially the older people who have been on the production line a number of years and who until now have not been able to compete academically with those coming directly from secondary schools. In the second place, it will delay the entrance into higher education of individuals now in the secondary schools.

The effect of the new program in drawing people immediately from the relatively large "middle group" in the labor force will tend to redress any "imbalance" in the proportion of trained and untrained people which occurred when this group passed through the ages heretofore devoted to advanced training. It will also tend to maintain a "balance" in terms of formal skills and age structure between the middle group and the relatively small junior group in the labor force. Thus, by giving the people in the middle age cohorts an opportunity to raise their qualifications, the program will tend to bring the rate at which the advanced schools turn out people of given ages more into line with the rate at which these people are being supplied to the national economy.

The directives with respect to the reduction of hours of work appear as part of a long-run objective the attainment of which was delayed when hours were increased substantially during World War II. The condition that this reduction in hours must take place in a given enterprise without reducing per man productivity seems to be an administrative technique for stimulating individual directors to raise the technological and organizational levels of the enterprise's operation.

The demographic question that comes to mind is this: why, in view of the imminent decline in the rate of increase of the population of working ages, have the Soviets picked this time to reduce hours of work? Will it not aggravate the labor supply problem? In the most obvious sense it will. On the other hand, if we take into account the age structure of the labor force to which I have referred in terms of the three groups, and the fact that the rate of increase of the labor force in the future will not for many years again be as high as in the past, this reduction of hours may not necessarily be ill-timed.

First, to reduce hours at anytime in the future will be to do so in the face of a slower rate of increase of the labor force than in the past. Furthermore, the rate of increase of the labor force over the past seven years or so has been unusually high. Taking this seven-year period together with the next seven years produces an average increase of about one million persons per year, or not significantly below the increase for most years since 1928.

Second, as the program is carried out over the next few years, the hours of labor reduced will be primarily those supplied by the relatively large "middle group" in the labor force. To execute the program at the present time, therefore, serves to accentuate the need to adjust to a long-run reduction in the rate of increase of labor supply, by cutting immediately into the relatively large labor supply that has come on the scene over the past five or ten years.

Since this is a meeting of statisticians, I would like to end my presentation on a statistical note, by calling your attention to the fact that within the next month, on January 15, 1959, the Soviets will conduct their first census of population in twenty years. There is some reason for hoping that more of the data from this census will be published than from the 1939 census. A certain optimism in this connection is enhanced by the gradual appearance in recent years of more statistics in all fields and by the discussion of some of these statistics in the academic journals. With the publication of the data from the census, therefore, we might also hope that discussions will widen to the area, heretofore virtually ignored, comprising relationships between population and economic and social variables.

Footnotes

1. Pravda, November 14, 1958.

2. T. V. Riabushkin, "Social Aspects of Population Structure and Movement," Proceedings of the World Population Conference, 1954 (New York: United Nations, 1955), Volume V, p. 1031.

3. MinZdrav SSSR, Zdravookhranenie v SSSR: statisticheskii spravochnik (Moscow: 1957), p. 9.

4. M. Ia. Sonin, "Ob aktual'nykh voprosakh vosproizvodstva trudovykh resursov SSSR," Akademiia Nauk SSSR, Voprosy sotsialisticheskogo vosproizvodstva (Moscow: 1958), pp. 258-259.