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MERITOCRATIC ALLOCATION OF PERSONS TO JOBS

In this chapter, I intend to measure how far Polish society was from a meritocracy in 1988 and in 1998, and whether Poland moved closer to a meritocracy during the transformation period from 1988 to 1998. I will also explore whether the trend toward a meritocracy is concomitant with an increase in social inequality, and reevaluate the assertions about the causal relationship between democratization and social stratification.

Theoretical Background and Testable Hypotheses

Meritocracy can be defined as a large-scale social system in which there is a close relation between individual merit and socially distributed rewards. One basic principle of meritocracy is that a person with a lower level of merit does not obtain more rewards than does a person with a higher level of merit. Sociologists tend to operationalize merit as educational attainment and rewards with monetary income (Krauze and Slomczynski 1985; Slomczynski 1989; Krauze 1999). It is possible to show that, generally, the inequality of educational groups with respect to pay reaches its maximum under meritocratic allocation. Two rationales are raised to defend the legitimacy of the meritocratic principle. First, meritocratic allocation is related to the concept of fairness. With limited rewards and limited merits, according to the logic that level of merit should be related positively to the type of rewards, meritocratic allocation constitutes the

best possible distribution of these rewards. Second, according to the meritocratic principle, the strong association between individual merits and social rewards exists in modern societies primarily in order to utilize efficiently the total pool of talent embodied in the labor force (Slomczynski 1989; Krauze 1999).

Some sociologists claim that meritocratic tendencies are inherent in a highly industrialized society and that post-industrial society, in its logic, is meritocratic (Bell 1973; Husen 1974; Halsey 1973). However, others, stressing the efficient utilization of human resources, argue that meritocratic allocation of persons to jobs applies to the labor market of a socialist system as well (Shirk 1984; Wesolowski and Krauze 1981; Wesolowski 1979, 1981). With the enhancement of educational opportunities for the working class, educational meritocracy serves the proletariat's interests by optimally utilizing human resources, and, in a planned and centralized economy, education is a normative criterion for allocating persons to jobs (Slomczynski 1989). Analyzing data from the late 1970s, Slomczynski (1989) confirms that Poland was no less meritocratic than were the United States and Japan.

Meritocracy During the Transformation Period from 1988 to 1998

In state socialism, rewards for educational merits may be compromised by political merits such as political loyalty, which itself earns rewards in a monopolistic socialist regime. Walder, Li, and Treiman (2000) find that in China the enforcement of meritocratic principles has not been permitted to interfere with principles of party loyalty – and vice versa. The regime has created two segmented “markets” for the elite in which educational credentials are paramount for the attainment of elite professions while political credentials are paramount for the attainment of elite administrative positions. Although the trajectories of Poland and China will not be expected to be identical, the interference of political capital may mitigate rewards for educational merits in socialist Poland.

During the transition from state socialism to a market economy, political restrictions on social mobility have been gradually lifted. Therefore, we may expect that Poland, as well as other former socialist societies, will be more meritocratic than they were before. The first research hypothesis to be tested in this chapter is that *Polish society became closer to a meritocracy during the transformation period from 1988 to 1998.*

Democratization and Social Inequality

The transformation from socialism to market-oriented capitalism is also a process of democratization. According to Muller (1988), a functioning democratic regime is established if (1) the executive is elected or is responsible to an elected assembly in (2) no less than two consecutive free and fair competitive elections in which (3) approximately a majority of the adult population has the right to vote, and during which (4) the rights of freedom of speech and assembly are respected. Although not a perfect model of democracy, Polish society since 1989 apparently complies with all the above-mentioned criteria. However, the process of democratization in the East European countries is quite different from their Western counterparts, whose democracy was initiated and established from the bottom. The transition from a socialist regime to capitalism is a large-scale transformation engineered from above, in which socialist countries move their bureaucratically coordinated economies toward a market model (Rona-Tas 1994). As a result, the implications of democratization with respect to social inequality may be significantly different between post-socialist countries and the other countries.

