

SIZE-DISTRIBUTION OF EARNINGS AND HOUSEHOLD INCOMES IN SMALL SOCIALIST COUNTRIES

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Part I: Availability and meaning of East European distributional statistics are discussed.

Part II: Measures of inequality to be used in this study are examined: the Gini coefficient of concentration, though superior to some other single indicators, is found to be an unreliable comparative measure of inequality, and is therefore supplemented by a set of ratios of selected percentiles to the median.

Part III: Inequality of full-time gross monthly earnings is measured for (almost) the whole civilian working population and for some subpopulations (selected industries, men, women) in Czechoslovakia and Yugoslavia through 1970, in Hungary through 1968: the observed inequality appears to be less than in small capitalist countries, in spite of the reversal of the socialist egalitarian trend in the 'sixties. The main factor of equalization of socialist earnings are small interoccupational and interregional differentials and a very flat age profile.

Part IV: The socio-economic structure of households, the size of samples underlying the distributional statistics, and the composition of household "revenues" (wage and salary earnings, agricultural incomes, social security payments, relatively unimportant property incomes, as well as non-income cash flows) are examined. Inequality coefficients are estimated for *per capita* revenues of all households as well as subpopulations of households in Czechoslovakia and Hungary, and some information is given on the distribution of household incomes in Yugoslavia.

Part V: Limits of desirable equalization of earnings are discussed. With very narrowly dispersed short-term earnings, lifetime earnings tend to be rather unequally distributed because of the variation of earning years among occupations. With largely equalized primary incomes, *per capita* household incomes tend to be more unequally distributed, in spite of massive transfers, because of the varying ratio of earners to dependents within households. The need of income differentials as incentives to work, the probable trade-off between income equality and economic growth, and socialist distributive principles are outlined.

I. INTRODUCTION

The purpose of this article is to measure the inequality (relative dispersion) of earnings and household incomes in three small European socialist countries in selected years in the 1950s and 1960s on the basis of available official distributional statistics. Two of these countries—Czechoslovakia (except 1967–1969) and Hungary (until 1968) are examples of centrally planned economies, whereas the third country, Yugoslavia, is a socialist market economy with substantial labor management.

The smallness of these countries is an important attribute from the viewpoint of international comparability of the inequality coefficients. In contrast to the

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U.S.S.R., there are no pronounced "price zones" in Czechoslovakia and Hungary. In Yugoslavia's market economy, regional differentials in prices and other components of the cost of living are more significant, but still limited compared to those in very large countries like the U.S. or the U.S.S.R. Thus, the extremely difficult regional deflation of money earnings and money incomes, which is a necessary condition to make the dispersion of money incomes reflect the dispersion of welfare, is less imperative in small than in large countries.

Some other problems of comparability also tend to be manageable in the countries under study: the definitions of earnings and household incomes, and of the period over which earnings and incomes are accumulated, do not differ dramatically within this group. All three countries collect data on pre-tax full-time monthly money earnings on the basis of special statistical reports, and data on annual (primary and transferred) household incomes on the basis of large samples in the framework of an elaborate system of family budgets. Yet, specific difficulties are involved in measuring the inequality of socialist incomes.

In the early 'fifties, socialist prices deviated very much from the pattern of consumers' preferences, rationing was widespread, and income in kind loomed large in total income. Under these conditions, the dispersion of money income was of little economic meaning.

In the late 'fifties and in the 'sixties, most of the rationing had been abolished, the choice of consumers' goods had been widened, and prices, especially in Yugoslavia, had been brought somewhat closer to relative demand. The socialist planners themselves now attach a great importance to the distribution of money earnings as an incentive to work and to acquire new skills, and to the distribution of household money incomes as an instrument of social policy and an important factor of aggregate and partial equilibria.

There are, however, two aspects of the dispersion of welfare which cannot be captured at all by the inequality coefficients in this paper: The "social" or "collective" consumption (goods provided by the Government free or almost free of charge, such as medicines, school books, etc.), and free social services (such as health care, education, etc.). These "in kind" transfers to individuals and households amounted in 1968 to approximately 18 percent of personal consumption in Czechoslovakia and to approximately 12 percent in Hungary.¹ "Collective consumption" has an equalizing effect on the distribution of welfare only to the extent that free Government goods and services are available to everyone. Inasmuch as it also covers non-monetary rewards for special political, military, scientific, artistic and sports achievements, it has a disequalizing effect. We have no data to estimate its net impact. Furthermore, incomes from black-marketing, moonlighting, etc., also escape all official statistics. Yet, the resulting problems in estimating the dispersion of welfare under socialism seem to be no more frustrating than the unreported or under-reported incomes, negative incomes, and other problems which bedevil the studies of income distribution in mixed capitalist economies.

Finally, some computational problems arise from the non-systematic publication and occasionally vague definitions of the distributional data in the socialist countries.

¹Cf. [11], p. 2.

II. MEASURES OF INEQUALITY

Two measures of inequality will be used:

1. The Gini coefficient of concentration,² reflecting the ratio of the area between the Lorenz curve and the diagonal to the triangle below the diagonal. The weaknesses of this coefficient are well known: it does not convey any information on the location of inequality [3, p. 49], [10, pp. 809]; it is not sensitive to limited changes in inequality, especially at the lower tail; and it fails to rank the distributions according to concave social utility functions [1], [2], [10]. Its computation on the basis of the usual grouped-data statistics is subject to a margin of error, (cf. [11, pp. 405]).³ But it also has a very convenient property: in contrast to the log variance or the coefficient of variation, its upper limit (for complete inequality) is 1 independently of the number of observations (income classes in the usual grouped-data statistics).⁴

2. My second measure of inequality is a set of ratios of income at selected percentiles to the median:

$$P_i = \frac{P_i}{P_{50}}.$$

Counting from high income to low, this ratio has been estimated at the 5th, 10th, 25th, 75th, 90th, and 95th cumulative percentiles of recipients. For distributions with a fine classification of income brackets, I have also estimated P_1 , P_2 and P_{98} .

P_1 , P_2 and P_5 are very sensitive to changes of inequality in the upper tail, P_{95} and P_{98} to changes of inequality in the lower tail. The Lorenz curve of distribution a is inside the Lorenz curve of distribution b , if $P_i^a < P_i^b$ for all i above 50, and $P_i^a > P_i^b$ for all i below 50. If we know that the Lorenz curves of the distributions under comparison do not intersect, we can use the Gini coefficient with somewhat more confidence as a comparative measure of inequality. Thus, the P_i coefficients usefully complement the Gini coefficient. In my opinion, they are preferable to income shares, also, for two other reasons: they provide more detailed information on the tails of the distributions, and they are relatively

²In a form explicitly applicable to grouped data with unequal income intervals:

$$R = \frac{\sum_{r=1}^n \sum_{s=1}^n |X_r X_s| f_r f_s}{N^2} \cdot \frac{1}{2X}$$

³Fortunately, the number of income brackets in Czechoslovak and Yugoslav statistics is fairly high (varying from 9 to 21, as indicated in the statistical tables, last line), and the frequency of recipients in the open-ended brackets is low (in Czechoslovakia usually less than 1 percent, in Yugoslavia around 3 percent). Most of the published Hungarian statistics use only 7 income brackets and the frequency of recipients in the open-ended classes is high, so that the computation of R for Hungary is subject to a greater margin of error.

⁴The lower limit of these three inequality coefficients is zero for complete equality. Whenever the coefficient of variation or the log variance is greater than 0, the underlying statistics should be standardized for the number of income classes, which is not necessary when computing the Gini coefficient. The coefficient of variation suffers from an additional weakness. It depends so heavily on the mean of the distribution that it ceases to be an acceptable comparative measure of inequality when the mean varies substantially over time or between populations (countries).