There has been an ongoing debate about the relationship between political democracy and income inequality since the early 1970s, when data on the distribution of personal income within nations at differing levels of economic development first became available. The results of numerous studies are rather inconsistent. Some confirm the hypothesis of a negative effect of level of democracy on income inequality (Rubinson and Quinlan 1977; Stack 1978; Weede 1980), while others failed to verify it (Bollen and Grandjean 1981). However, despite the differences in results, the researchers seem to accept the assumption that political democracy should have a negative relationship with social inequality, and their debates have focused more closely on the application of appropriate methodologies than on the theoretical legitimacy of the inverse relationship. The intellectual debate between Muller and Bollen best illustrates this point. Operationalizing and measuring democracy not by level of democracy but by years of democracy, Muller (1988) argued that the inverse association between democracy and income inequality was valid and statistically tenable. But Bollen and Jackman (1989) pointed out that such an operationalization measured stability rather than intensity of democracy, while intensity should be considered the essence of the latent variable. Furthermore, the use of cross-sectional data with limited sizes seriously compromised the cogency of their arguments, even though most of the researchers applied an advanced and complicated technique: multiple structural equation modeling.

However, sociologists who pay close attention to social transformation in post-socialist societies are dubious about the alleged positive impacts of democratization on redistribution of social wealth. Gerber and Hout (1998) argued that during the democratization process in Russia, income distribution was distended and the social inequality was unprecedented. Some people gain wealth, others lose it; some see their income grow, while others see a marked deterioration in their earning power. According to Rona-Tas (1994), communist cadres have not lost their advantageous economic positions in the process, while the transition from socialism to capitalism often disposed of the top layers of the old political elite in a spectacular manner. With political and social capital accumulated under the former regime, cadres quickly took advantage of the new corporate segment of the private sector as entrepreneurs. Such a development has increased income inequality, as those who had more initially gained more than those who started out with less (Rona-Tas 1994). The process of democratization tends to fulfill the prophecy of the “Matthew effect” (Merton 1968): “For unto one that hath shall be given and he shall have abundance: but from him that hath not shall be taken away even that which he hath.”

The panel survey data from Poland may provide valuable evidence that is expected to help in clarifying theoretical misconceptions about the relationship between democratization and social inequality. The second research hypothesis of this chapter is that *during the process of democratization from 1988 to 1998, the social inequality increased*. By this, I would argue that the inverse relationship between democracy and social inequality is not applicable to post-socialist societies. In this chapter, I measure social inequality against disparity in monetary income. Because former socialist regimes confiscated all the private properties into the ownership of collectivity, there was little variation in cumulated wealth among respondents at the beginning of social change. Furthermore, the in-kind remuneration is highly correlated with the monetary rewards. Therefore, it is legitimate to specify income as a valid indicator of the position in the social hierarchy.

Data and Measurement

This chapter is based on survey data derived from two of the three waves of a panel study conducted in Poland in 1987–88, 1993, and 1998. In line with my research interests, I analyze data from the first and third waves of the panel survey. I focus my research on those respondents who remained

employed both in 1988 and in 1998, regardless of whether they switched jobs from the public sector to the private sector.

Measuring Meritocracy

The meritocratic principle requires that people who are more highly educated should not have a lower social status than those who are less educated. Given a univariate distribution of education and a univariate distribution of status, the meritocratic principle, stated formally, determines a joint distribution of the two. The bivariate distribution, labeled as meritocratic allocation, is obtainable via an algorithm that is an operationalization of Thurow's (1975) idea of queuing as a job allocation mechanism (Krauze and Slomczynski 1985).

I differentiate education into four ordinal levels: elementary (or less), basic vocational, secondary, and college (or above). Insofar as the ages of the respondents ranged from twenty-two to sixty-six in 1988 and they were already in the labor market at that time, I hold constant the distribution of the respondents across the four levels of education both in the 1988 matrix and in the 1998 matrix. I operationalize rewards as monetary income, and, to facilitate comparison of the two data sets, standardize income in both years with the function: x_i / μ , where x_i is the actual income, and μ is the average income for the population. If the standardized income for a respondent in 1988 was 0.86, the respondent earned 86 percent of the average income in 1988. Standardized income can help us better capture respondents' relative positions in a social hierarchy. In this way, I obtain transformed standardized income both for 1988 and for 1998.