TABLE 1
DISPERSION OF PRE-TAX MONEY EARNINGS OF FULL-TIME WAGE AND SALARY EARNERS
Excluding members of agricultural cooperatives and apprentices
Earnings include overtime, bonuses and premia; in Yugoslavia, workers' shares in net income of firms

| | Czechoslovakia, socialist sector, May | | | | | | | | Hungary, State sector, September | | | | | | Yugoslavia ("net income"), socialist sector, September | | | | |
|-----------------------------|---------------------------------------|-------------------|-------|-------|-------|-------|-------|-------|----------------------------------|-------------------|---------|---------|---------|---------|--|--------|--------|--------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| | 1947 ¹ | 1949 ² | 1959 | 1962 | 1964 | 1966 | 1968 | 1970 | 1952 ³ | 1955 ³ | 1960 | 1964 | 1966 | 1968 | 1962 | 1964 | 1967 | 1969 | 1970 |
| <i>R</i> | 0.313 | 0.261 | 0.201 | 0.195 | 0.192 | 0.193 | 0.199 | 0.204 | 0.274 | 0.269 | 0.226 | 0.240 | (0.250) | (0.256) | 0.256 | 0.257 | 0.269 | 0.280 | (0.260) |
| <i>P</i> ₁ | ... | 2.48 | 2.45 | 2.27 | 2.19 | 2.21 | 2.27 | 2.39 | ... | ... | (2.25) | ... | ... | ... | 3.11 | ... | ... | ... | 3.29 |
| <i>P</i> ₂ | ... | 2.24 | 2.10 | 1.99 | 1.96 | 1.94 | 2.04 | 2.08 | (2.70) | ... | 2.08 | (2.07) | ... | ... | 2.65 | ... | (2.25) | (2.85) | 2.63 |
| <i>P</i> ₅ | ... | 1.98 | 1.81 | 1.71 | 1.71 | 1.70 | 1.75 | 1.79 | 2.07 | 1.96 | 1.88 | 1.85 | ... | ... | 2.24 | 3.25 | 2.07 | 2.12 | 2.19 |
| <i>P</i> ₁₀ | 2.06 | 1.73 | 1.52 | 1.51 | 1.51 | 1.52 | 1.53 | 1.56 | 1.74 | 1.68 | 1.62 | 1.60 | 1.61 | 1.61 | 1.83 | 2.05 | 1.75 | 1.78 | 1.78 |
| <i>P</i> ₂₅ | 1.46 | 1.37 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.26 | 1.34 | 1.30 | 1.30 | 1.30 | 1.31 | 1.30 | 1.34 | 1.40 | 1.33 | 1.32 | 1.34 |
| <i>P</i> ₇₅ | 0.67 | 0.74 | 0.78 | 0.79 | 0.79 | 0.79 | 0.80 | 0.78 | 0.77 | 0.78 | 0.77 | 0.78 | 0.78 | 0.78 | 0.78 | 0.75 | 0.77 | 0.76 | 0.76 |
| <i>P</i> ₉₀ | 0.37 | 0.48 | 0.63 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.60 | 0.61 | 0.62 | 0.64 | 0.62 | 0.61 | 0.58 | (0.54) | 0.60 | 0.58 | 0.60 |
| <i>P</i> ₉₅ | 0.22 | 0.27 | 0.55 | 0.57 | 0.58 | 0.57 | 0.57 | 0.57 | ... | 0.53 | 0.56 | 0.55 | 0.55 | 0.55 | 0.50 | ... | 0.51 | 0.50 | 0.50 |
| <i>P</i> ₉₈ | ... | ... | 0.48 | ... | 0.54 | ... | 0.49 | 0.48 | ... | ... | ... | ... | (0.48) | (0.46) | ... | ... | 0.42 | 0.46 | 0.43 |
| Skewness | ... | 1.54 | 1.80 | 1.65 | 1.69 | 1.63 | 1.74 | 1.84 | ... | 2.04 | 2.00 | 1.89 | ... | ... | 2.48 | ... | 2.18 | 2.24 | 2.38 |
| Mean, estimated | 2,566 | 3,354 | 1,414 | 1,556 | 1,557 | 1,626 | 1,827 | 2,030 | 952 | 1,182 | (1,617) | (1,828) | (1,973) | (2,060) | 23,920 | 36,840 | 801 | 1,032 | 1,177 |
| Median, estimated | 2,325 | 3,275 | 1,340 | 1,470 | 1,470 | 1,530 | 1,720 | 1,890 | 815 | 1,010 | 460 | 1,590 | 1,700 | 1,780 | 20,900 | 32,300 | 685 | 880 | 1,034 |
| Population covered, 1,000's | 2,473 | 7 | 3,864 | 4,160 | 4,327 | 4,385 | 4,670 | 4,742 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| No. of brackets | 11 | 10 | 13 | 13 | 13 | 13 | 21 | 21 | 8 | 8 | 7 | 7 | 7 | 7 | 11 | 9 | 10 | 10 | 12 |

General Note and Explanation of Signs:

- R is the Gini ratio of concentration (Lorenz measure), i.e., coefficient of inequality. The corresponding coefficient of equality is $1 - R$.
 P_i is the ratio of earnings (income) at the i th percentile, counted from high to low, to the median P_{50} .
Mean and median are in current (undeflated) korunas for Czechoslovakia, current forints for Hungary, and current dinars for Yugoslavia. They have been estimated from distributional statistics with open-ended earnings (income) classes, and thus are subject to computational error.
Skewness is approximated by $(P_5 - P_{50}) / (P_{50} - P_{95})$.
Number of brackets refers to the number of earnings (income) classes in the underlying distributional statistics.
() computational error likely to exceed ± 3 percent.
... raw data not available to me, or is such that the computational error might exceed ± 10 percent.
n.a. not announced in the statistics available to me.
[] source number in the list of References.
| a serious interruption of comparability in the time series.
: a relatively minor interruption of comparability in the time series.

Specific Notes:

The “*Socialist sector*” (i.e., State and cooperative sectors), excluding agricultural cooperatives, employed in Czechoslovakia 99.8 percent of all (full-time and part-time) wage and salary earners (excluding apprentices) in 1959; and over 99.9 percent since 1959 [32, p. 115].

In Yugoslavia, the socialist sector employed approximately 97.9 percent of all wage and salary earners (excluding apprentices) in 1963, and 97.8 percent in 1970 [35, p. 85].

Data for Hungary cover only the “*State sector*”. The percentage distribution of all “active earners” (full-time and part-time) in Hungary was as follows [25, p. 8].

| | 1950 | 1955 | 1960 | 1964 | 1966 | 1968 | 1970 |
|--------------------|------|------|------|------|------|------|------|
| State sector | 34.7 | 54.9 | 57.5 | 65.6 | 66.6 | 66.6 | 67.7 |
| Cooperative sector | 2.1 | 9.5 | 17.9 | 28.4 | 27.6 | 28.3 | 27.7 |
| Private sector | 63.2 | 35.6 | 24.6 | 6.0 | 5.8 | 5.1 | 4.6 |

All data refer only to the “civilian” labor force excluding apprentices (trainees). They do not cover earnings of armed forces, police, and prisoners (for the relative weight of these groups in total labor force in Czechoslovakia, see [10, pp. 53–54, and 11, p. 7]).