For the main part of my analysis, I categorize income of both waves into ten ordinal levels. Let e_i denote the i th highest education level ($i = 1, 2, 3, 4$), and s_j represent the j th highest level of monetary rewards ($j = 1, 2, 3, \dots, 10$). I assign the largest number of each sequence to the highest level of each scale so that $e_i > e_{i+1}$ for $i = 1, 2, 3$ and $s_j > s_{j+1}$ for $j = 1, 2, 3, \dots, 9$.

The number of persons at the i th educational level is a_i , ($a_i > 0$), and the number of positions at the j th income level is b_j , ($b_j > 0$). The sequences of marginal frequencies (a_1, \dots, a_4) and (b_1, \dots, b_{10}) are called distributional constraints. This is a closed system in which the total number of persons N is equal to the total number of positions. The number of persons at educational level i allocated to positions at status level j is denoted by x_{ij} . Each person is assumed to occupy exactly one position and each position is assigned to exactly one person. It follows that,

$$\sum_{j=1}^{10} x_{ij} = a_i \quad a_i > 0 (i = 1, 2, 3, 4) \tag{1}$$

$$\sum_{i=1}^4 x_{ij} = b_j \quad b_j > 0 (j = 1, \dots, 10) \tag{2}$$

Following the principle of meritocratic allocation that more-educated persons should not have lower social status than less-educated ones, we can construct a frequency distribution d_{ij} on the basis of margins a_i and b_j of the observed distribution. The values d_{ij} , satisfying the marginal constraints (1) and (2), are defined for ordinal scales of education and income. For any $d_{uv} > 0, d_{rt} > 0$ (where $u, r = 1, 2, 3, 4$ and $v, t = 1, 2, \dots, 10$), the inequality $e_u > e_r$ implies $s_v > s_t$.

The values of d_{ij} can be determined sequentially using the given marginal frequencies and formal auxiliary constants $d_{i,0} = d_{0,j} = 0$. The formula for d_{ij} , where $i = 1, 2, 3, 4; j = 1, \dots, 10$, is and the terms d_{ik} and d_{kj} refer to the previously determined entries of the

$$d_{ij} = \min \left(a_i - \sum_{k=0}^{j-1} d_{ik}, b_j - \sum_{k=0}^{i-1} d_{kj} \right) \tag{3}$$

meritocratic allocation matrix. The meritocratic allocation complies with the description by Boudon (1973) that if a high social position is available, it is much more likely to be filled by an individual with a higher level of education.

Besides the observed allocation of education and income and the meritocratic allocation, there is a random allocation of education and income, where allocation of positions to persons is implemented by random selection rather on the basis of educational merits. Who occupies which position is determined totally by chance and is beyond prediction. The formula for r_{ij} , where $i = 1, 2, 3, 4; j = 1, \dots, 10$, is

$$r_{ij} = \text{Round}((a_i * b_j) / N) \tag{4}$$

where a_i and b_j , as distributional constraints, are the sum of occurrences in the i th row and the sum of occurrences in the j th column, respectively, and N is the total number of persons. The random allocation illustrates the situation where differences in educational merits do not influence the distribution of monetary rewards.

For each educational level, we can calculate its corresponding status value S_i , measured by standardized income. The formula for average rewards to a specific level of education, where $i = 1, 2, 3, 4$, is:

$$S_i = (1/a_i) \sum_{j=1}^{10} s_j X_{ij} \quad (5)$$

where s_j refers to the observed value, such as monetary remuneration, of the j th level of status. X_{ij} can be x_{ij} , d_{ij} , or r_{ij} , depending on whether one intends to measure average rewards to educational categories in any observed allocation, meritocratic allocation, or random allocation of education and income.

To assess "how far to meritocracy?" from empirical reality, I adopt the following strategy. I begin by analyzing a given observed distribution $Y = (y_{ij})$, classified by education and status, for which two ideal type distribution matrices, the meritocratic allocation $D = (d_{ij})$ and random allocation $R = (r_{ij})$, are constructed (Slomczynski 1989). It is reasonable to acknowledge that matrices of the three types of allocation are necessarily different from each other. One allocation matrix can be reshuffled into another type of allocation matrix, if some persons change their status under the limitation that status mobility occurs within educational groups (Slomczynski 1989). The minimum number of persons who must switch their status to arrive at a transition from the observed distribution Y to any other allocation X , both satisfying (1) and (2), can be calculated with this the *index of dissimilarity* formula, as follows:

$$d(X, Y) = \frac{1}{2} \sum_{i=1}^4 \sum_{j=1}^{10} |x_{ij} - y_{ij}| \quad (6)$$

where $| \cdot |$ is the absolute value function. The proportion of the total population, represented by $p(X, Y)$, who need to change their statuses so as to accomplish the transition, is derived from dividing $d(X, Y)$ by N , the size of the population.