Full-time wage and salary earners are defined as follows: In Czechoslovakia, those who worked at least 170 to 180 hours in occupations with normal working time; at least 160–170 hours in occupations with reduced working time (e.g., miners), depending on the number of working days in the month of May of a given calendar year. In Hungary, basic data “exclude earnings by auxiliary juvenile workers, apprentices, home workers, gainfully occupied pensioners, as well as wages of persons not on the (full-time) payroll”. In Yugoslavia, earnings are defined as “net personal receipts of persons employed” (excluding apprentices and workers employed in the private sector) “who worked 180 to 230 paid-for hours, including overtime. In institutions and organizations with (reduced) 42-hour working week, 160–200 paid-for hours, during the reporting month” (September).

1. Full-time and part-time earnings, based on mandatory old-age benefit insurance statistics, April, 1947. Data exclude miners. According to official estimates, these data involved underreporting (especially of part-time earnings) of approximately 14 percent.
2. Based on mandatory health insurance statistics. Data cover full-time and part-time wage and salary earnings only of those workers who, after illness, reported back to work in July, 1949.
3. Basic data are described as covering “Laborers and employees excluding those of agriculture, cooperatives, and the private sector”. To my knowledge, they cover only full-time wage and salary earners.

Sources of basic statistics by columns: 1–2: [28, pp. 9ff.] 3–6: [22, pp. 117–118]. 7–8: [18, p. 146]. 9–10: [17, p. 60]. 11–14: [15, p. 85]. 15–16: [27, Chapter 12, p. 16]. 17: [24, p. 277]. 18: [25]. 19: [26, p. 274].

easy to compute, even if reliable information on the very lowest and very highest incomes, and thus on total income, is lacking.⁵

III. SIZE DISTRIBUTION OF LABOR INCOMES (EARNINGS)

Table 1 provides inequality coefficients of full-time monthly earnings⁶ for the great majority of civilian wage and salary earners as specified in the notes. Earnings, including bonuses, premiums and profit shares,⁷ are gross of direct tax, but taxation is low, and not very progressive (cf. Table 6, last column, and [27, Chapter 10 and 12]).

Among the three socialist countries under study, the inequality of full-time earnings, in terms of R as well as P_i , appears to be lowest in Czechoslovakia and greatest in Yugoslavia. The relatively small difference is due mainly to varying dispersion of earnings above the median. Dispersion in the lower tail is similar for all three countries, especially in recent years.

It is of interest to note that the narrowest dispersion of earnings was reached in Czechoslovakia in the mid-sixties, whereas in the other two socialist countries, the egalitarian trend was reversed earlier. The recent slight widening of the Czechoslovak dispersion occurred only in the upper tail.

All distributions of earnings in Table 1 (as well as all other socialist distributions covered in this paper) are right-skewed. This is indicated by the positive coefficient of skewness as well as by the estimate of the mean substantially exceeding the estimate of the median.

Compared to contemporary mixed capitalist economies, the socialist earnings under study appear to be more equally distributed.⁸ It is not practicable

⁵As cumulative frequencies in the published statistics seldom coincide with the selected percentiles, some interpolations have been necessary. Interpolation of polynomials could be used for this purpose, but I have found the graphical method of laying a smooth ogive through the available points, on large-size paper, to be of sufficient accuracy.

⁶The frequency of earners by earning classes is reported by socialist enterprises only in one calendar month—May in Czechoslovakia, September in Hungary and Yugoslavia. This is a statistical weakness. Although employment, in contrast to economic activity in general, is not subject to great seasonal variation under central planning in Czechoslovakia and Hungary, earnings do vary from month to month because of uneven distribution of premiums and similar payments over the year. In Yugoslavia's market economy, seasonal swings of employment and earnings are even more important.

⁷The composition of earnings in the socialist sector (state and cooperative enterprises, excluding agricultural cooperatives) in 1970 was as follows:
Czechoslovakia: basic wages and salaries 83.3 percent, bonuses and premiums 13.8 percent, shares in net income of enterprises, 2.9 percent [11, p. 103].
Hungary: basic wages, salaries, premium and bonuses 92.9 percent, shares in net income of enterprises 7.1 percent [27, p. 111].
Yugoslavia: earnings are officially described as "net personal receipts," most of which are profit shares.

⁸An accurate comparison of inequality between the socialist economies on one hand and the mixed capitalist economies on the other would go beyond the scope of this paper. Yet it is noteworthy that in the mid-sixties, the Gini coefficient of gross income of tax units of wage and salary earners ranged from 0.27 in the U.K. to 0.40 in the Netherlands, whereas the Gini coefficient of full time gross earnings in the countries under study ranged from 0.19 in Czechoslovakia to 0.27 in Yugoslavia. A more meaningful comparison of P_i coefficients of full-time earnings in some capitalist countries (Canada, France, Japan) as estimated by Lydall [8] and the corresponding coefficients in Table 1 also supports my statement in the text above.

TABLE 2

DISPERSION OF PRE-TAX MONEY EARNINGS IN SELECTED ECONOMIC SECTORS

All full-time earners (excluding apprentices) in socialist enterprises

Code: A. Industry (Mining, Manufacturing, Utilities). B. Building Industry. C. Agriculture and Fishery. D. Trade and Catering. E. Culture, Education, Health and Social Services.

| | CZECHOSLOVAKIA (May) | | | | | YUGOSLAVIA (September) | | | | | | | |
|------------------------------|----------------------|-------|---------|-------|----------|------------------------|-------|--------|-------|--------|-------|-------|-------|
| | A | | | B | | A | | C | | D | | E | |
| | 1959 | 1964 | 1968 | 1959 | 1968 | 1967 | 1970 | 1967 | 1970 | 1967 | 1970 | 1967 | 1970 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| R | 0.197 | 0.190 | : 0.194 | 0.187 | : 0.173 | 0.268 | 0.247 | 0.259 | 0.246 | 0.264 | 0.267 | 0.260 | 0.254 |
| P ₁ | 2.18 | 2.17 | : 2.16 | 2.07 | : (2.01) | ... | 3.03 | ... | 3.13 | ... | ... | ... | ... |
| P ₂ | 1.97 | 1.93 | : 2.01 | 1.91 | : 1.84 | ... | 2.69 | (2.57) | 2.63 | ... | 2.88 | ... | 2.68 |
| P ₅ | 1.72 | 1.71 | : 1.73 | 1.67 | : 1.61 | 2.12 | 2.12 | 2.05 | 2.17 | (2.21) | 2.20 | ... | 2.13 |
| P ₁₀ | 1.52 | 1.37 | : 1.51 | 1.48 | : 1.44 | 1.78 | 1.78 | 1.74 | 1.80 | 1.76 | 1.82 | 1.67 | 1.74 |
| P ₂₅ | 1.24 | 1.24 | : 1.25 | 1.22 | : 1.20 | 1.34 | 1.34 | 1.30 | 1.32 | 1.32 | 1.35 | 1.26 | 1.29 |
| P ₇₅ | 0.75 | 0.78 | : 0.78 | 0.80 | : 0.82 | 0.76 | 0.77 | 0.77 | 0.79 | 0.78 | 0.77 | 0.77 | 0.78 |
| P ₉₀ | 0.63 | 0.65 | : 0.65 | 0.63 | : 0.66 | 0.61 | 0.62 | 0.60 | 0.65 | 0.63 | 0.62 | 0.59 | 0.61 |
| P ₉₅ | 0.57 | 0.59 | : 0.60 | 0.55 | : 0.56 | 0.52 | 0.53 | 0.51 | 0.56 | 0.56 | 0.53 | 0.43 | 0.52 |
| Mean, estimated (Kčs, Din) | 1,480 | 1,620 | : 1,850 | 1,590 | : 2,075 | 762 | 1,132 | 693 | 981 | 827 | 1,238 | 896 | 1,298 |
| Median, estimated (Kčs, Din) | 1,410 | 1,530 | : 1,750 | 1,515 | : 1,995 | 655 | 990 | 610 | 855 | 703 | 1,057 | 781 | 1,136 |
| Population in 1,000's | 1,785 | 2,051 | : 2,196 | 348 | : 387 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| Skewness | 1.67 | 1.73 | : 1.83 | 1.49 | : 1.39 | 2.33 | 2.38 | 2.14 | 2.66 | (2.75) | 2.55 | ... | 2.35 |
| No. of brackets | 13 | 13 | 21 | 13 | 21 | 10 | 12 | 10 | 12 | 10 | 12 | 10 | 12 |