Values of $p(Y, D)$, where Y represents observed allocation and D refers to meritocratic allocation, indicate how far the society is from meritocracy. The difference between the value of $p(Y, D)$ in 1988 and that of $p(Y, D)$ in 1998 can be used to test whether Polish society became more meritocratic or less meritocratic. The null hypothesis that Polish society did not change with respect to meritocracy is denoted as follows:

$$p(Y, D)_{1988} - p(Y, D)_{1998} = 0 \quad (7)$$

If $p(Y, D)_{1998}$ is significantly less than $p(Y, D)_{1988}$, we may conclude that Polish society is closer to a meritocracy. In contrast, if Polish society became

further away from a meritocracy, $p(Y, D)_{1998}$ should be significantly larger than $p(Y, D)_{1988}$.

Measuring Social Inequality

In this chapter, I apply the Theil index to measure levels of social inequality. This index is a measure of dispersion divided by the mean (Allison 1978), and can be conveniently decomposed into within-group and between-group components. In line with the practice of Allison (1978), the Theil measure of inequality is calculated as:

$$T = (1 / N) \sum (x_i / \mu) * \log(x_i / \mu), \tag{8}$$

where x_i refers to an individual income and μ refers to the average income.

Slomczynski (1985) proposed an improved formula for calculating the Theil index, which makes it easy to decompose the Theil coefficient into within-group inequality and between-group inequality. This enables us to capture the variation of income across a categorical variable. The revised formula is as follows:

$$T = \frac{\sum a_i | N \frac{(\sum s_j x_{ij}) / a_i}{(\sum s_j b_{ij}) / N} \log \frac{(\sum s_j x_{ij}) / a_i}{(\sum s_j b_{ij}) / N} + \sum a_i | N \frac{T_i (\sum s_j x_{ij}) / a_i}{(\sum s_j b_{ij}) / N}}{\sum a_i | N} \tag{9}$$

where

$$T_i = \frac{\sum s_j x_{ij} \log s_i - \sum s_j x_{ij} \log ((1 / a_i) \sum s_j x_{ij})}{\sum s_j x_{ij}} \tag{10}$$

and sums without explicitly given summation indexes are taken over $j, j = 1, \dots, n$. The first term on the right-hand side, called here T_b , is the between-group component. In this case, it is equivalent to the value of T that would be obtained if everyone in each educational group received the mean status for that group. The second term on the right-hand side, called here T_w , is a weighted average of the within-group status inequality, measured by T_i . The weight for educational group i is the fraction of the total pool of status received by group i . Thus the decomposition of T for arbitrary distribution X can be written:

$$T(X) = T_b(X) + T_w(X) \tag{11}$$

Not surprisingly, the values of Theil indexes calculated from equation (8) are slightly different from the results derived from equations (9) and (10). Results from equation (8) are on the basis of manipulation of individual cases, whereas

results from equations (9) and (10) approximate the Theil indexes by manipulating the means of subgroups. But, Slomczynski's version is better able to illustrate implications of a categorical variable on social inequality. Therefore, to better illustrate changes in social inequality, both approaches are adopted.

To test the second research hypothesis that social inequality increased from 1988 to 1998, we need to learn whether the Theil index for 1988 is significantly larger than the Theil index for 1998. The second null hypothesis to be tested – that there is no change in social inequality – is formulated as follows:

$$T_{1988} - T_{1998} = 0 \quad (12)$$

If T_{1998} is significantly larger than T_{1988} , I may arrive at the conclusion that the social inequality in Polish society increased during the transition period. If the change in the Theil index is not significantly different from zero, there was no increase in social inequality.