General Note and Explanation of signs: See Table 1. Sources by columns: 1, 2, 4: [22]. 3, 5: [18]. 6, 8, 10, 12: [24]. 7, 9, 11, 13: [26].

to regress earnings on the main characteristics of earners to quantify the equalizing influence of reduced differentials among subpopulations, for lack of systematic statistical information. Yet, the main factors contributing to the observed low inequality can be traced:

1. The inter-occupation differential of earnings is rather small in Czechoslovakia and Hungary, and moderate in Yugoslavia (cf. [11, p. 10]). The link between earnings, formal education, skill and responsibility seems to be especially weak in Czechoslovakia. The coefficient of correlation between earnings and the formal education of earners in the mid-sixties was only 0.44.⁹

2. The age profile of earnings is extremely flat. According to a graph by Večerník ([9, p. 309]), the maximum age group difference in earnings (by five-year intervals from the age of 16 until the retirement age)¹⁰ is only one-fourth for male salary earners, and even less for male wage earners, and for female wage as well as salary earners. My own estimates of the age differential of earnings, based on more detailed statistics available on the dispersion of earnings in the Czechoslovak building industry, confirm the striking flatness of the age profile ([cf. 11, Table 2]).

3. The regional differential in earnings also is rather small in Czechoslovakia and Hungary (cf. [11, pp. 9–10]), but greater in Yugoslavia.

On the other hand, substantial differentials in mean earnings continue to exist in all three socialist countries under study among economic sectors. The industrial structure of earnings differs, however, substantially: in Czechoslovakia and Hungary, the mean earnings in trade and other service sectors are noticeably lower than the mean earnings in industry, construction, and even agriculture, whereas in Yugoslavia, the opposite is true (cf. [11, Table 2]).

There is also a persistent difference in earnings of men and women. Since little is known in the Western literature about earnings by sex in Eastern Europe, my estimates for Czechoslovakia and Hungary¹¹ are given in Table 3. The mean full time earnings of men appear to be about one third higher than those of women—a differential similar to that in contemporary France or Scandinavia. Dispersion of female earnings is noticeably narrower than the dispersion of male earnings, except in the lower tail in Hungary. As the P_i coefficients in Table 3, columns 6 and 12, indicate, the pertinent Lorenz curves intersect between the 75th and 90th percentile (counted from high to low earnings). Therefore, the Gini coefficients in this case should not be compared without heavy qualifications.

IV. SIZE DISTRIBUTION OF HOUSEHOLD INCOMES

The main source of information on the distribution of household incomes (including transfers) is an elaborate system of family budgets, based on large (usually two-stage random) samples. The income variant used in these statistics

⁹Estimated by J. Alan [9] who related six earnings brackets to six levels of education from University graduates to elementary school unfinished.

¹⁰60 for men, 55 for women.

¹¹For Hungary, data for 1962 only are available to me. However, in 1970, the ranking of industries by mean earnings was exactly inversely related to the percentage of women employed, thus suggesting that a substantial difference in earnings continued to exist between men and women [cf. 11, p. 13].

TABLE 3
DISPERSION OF PRE-TAX EARNINGS OF MEN AND WOMEN
Earnings in Socialist Sector, Excluding Apprentices
Czechoslovakia: Full-time, excluding agricultural cooperatives
Hungary: Presumably all earnings, excluding agriculture

| | MEN | | | | | | WOMEN | | | | | |
|-----------------------------|------------------------|-------|-------|-------|--------|----------------------|------------------------|--------|-------|--------|-------|----------------------|
| | Czechoslovakia, May | | | | | Hungary September | Czechoslovakia, May | | | | | Hungary September |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 1949 ¹ | 1959 | 1962 | 1968 | 1970 | 1962 | 1949 ¹ | 1959 | 1962 | 1968 | 1970 | 1962 |
| <i>R</i> | 0.249 | 0.173 | 0.163 | 0.170 | 0.176 | 0.218 | 0.195 | 0.150 | 0.137 | 0.150 | 0.159 | 0.193 |
| <i>P</i> ₁ | 2.29 | 2.02 | 1.99 | 2.09 | ... | ... | 2.15 | 1.89 | 1.87 | (2.10) | 2.11 | 2.19 |
| <i>P</i> ₂ | 2.05 | 1.88 | 1.82 | 1.88 | (1.98) | ... | 1.94 | 1.73 | 1.68 | 1.82 | 1.85 | 1.95 |
| <i>P</i> ₅ | 1.81 | 1.62 | 1.59 | 1.62 | 1.65 | 1.81 | 1.67 | 1.51 | 1.49 | 1.56 | 1.61 | 1.63 |
| <i>P</i> ₁₀ | 1.61 | 1.43 | 1.41 | 1.43 | 1.46 | 1.56 | 1.48 | 1.38 | 1.34 | 1.40 | 1.43 | 1.44 |
| <i>P</i> ₂₅ | 1.31 | 1.19 | 1.19 | 1.19 | 1.21 | 1.26 | 1.23 | 1.18 | 1.16 | 1.18 | 1.19 | 1.18 |
| <i>P</i> ₇₅ | 0.59 | 0.83 | 0.84 | 0.84 | 0.84 | 0.81 | 0.80 | 0.86 | 0.86 | 0.85 | 0.84 | 0.82 |
| <i>P</i> ₉₀ | 0.45 | 0.74 | 0.70 | 0.70 | 0.70 | 0.65 | 0.61 | 0.77 | 0.73 | 0.74 | 0.72 | 0.61 |
| <i>P</i> ₉₅ | ... | 0.58 | 0.61 | 0.62 | 0.61 | 0.56 | 0.46 | (0.59) | 0.65 | 0.65 | 0.64 | 0.49 |
| Mean, estimated | (3,957) | 1,614 | 1,795 | 2,125 | 2,364 | (1,993) | (2,596) | 1,050 | 1,170 | 1,400 | 1,567 | 1,309 |
| Median, estimated | 3,775 | 1,540 | 1,715 | 2,020 | 2,227 | 1,767 | 2,500 | 1,020 | 1,130 | 1,345 | 1,495 | 1,231 |
| Skewness | ... | 1.48 | 1.51 | 1.63 | 1.67 | 1.84 | 1.24 | 1.24 | 1.40 | 1.60 | 1.69 | 1.24 |
| Population covered, 1,000's | 4.6 | 2,488 | 2,561 | 2,742 | 2,750 | n.a. | 2.8 | 1,377 | 1,599 | 1,929 | 1,992 | n.a. |
| No. of brackets | 10 | 13 | 13 | 21 | 21 | n.a. | 10 | 13 | 13 | 21 | 21 | n.a. |

General Note and Explanation of Signs: see Table 1.

(1) Based on health insurance statistics—see Table 1, note 2.