Aimed at corroborating the accuracy of the Theil indexes, Gini indexes, which are a measure of dispersion divided by twice the mean, are also provided:

$$G = \frac{(1/N^2) \sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2\mu} \quad (13)$$

where μ refers to the mean of the population. The numerator of this expression, known as Gini's coefficient of mean difference, is the average difference between all pairs of individuals. It is expected that the change in Gini indexes from 1988 to 1998 should be commensurate with that in the Theil coefficients.

How Far from Meritocracy?

Tables 4.1 and 4.2 contain the bivariate distribution of the same group of respondents, by education and income, for Poland in 1988 and 1998, respectively. The distributions of the respondents with respect to education remain constant in the two tables, because there was negligible change in their educational attainment during the ten years, and adult continuous education is more an in-kind reward than a valid indicator of improvement in merits. The income for both 1988 and 1998 are evenly stratified into ten consecutive ranked categories. For these respondents, their positions with

respect to income may fluctuate, while they remain in the same educational category throughout the ten years.

Table 4.1. Observed, Meritocratic, and Random Distributions of Persons, According to Education and Income, for Poland, 1988

Education	Income										Total
	S ₁ (high)	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀ (low)	
A. Observed distribution											
College or above	16	37	21	19	13	18	7	9	4	2	146
Secondary completed	9	30	17	17	34	23	37	30	34	44	275
Basic vocational	15	20	25	16	27	20	23	25	26	19	216
Elementary or less	4	4	4	5	11	3	12	7	9	17	76
Total	44	91	67	57	85	64	79	71	73	82	713
B. Meritocratic distribution											
College or above	44	91	11	0	0	0	0	0	0	0	146
Secondary completed	0	0	56	57	85	64	13	0	0	0	275
Basic vocational	0	0	0	0	0	0	66	71	73	6	216
Elementary or less	0	0	0	0	0	0	0	0	0	76	76
Total	44	91	67	57	85	64	79	71	73	82	713
C. Random distribution											
College or above	9	19	14	12	17	13	16	14	15	17	146
Secondary completed	17	35	26	22	33	25	30	27	28	32	275
Basic vocational	13	28	20	17	26	19	24	22	22	25	216
Elementary or less	5	10	7	6	9	7	8	8	8	9	76
Total	44	91	67	57	85	64	79	71	73	82	713

Table 4.2. Observed, Meritocratic, and Random Distributions of Persons, According to Education and Income, for Poland, 1998

Education	Income										Total
	S ₁ (high)	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀ (low)	
A. Observed distribution											
College or above	39	17	21	10	14	10	14	3	4	14	146
Secondary completed	23	26	33	26	30	17	51	28	23	18	275
Basic vocational	7	22	18	14	18	18	33	34	29	23	216
Elementary or less	0	2	4	5	10	5	11	6	17	16	76
Total	69	67	76	55	72	50	109	71	73	71	713
B. Meritocratic distribution											
College or above	69	67	10	0	0	0	0	0	0	0	146
Secondary completed	0	0	66	55	72	50	32	0	0	0	275
Basic vocational	0	0	0	0	0	0	77	71	68	0	216
Elementary or less	0	0	0	0	0	0	0	0	5	71	76
Total	69	67	76	55	72	50	109	71	73	71	713
C. Random distribution											
College or above	14	14	16	11	15	10	22	14	15	15	146
Secondary completed	27	26	29	21	28	19	42	27	28	27	275
Basic vocational	21	20	23	17	22	15	33	22	22	22	216
Elementary or less	7	7	8	6	8	5	12	8	8	8	76
Total	69	67	76	55	72	50	109	71	73	71	713

In Tables 4.1 and 4.2, panels A, B, and C show the observed distribution, the meritocratic distribution, and the random distribution, respectively. Based on information provided in the two tables, there appear to be accurate

answers to the following: how far the observed matrix X is to the baselines, the meritocratic matrix and the random allocation both in 1988 and in 1998, and whether Poland became more meritocratic during the social transition. Table 4.3 shows that around 63 percent of the whole population needs to switch statuses in order for the observed matrix to become a meritocratic one in 1988. But a smaller proportion of people, around 55 percent, need to move during the transition from an observed allocation to its meritocratic counterpart in 1998.