Sources, by columns: 1, 7: [18, p. 9]. 2, 3, 8, 9: [22, pp. 117-118]. 4, 5, 10, 11: [18, p. 146]. 6, 12: [8, p. 320, Table HU-1].

TABLE 4
SOCIO-ECONOMIC STRUCTURE OF POPULATION ACCORDING TO THE MAIN OCCUPATION OF HOUSEHOLD HEAD
In percent of all households

| | | Wage Earners (Blue Collar Workers) | Salary Earners (White Collar Workers) | Dually Employed ¹ | Members of Agricultural Coops. | Independent Farmers | Self-Employed Outside Agriculture | Pensioners | Others |
|-----------------|------|---------------------------------------|--|------------------------------|-----------------------------------|---------------------|--------------------------------------|-------------------|--------|
| | | | | | | | | | |
| Czechoslovakia, | 1950 | | 55.0 | | 0.8 | 18.3 | 5.3 | 19.4 | 1.2 |
| | 1967 | 37.3 | 23.3 | 4.0 | 6.8 | 1.2 | 0.5 | 26.9 | — |
| Hungary, | 1967 | 36.1 | 17.3 | 8.3 | 17.6 | 1.7 | 2.5 | 16.5 ² | — |

¹Wage and salary earners who are also farmers.

²Includes persons without current income.

Sources: Lines 1, 2, [3, p. 191]. Line 3, [15, pp. 326, 7].

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TABLE 5
SIZE OF SAMPLE AND COMPOSITION OF HOUSEHOLDS
Code: A. Number of households in the sample. B. Number of persons per household. C. Active earners per household.
Households are classified according to the main occupation of the head

| | | Wage Earners | | | Salary Earners | | | Agricultural Households | | | Pensioners | | | All | | |
|---------|------|----------------|------|--------|----------------|------|-------|-------------------------|-------------------|--------------------|-------------------|-------------------|-------|------|------|--------|
| | | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| | | Czechoslovakia | 1965 | 15,039 | 3.69 | 1.76 | 8,563 | 3.49 | 1.82 | 3,189 ¹ | 3.59 ¹ | 1.92 ¹ | 9,911 | 2.00 | 1.21 | 35,275 |
| | 1968 | 1,305 | 3.71 | 1.77 | 1,206 | 3.60 | 1.84 | 617 ¹ | 3.57 ¹ | 1.92 ¹ | ... | ... | ... | ... | ... | ... |
| Hungary | 1968 | 1,385 | 3.83 | 1.67 | 766 | 3.15 | 1.72 | 1,143 ² | 2.57 ² | ... | ... | ... | ... | ... | ... | ... |

¹Only members of agricultural cooperatives.

²"Peasant households", excluding "households with dual income."

Sources: Line 1: [20]. Line 2: [32]. Line 3: [15].

includes some small non-income cash flows, such as gross withdrawals from savings and personal loans;¹² it is balanced against expenditures on goods and services as well as the relatively unimportant personal savings, repayment of loans, and direct tax payments. I shall call this income variant "household revenue."

In the Czechoslovak statistics, household revenue is always on *per capita* basis, that is, adjusted for the number of household members. This is, indeed, a useful definition of the recipient unit to study social welfare. However, one has to bear in mind that the pertinent inequality coefficient is, *inter alia*, a function of the varying ratio of earners to non-earning dependents within households. The Hungarian statistics provide distributional data on both the *per capita* and the total household incomes (revenues). The inequality coefficients of the latter are, of course, a function of the varying size of households. The official Yugoslav statistical yearbooks publish data on the size distribution of farmers' households only. Yet, data on the distribution of all households, and of non-agricultural households are reported to the Institute for the Standard of Living in Belgrade; they have been used in a forthcoming study on incomes in the development of Yugoslavia 1952–1972, prepared for the World Bank by Ian M. Hume. As this study may be available soon, I shall concentrate here on household revenues in Czechoslovakia and Hungary.

Before inquiring into the inequality coefficients, some basic household statistics may be of interest: Table 4 provides data on the socioeconomic structure of the household population. Table 5 shows the size of household samples underlying the distributional statistics, as well as the average number of members and of earners per household.

Most importantly, Table 6 furnishes information on the composition of household revenues. The most important sources of household revenues are wages and salaries in non-agricultural households, and incomes from cooperatives in agricultural households, followed by social security payments. "Other money income" (including income from property) is very unimportant, except in peasants' households in Hungary. Non-income cash flows are relatively small (larger in high income than low-income households, as shown in Czechoslovakia in 1968).

Table 6 also provides figures on the relative importance of income in kind (not to be confused with social benefits in kind). This, of course, is greater in agricultural than non-agricultural households. Furthermore, Czechoslovak data for 1968 indicate that income in kind is more important in low-income than in high-income agricultural and non-agricultural households. Finally, the last column in Table 6 shows the low average income tax rate, and, for Czechoslovakia in 1968, also the low progressivity of tax.

The inequality coefficients of pre-tax¹³ *per capita* revenue of households in Czechoslovakia have been estimated in Table 7. They are, of course, higher for

¹²Most of these loans are granted by the state at a very low (even zero) rate of interest. Some of them are never repaid (e.g., loans to newly married couples when they have children).

¹³Although the title of the pertinent statistics is frequently "distribution of net revenue of households", the revenue brackets used are most probably pre-tax. The estimate of the mean based on these distributional statistics exceeds the post-tax mean revenue in other statistics almost exactly by the average tax rate.

TABLE 6

COMPOSITION OF PER CAPITA MONEY REVENUE OF HOUSEHOLDS
 Unless stated otherwise, data refer to the average of all income brackets.

| | Pre-tax per capita Mean Annual Revenue (In Kčs) | In Percent of Column 1 | | | | | | | | | |
|---|--|---------------------------------------|--------------------------------|------------|---------------------------|---|--------------------------|---------------------------------|---|-------------------|-------------------|
| | | Wages, Salaries, Bonus, etc. | Social Security Benefits | Of which: | | Money from Agri- cultural Coopera- tives | Other Money Income | Non- income Cash Flows | Of which: Gross With- drawals from Savings | Income in Kind | Personal Taxes |
| | | | | Old Age | Family Allow- ances | | | | | | |
| <i>Czechoslovakia, 1965</i> | | | | | | | | | | | |
| <i>All Households</i> | 8,467 ¹ | 70.6 | 19.6 | ... | ... | 8.2 | 1.8 ² | ... | ... | 5.9 | ... |
| Of which with revenues: | | | | | | | | | | | |
| Below 2,400 | 1,631 ¹ | 6.7 | 59.5 | ... | ... | 29.0 | 9.9 ² | ... | ... | 50.0 | ... |
| Above 24,001 | 28,596 ¹ | 68.1 | 8.0 | ... | ... | 11.8 | 12.1 ² | ... | ... | 1.6 | ... |
| <i>Wage Earners</i> | 8,479 ¹ | 84.5 | 13.8 | ... | ... | 0.6 | 1.1 ² | ... | ... | 4.4 | ... |
| Of which with revenue: | | | | | | | | | | | |
| Below 2,400 | 1,878 ¹ | 61.6 | 34.0 | ... | ... | 1.2 | 3.1 ² | ... | ... | 19.6 | ... |
| Above 24,001 | 28,005 ¹ | 85.3 | 10.5 | ... | ... | 0 | 4.1 ² | ... | ... | 0.6 | ... |
| <i>Salary Earners</i> | 10,013 ¹ | 88.0 | 10.8 | ... | ... | 0.2 | 1.1 ² | ... | ... | 1.9 | ... |
| Of which with revenues: | | | | | | | | | | | |
| Below 3,600 | 3,328 ¹ | 69.4 | 28.1 | ... | ... | 0.2 | 2.3 ² | ... | ... | 23.5 | ... |
| Above 24,001 | 28,512 ¹ | 86.6 | 6.5 | ... | ... | 0 | 6.8 ² | ... | ... | 0.1 | ... |
| <i>Members of Agricultural Cooperatives</i> | 8,118 ¹ | 17.4 | 13.4 | ... | ... | 68.0 | 1.2 ² | ... | ... | 18.6 | ... |
| Of which with revenue: | | | | | | | | | | | |
| Below 2,400 | 1,783 ¹ | ... | 31.2 | ... | ... | 66.5 | 2.0 ² | ... | ... | 76.6 | ... |
| Above 24,001 | 26,448 ¹ | 5.2 | 2.2 | ... | ... | 92.5 | 0.1 ² | ... | ... | 7.5 | ... |
| <i>Old Age Benefit Recipients</i> | 6,993 ¹ | 25.3 | 67.0 | ... | ... | 5.3 | 2.4 ² | ... | ... | 6.6 | ... |
| Of which with revenue: | | | | | | | | | | | |
| Below 2,400 | 1,898 ¹ | 0.5 | 92.2 | ... | ... | 5.0 | 2.3 ² | ... | ... | 34.1 | ... |
| Above 24,001 | 29,113 ¹ | 42.6 | 45.9 | ... | ... | 0.0 | 11.5 ² | ... | ... | 1.5 | ... |

| | | | | | | | | | | | | |
|---|-------------|------|------|-----|------|-------------------|-------------------|-------------------|------|------|------|--|
| <i>Czechoslovakia, 1968</i> | | | | | | | | | | | | |
| <i>Wage Earners</i> | 13,061 | 76.1 | 9.5 | 2.5 | 5.1 | 0.9 | 3.4 | 10.0 | 1.0 | 3.3 | 10.4 | |
| Of which with revenue: | | | | | | | | | | | | |
| Below 4,800 | 4,847 | 65.2 | 30.2 | 0.0 | 30.1 | 0.0 | 1.0 | 3.7 | 3.7 | 6.7 | 4.3 | |
| Above 16,801 | 25,864 | 77.0 | 4.0 | 1.5 | 0.5 | 0.5 | 6.2 | 12.2 | 9.9 | 1.7 | 13.1 | |
| <i>Salary Earners</i> | 15,404 | 76.7 | 7.5 | 2.1 | 3.7 | 0.4 | 3.7 | 11.5 | 8.9 | 2.4 | 10.1 | |
| Of which with net revenue: | | | | | | | | | | | | |
| Below 6,000 | 6,444 | 63.5 | 26.0 | 2.1 | 22.0 | 0.5 | 2.8 | 7.2 | 5.8 | 12.9 | 5.7 | |
| Above 16,801 | 27,567 | 75.0 | 3.1 | 1.1 | 0.8 | 0.6 | 5.7 | 15.4 | 12.6 | 1.5 | 7.6 | |
| <i>Members of Agricultural Cooperatives</i> | 12,945 | 9.3 | 9.7 | 4.9 | 3.9 | 60.4 ³ | 8.7 | 11.9 | 10.1 | 14.6 | 2.3 | |
| Of which with net revenue: | | | | | | | | | | | | |
| Below 4,800 | 4,505 | 1.7 | 40.0 | 6.6 | 32.3 | 58.4 ³ | ... | ... | ... | 19.4 | 0.2 | |
| Above 16,001 | 23,757 | 5.5 | 4.1 | 3.3 | 0.5 | 63.3 ³ | 12.5 | 14.2 | 12.1 | 11.1 | 2.0 | |
| <i>Hungary, 1968</i> | (In Forint) | | | | | | | | | | | |
| <i>Households of Workers (Wage Earners)</i> | 13,332 | 78.6 | 9.2 | 3.5 | 3.1 | ... | 12.2 ⁴ | ... | ... | 6.5 | 3.8 | |
| <i>Employees (Salary Earners)</i> | 18,284 | 80.2 | 7.9 | | 3.8 | 2.0 | 11.9 ⁴ | | ... | 2.8 | 4.6 | |
| <i>Peasants⁵</i> | 11,163 | 0.4 | 8.5 | | 6.3 | 0.9 | 46.5 | 44.6 ⁶ | ... | 32.0 | 5.6 | |

¹Probably post-tax.

²Probably including non-income cash flows.

³Only income from agricultural cooperatives. Other money income from agriculture (private sale of farm products) included in Column 8.

⁴Probably including small non-income cash flows.

⁵Excluding "households with dual income," (farming wage and salary earners).

⁶Including "sales revenue-income from state and cooperative agencies and from the population." (sic).

Sources: Same as in Table 5.

The reader will notice that data for "all households" are available only in Czechoslovakia in 1965. In 1968, statistics have been published in Czechoslovakia and in Hungary only by selected socioeconomic groups of households.

TABLE 7

DISPERSION OF PER CAPITA ANNUAL "MONEY REVENUE" OF HOUSEHOLDS IN CZECHOSLOVAKIA
By socio-economic groups according to the main occupation of household heads

| | All households | | | Wage earners | | | Salary earners | | | Collective farmers | | | Old-age benefit recipients |
|--------------------------------|------------------------|-----------|------------------------|--------------|-----------|-----------|----------------|-----------|-----------|--------------------|------------|------------|----------------------------|
| | 1956 ¹ 1 | 1965 2 | 1967 ¹ 3 | 1965 4 | 1967 5 | 1968 6 | 1965 7 | 1967 8 | 1968 9 | 1965 10 | 1967 11 | 1968 12 | 1965 13 |
| <i>R</i> | (0.277) | 0.242 | (0.239) | 0.212 | 0.21 | 0.22 | 0.194 | 0.23 | 0.25 | 0.232 | 0.25 | 0.26 | 0.249 |
| <i>P</i> ₁ | (2.82) | 2.43 | (2.28) | 2.27 | ... | ... | 2.22 | ... | ... | 2.40 | ... | ... | 2.56 |
| <i>P</i> ₂ | (2.57) | 2.19 | (2.11) | 2.06 | ... | ... | 2.00 | ... | ... | 2.22 | ... | ... | 2.32 |
| <i>P</i> ₅ | (2.19) | 1.90 | (1.88) | 1.81 | 1.78 | ... | 1.75 | ... | ... | 1.91 | ... | ... | 2.02 |
| <i>P</i> ₁₀ | (1.85) | 1.67 | (1.67) | 1.63 | 1.58 | 1.56 | 1.56 | (1.54) | ... | 1.70 | 1.63 | (1.57) | 1.73 |
| <i>P</i> ₂₅ | (1.42) | 1.33 | (1.33) | 1.30 | 1.30 | 1.24 | 1.14 | 1.23 | 1.22 | 1.32 | 1.27 | 1.27 | 1.37 |
| <i>P</i> ₇₅ | (0.70) | 0.72 | (0.72) | 0.76 | 0.80 | 0.81 | 0.80 | 0.81 | 0.82 | 0.75 | 0.77 | 0.78 | 0.73 |
| <i>P</i> ₉₀ | (0.48) | 0.53 | (0.53) | 0.59 | 0.67 | 0.68 | 0.63 | 0.73 | 0.69 | 0.60 | 0.60 | 0.62 | 0.52 |
| <i>P</i> ₉₅ | (0.30) | 0.42 | (0.42) | 0.50 | 0.60 | 0.61 | 0.55 | 0.60 | 0.62 | 0.46 | 0.53 | 0.54 | 0.39 |
| <i>P</i> ₉₈ | ... | 0.30 | (0.30) | 0.43 | 0.53 | 0.53 | 0.48 | 0.48 | 0.55 | 0.36 | 0.45 | 0.47 | ... |
| Skewness | (1.70) | 1.55 | (1.52) | 1.62 | 1.95 | 11.0 | 1.67 | ... | ... | 1.69 | ... | ... | 1.67 |
| Mean, (est) in Kčs | (5,930) | 8,700 | (9,500) | 9,380 | 10,810 | 11,930 | 10,860 | 12,790 | (14,500) | 8,720 | (11,100) | (13,200) | 6,800 |
| Median, (est) in Kčs | (5,530) | 8,400 | (9,020) | 8,810 | 9,260 | 10,540 | 10,045 | 11,160 | 12,150 | 8,090 | 9,860 | 11,200 | 6,245 |
| Number of households in sample | ... | 39,275 | ... | 15,039 | 1,305 | 1,305 | 8,563 | 1,206 | 1,206 | 3,189 | 617 | 617 | 9,911 |
| Number of income brackets | (19) | 20 | (19) | 20 | 12 | 12 | 20 | 12 | 12 | 20 | 12 | 12 | 20 |