Table 4.3. Minimal Proportion of Status Mobile Persons Required by the Transition from Observed to Meritocratic and Random Distributions, for Poland, 1988–1998

Transition	Year of study		Difference
	1988	1998	
From observed to meritocratic distribution	0.6283	0.5498	0.0785 ^a
From observed to random distribution	0.1473	0.1388	0.0085

^a Standard deviation for the difference in values of the index of dissimilarity is 0.026; $z = 3.022$, a significant value at $p < 0.05$.

To test whether such a difference between 0.63, which is $p(Y, D)_{1988}$, and 0.55, referring to $p(Y, D)_{1998}$, is statistically significant, a particular formula aimed at comparing two proportions needs to be introduced. According to Agresti and Finlay (1997), the test statistic is:

$$Z = \frac{\text{Estimate} - \text{null hypothesis value}}{\text{Standard error}} = \frac{(\pi_2 - \pi_1) - 0}{\delta_{\pi_2 - \pi_1}} \quad (14)$$

where π_1 denotes the observed proportion for the first population, π_2 the observed proportion for the second population, and $\delta_{\pi_2 - \pi_1}$ the standard error of difference between the proportion in the first sample and the proportion in the second sample. The standard error is calculated with the following formula:

$$\delta_{\pi_2 - \pi_1} = \sqrt{\frac{\pi_1(1 - \pi_1)}{n_1} + \frac{\pi_2(1 - \pi_2)}{n_2}} \quad (15)$$

where n_1 and n_2 denote the size of the first sample and the size of the second sample, respectively. Calculated on the basis of equation (15), the standard error for the difference between the index for dissimilarity for 1988, represented by $p(Y, D)_{1988}$, and its counterpart in 1998, denoted by $p(Y, D)_{1998}$, is 0.026. Dividing the difference between $p(Y, D)_{1988}$ and $p(Y, D)_{1998}$ by the standard error, I obtained the Z-statistic, 3.022, which is statistically significant at the $\alpha = 0.05$ level. Thus, the null hypothesis that there is no difference between the index of dissimilarity for 1988 and that for 1998 is invalid, and the research hypothesis that the index of dissimilarity for 1998 is significantly less than that for 1988 is confirmed. Polish society in 1998 is closer to a meritocracy than it was in 1988, and monetary rewards to higher educational attainment significantly increased during the social transition period.

Boudon (1973) raised a concern about cohort-dependent devaluation of education, implying that for a given number of school years, younger cohorts receive lower meritocratic status than do older cohorts. Therefore, I limited my conclusion to age-specific cohorts, which shows that during the process of social transition, Polish society became more meritocratic.

However, even though the observed allocation of education and income in 1998 is significantly closer to meritocratic allocation than the observed allocation in 1988, neither is far away from "lottery" random allocation. This confirms that there are some other factors mediating the influence of educational merits on dispensation of social rewards, both in state socialism and the market economy.

Social Inequality

Table 4.4 shows the values of the Theil index for 1988 and 1998, which are calculated from the formulas provided in equation (8), and which reflect the levels of social inequality in Polish society. The Theil index for 1988 is 0.096, whereas its counterpart for 1998 is 2.24 times larger, at 0.312. To test whether such an increase in social inequality is statistically significant, I apply the standard form (Agresti and Finlay 1997) for a z-test statistic:

$$z = \frac{\text{Estimate of parameter} - \text{null hypothesis value of parameter}}{\text{Standard error of parameter}} \quad (16)$$

Treating the difference $T_{1998} - T_{1988}$ as the parameter, I test whether $T_{1998} - T_{1988} = 0$; that is, the null hypothesis value of the parameter $T_{1998} - T_{1988}$ is 0. The estimated value of $T_{1998} - T_{1988}$ is $Y_2 - Y_1$. The form of the z-test statistic is:

$$z = \frac{(Y_2 - Y_1) - 0}{\delta_{Y_2 - Y_1}} = \frac{(Y_2 - Y_1)}{\delta_{Y_2 - Y_1}} \tag{17}$$

where

$$\delta_{Y_2 - Y_1} = \sqrt{\delta_{Y_2 - Y_1}^2} = \sqrt{\frac{\delta_1^2}{n_1} + \frac{\delta_2^2}{n_2}} \tag{18}$$