Explanation of signs: See Table 1.

¹Approximations based on a histogram.

Sources by columns: 1, 3: [3]. 2, 4, 7, 10, 13: [22]. 5, 6, 8, 9, 11, 12: [32].

“all households” than for the somewhat more homogeneous socioeconomic groups of households. It is noteworthy that the *per capita* money revenue of pensioners’ households, besides showing the lowest mean and median, is more unequally distributed than the revenue of wage earners’, salary earners’, and collective farmers’ households.¹⁴

Using the available detailed information on income in kind and on tax by income brackets, I estimated the Gini coefficients and the means of *disposable* income¹⁵ of the main groups of Czechoslovak households in 1968, on a *per capita* basis:

| | Households whose head is a | | |
|---|----------------------------|---------------|-------------------|
| | Wage earner | Salary earner | Collective farmer |
| Gini coefficient <i>R</i> | 0.18 | 0.17 | 0.18 |
| Average annual <i>per capita</i> income after tax, including income in kind, in Kčs | 12,200 | 14,000 | 13,300 |

The concentration of this disposable income is noticeably lower than that of *per capita* money revenue (see Table 7, columns 6, 9, and 12). Furthermore, in contrast to *per capita* money revenue, the mean of *per capita* disposable income is higher for collective farmers’ than for wage earners’ households.

We also have some information on the dispersion of personal (individual) incomes¹⁶ in Czechoslovakia: estimates of decile shares in 1946 to 1965 by Večerník [9, p. 298]). On the basis of Večerník’s figures, I estimated the pertinent Gini coefficients ([11, p. 17 and Table 9]): in 1946, under the semi-socialist system combining limited central planning and postwar rationing with a significant operation of market forces, *R* appears to be 0.38—already a narrow dispersion of personal pre-tax income compared to most capitalist countries. Under socialist central planning, *R* in 1965 fell to 0.29. Low as this concentration of personal income is, it is still greater than the concentration of *per capita*

¹⁴For the bottom 5 percent of pensioners’ households, *per capita* money revenue in 1965 was only 28 percent or less of the median of all households. There is no doubt that there were pockets of poverty among pensioners in Czechoslovakia in the mid-sixties. However, in 1968–1970 the lowest pensions were raised substantially, which narrowed the dispersion of old-age benefits, especially at the lower tail of the distribution.

¹⁵Obtained by deducting non-income cash flows and direct taxes from the *per capita* money revenue of households, and by adding income in kind in each of the 12 revenue brackets.

¹⁶Probably under the usual Western definition, i.e., individual annual primary and transferred money incomes before tax, excluding zero and negative personal incomes, although this has not been stated explicitly by Večerník.

TABLE 8

DISPERSION OF PRE-TAX ANNUAL PER CAPITA AND TOTAL "MONEY REVENUE" OF HOUSEHOLDS IN HUNGARY BY SOCIO-ECONOMIC GROUPS

Code, according to occupation of household head: A. All. B. All employed. C. Executives and professional workers. D. All "brain" (white-collar) workers. E. All non-agricultural manual (blue-collar) workers. F. All agricultural manual workers. G. Households whose head is an old-age benefit recipient, or a person without regular income (probably formerly self-employed).

| Code: | 1967 Per capita revenue of households | | | | | | | 1967 Household revenue | | | |
|-------------------|--|--------|-------|--------|--------|-------|------|---------------------------|---------|--------|--------|
| | A | B | C | D | E | F | G | A | B | E | F |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 422 R | (0.30) | (0.31) | ... | (0.35) | (0.28) | ... | ... | (0.26) | (0.31) | (0.25) | (0.28) |
| P_5 | 1.86 | 1.89 | ... | ... | 1.79 | 1.83 | 1.91 | ... | ... | ... | ... |
| P_{10} | 1.61 | 1.58 | ... | 1.59 | 1.60 | 1.58 | 1.67 | ... | ... | ... | ... |
| P_{25} | 1.30 | 1.29 | 1.23 | 1.23 | 1.29 | 1.23 | 1.30 | 1.37 | 1.31 | 1.28 | 1.39 |
| P_{75} | 0.76 | (0.77) | 0.79 | 0.78 | 0.77 | 0.75 | ... | 0.62 | 0.73 | 0.75 | 0.70 |
| P_{90} | ... | ... | 0.66 | 0.63 | ... | ... | ... | 0.32 | 0.49 | 0.52 | 0.45 |
| P_{95} | ... | ... | 0.57 | 0.54 | ... | ... | ... | ... | 0.37 | 0.39 | ... |
| Mean, estimated | (1,160) | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Median, estimated | 1,065 | 1,105 | 1,465 | 1,355 | 1,025 | 1,090 | 850 | 3,380 | (3,740) | 3,580 | 3,650 |
| No. of brackets | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |

Source: [33].

household revenue in 1965 ($R = 0.24$, see Table 7, column 2). The difference is plausible, and due mainly to the averaging of incomes within households.

The inequality coefficients of *per capita* and total household money revenue in Hungary can be found in Table 8. Unfortunately, the income intervals in the published Hungarian statistics are very broad, and the frequencies of recipients in the open-ended classes rather high, so that R involves a large margin of error.¹⁷ This obscures what otherwise would be the answer to an interesting question, whether the inequality of *per capita* household incomes (revenues) is noticeably smaller than the inequality of total incomes (revenues) of households.

In spite of statistical uncertainties, dispersion of *per capita* money revenue of households appears to be wider in Hungary than in Czechoslovakia.

In Yugoslavia, my estimate of R for pre-tax money income of farmers in 1966 is 0.29. I understand that I. M. Hume's forthcoming estimates of the Gini coefficients for non-agricultural household incomes, as well as all household incomes, in the 1960s are in the neighborhood of 0.33, thus showing a slightly greater inequality than household revenues in Hungary.¹⁸

A meaningful comparison of the inequality of household incomes between socialist and non-socialist countries is extremely difficult. Definitions of income of the recipient unit, and of the accumulation period vary from country to country. Most Western studies use the Gini coefficient without additional information on the shape of the distributions to be compared, or the log variance without testing the log-normality of the distributions and without standardizing them for the number of income classes; these are then rather inadequate comparative measures of inequality. Furthermore, differences in the level of economic development, the size of the countries, the degree of cultural homogeneity, as well as a host of structural differences, should be allowed for. Yet, in spite of these unsolved problems of international comparability, it is fairly safe to say that, in the 1960s, the pre-tax (and probably also post-tax) household income (and probably also personal income) was more equally distributed in the socialist countries under study than in the mixed capitalist economies of a roughly comparable size and level of development.¹⁹

¹⁷One additional problem I encountered in the Hungarian statistics is a different socio-economic classification of households, or possibly a discrepancy in data, between the Hungarian edition and the English-Russian edition of statistical yearbooks. While the frequency distribution for "population total" is identical in [33, p. 345, Table 18] and in [15, p. 326, Table 9], frequency distributions for sub-populations of households are not. The greatest discrepancy is between "Nyugdijasok es kereset nélküliek" on one hand, and "Pensioners and persons without living" [sic], on the other. I used data from the original Hungarian edition to compute the inequality coefficients in Table 8.

¹⁸In Yugoslavia, in view of the more important private enterprise (legal, semi-legal, and illegal), a greater amount of high incomes probably escapes official statistics. Thus, the Gini coefficient based on official statistics may underrate the inequality of incomes relative to Czechoslovakia and Hungary (especially prior to the 1968 economic reform).

¹⁹See a rough comparison in [11, pp. 18-19]. Two other recent studies have inquired into the relative inequality of socialist and capitalist incomes, though neither of them has measured the income dispersion of representative populations in individual socialist countries. Pryor [13] finds the distribution of income, of socialist countries as a whole, more equal than the Western distribution (standardized for a population of 40,000,000 and *per capita* GNP of \$1,000). Wilczynski [29] finds the opposite, but his measure of inequality (the spread between the minimum wage and unofficially reported income of prominent personalities) is rather doubtful.

V. SOME CONCLUDING REMARKS

A more equal distribution of household incomes in socialist countries was, of course, to be expected, since property incomes, which are normally much more concentrated than labor incomes, have a low weight in total income in the socialist economies. But even labor incomes appear to be more equally distributed in the countries under study than in contemporary mixed capitalist economies. In fact, the equalization of socialist earnings has gone so far, especially in Czechoslovakia, as to raise some specific problems of economically meaningful limits of equality of primary incomes.

If short-period incomes (for instance, monthly earnings in this study) are narrowly dispersed, life-time incomes (earnings) will be rather unequally distributed because of the variation of earning years among occupations; this is illustrated by data on cumulative earnings in the Czechoslovak engineering industry in Table 9, and shows the difficulty of choosing an appropriate time horizon in all studies of income inequality.

TABLE 9
CUMULATIVE EARNINGS OF MEN BY AGE INTERVALS UNTIL THE RETIREMENT AGE IN THE
CZECHOSLOVAK ENGINEERING INDUSTRY IN 1,000 Kčs
(BASED ON DATA REPORTED IN OCTOBER, 1965)

| | Age | | | | | | | | |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | 46-50 | 51-55 | 56-60 |
| Fitter | 25 | 123 | 259 | 400 | 545 | 690 | 835 | 980 | 1,125 |
| Engineer-designer | — | 17 | 132 | 269 | 413 | 557 | 701 | 845 | 989 |
| Turner | 22 | 107 | 224 | 344 | 465 | 586 | 707 | 828 | 949 |
| Lawyer | — | 17 | 127 | 253 | 380 | 507 | 634 | 761 | 883 |
| Laborer | 48 | 111 | 194 | 277 | 360 | 443 | 526 | 609 | 692 |

Data probably refer to gross earnings, and have not been discounted to a common time base.

Source: Tomášek, P., *Odměňování v nových podmínkách řízení*, Prague 1967, p.24.

Secondly, it should be noted that the inequality of *individual* earnings (constituting almost the bulk of primary personal incomes in the countries under study) is less than the inequality of *per capita household* incomes after transfers, especially in Czechoslovakia (cf. Tables 1, 6 and 7). This is so because, with primary incomes substantially equalized, the varying ratio of earners to dependents within households has a strong disequalizing effect on household incomes. I am almost inclined to propose a "law" of the following type: If the inequality coefficients of primary incomes fall below a critical value (perhaps the Gini coefficient, under the present Czechoslovak conditions, below 0.2), the inequality coefficients of the corresponding *per capita* household incomes will tend to exceed that critical value in spite of the massive redistributive efforts by the Government.

Thirdly, a far-reaching equalization of earnings takes away incentives to work and to acquire new skills. This has been deplored by several Czechoslovak

economists and officials.²⁰ The weakening of incentives, rather than the usual saving-reducing effect of equalization of incomes,²¹ may help to explain what seems to be a trade-off between income equalization and economic growth, even under socialism. Among the three countries under study, for more than a decade, Czechoslovakia clearly has had the highest *per capita* income, but the lowest inequality of income distribution, and the lowest rate of growth; Yugoslavia has had the lowest *per capita* income, the greatest inequality and the highest rate of growth.

It has not been the purpose of this article to set up a model explaining the socialist distribution of earnings and household incomes. It should be emphasized, however, that the observed dispersion of earnings is the outcome of centrally set, ideology-oriented norms, as well as of distributive decisions on the enterprise level. To a highly varying degree, the enterprise decisions have been influenced by market forces. The normative element of the socialist income distribution, which is stronger under central planning than in the framework of a socialist market economy, does not yet have a well established theoretical basis, although the term "optimum degree" of inequality of labor rewards has been used in East European professional literature. The distributive principle, frequently referred to, is that everyone should be rewarded according to the quantity, quality, and social importance of work.

If social importance of work is supposed to reflect supply and demand conditions so that labor can be allocated primarily through earnings differentials (which is the present practice in Eastern Europe), it does not reflect much more than an attempt at consistency between the planned technology, planned output, and the resulting demand for various categories of labor on the one hand, and the supply of labor on the other. Some East European studies, while trying to determine the "optimum" inequality of earnings by differentials in social importance of work, measure the latter by the required differences in earnings to satisfy the above-mentioned condition of consistency. This is then a circular reasoning, similar to that in some Western studies which try to explain income distribution by differentials in factor productivity while measuring the latter in terms of factor earnings. One cannot help the feeling that, in both East and West, primary income distribution models leave much to be desired.

The distribution of socialist household incomes is, of course, the result of the distribution of primary incomes, of the size and composition of households, and of important Government transfers, i.e., of social policy.

While this paper has not contributed to the explanation of socialist income distribution, it has measured the inequality of earnings and *per capita* household incomes in three socialist countries whose economies have been examined in

²⁰E.g., Z. Urbánek, in *Czechoslovak Economic Papers*, No. 10, stated: "The socialization of Czechoslovak economy has been accompanied by an elimination of excessive differentials of labor rewards . . . but this process has surpassed the optimum." Czechoslovak Minister of Planning, V. Hula, criticized in October, 1969 the rapid increase of wages during the decentralization attempts 1967-1968 *inter alia* on the ground that "it failed to lead to a more pronounced differentiation of labor rewards."

²¹Investment is financed mostly by the Government (out of the revenue of the turnover tax and of enterprise taxes) and by enterprise saving. The role of personal saving is very small, especially in Czechoslovakia, and in Hungary prior to 1968.

the Western professional literature mostly in terms of their productive rather than distributive aspects. It is hoped, therefore, that this empirical study will be of interest, and provide a stepping stone to the analysis of the functional interrelation between production and distribution under contemporary socialism. Such an analysis is conspicuous by its absence, and yet, without it, a meaningful evaluation of socialist systems is hardly possible.

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