To get the standard deviation of the Theil indexes, I recode one new variable equal to $(x_i / \mu) * \log(x_i / \mu)$ for 1988 and for 1998, respectively. The means of the newly coded variables are simply the Theil indexes, and the new variables' standard deviation is just that of the Theil index. In this way, I obtained the standard deviations of the Theil index for 1988 and that for 1998, which are 0.609 and 2.618, respectively. Because we also know that both sample sizes are 713, the standard error, 0.101, of the difference between the two Theil indexes can be derived from the function illustrated in equation (18). Because the observed Theil coefficient for 1998 is 0.216 larger than the Theil coefficient for 1988, the derived z-test statistic is 2.14, which is statistically significant at the $\alpha = 0.05$ level two-sided test. The Theil index for 1998 is significantly larger than that for 1988. Therefore, the second null hypothesis that the Theil index for 1998 is not different from the counterpart for 1988 is rejected, and the social inequality in Polish society did increase during the period of social transition. The process of democratization has a positive influence on the level of social inequality, which contradicts Muller's assertion about the inverse relationship between democracy and social inequality.

Table 4.4. Income Inequality, According to Theil Index and Gini Index, Poland, 1988–1998

Inequality measure	Year of study		Difference
	1988	1998	
Theil index ^a	0.096	0.312	-0.216 ^b
Gini index	0.276	0.396	-0.120

^a Calculated on the basis of equation (8).

^b Standard deviation for the difference in values of the Theil index is 0.101; $z = 2.140$, a significant value at $p < 0.05$.

Table 4.5 illustrates the results of decomposing the Theil indexes into between-group inequality and within-group inequality for observed distribution, meritocratic distribution, and random distribution. Both the observed between-group inequality and the observed within-group inequality in 1998 are larger than their respective counterparts in 1988. Table 4.6 shows the average standardized income for educational levels in the observed and meritocratic allocation in 1988 and 1998. The average standardized income for respondents with college or above education increased from 1.240 in 1988 to 1.495 in 1998, whereas the average standardized income for respondents with elementary and less education decreased from 0.862 to 0.597. The income disparity across the educational categories increased, as did the difference in monetary rewards to higher and lower educational achievements. This corroborates my previous finding that Polish society has grown closer to a meritocracy during the social transition.

It is interesting to find in Table 4.6 that in 1988, the average monetary rewards to secondary education were less than the average income for basic vocational education, a phenomenon that apparently contradicts the meritocratic principle. Such a discrepancy may be due to segmentation of the socialist labor market. People with basic vocational school education were likely to work in factories, which had a high priority in the Polish economy and enjoyed overvalued rewards, whereas secondary school education graduates tended to work as office clerks and low-rank civil officials, who received less remuneration in the socialist redistribution policy. Concomitant with the socialist ideology of dictatorship by proletariat, the socialist redistribution policy intentionally favored the main constituents of the socialist regime: the working class. However, in 1998, the average monetary rewards for secondary education were higher than those for basic vocational education. It is no wonder that the underlying mechanisms in the redistribution system have been undergoing changes. The working class as a whole experienced downward structural mobility. Losing support from the former socialist government, the fates of workers are subject to the manipulation of the unpredictable "invisible hand," the free market.

Not surprisingly, Table 4.5 shows that within-group inequality increased from 0.008 to 0.039 during the period. The variation of income distribution is distended within individual educational categories. In former socialist societies, governments tended to implement a coherent policy for redistributing the valuable resources, and to favor certain segments of the population who possessed characteristics that were considered desirable to the socialist regime. However, with the downfall of the socialist government, many intervening factors came to exert influences on the mechanisms of

Table 4.5. Components of the Theil Index, Computed for Income Inequality Between and Within Educational Categories in the Observed, Meritocratic, and Random Distributions, Poland, 1988 and 1998

Components of Theil index	Year of study	
	1988	1998
A. Observed distribution		
Between-group inequality T_b	0.008	0.039
Within-group inequality T_w	0.081	0.217
B. Meritocratic distribution		
Between-group inequality T_b	0.077	0.012
Within-group inequality T_w	0.212	0.044
C. Random distribution		
Between-group inequality T_b	0.002	0.087
Within-group inequality T_w	0.001	0.255
D. Additional computation		
Theil index ^a	0.089	0.256

^a Calculated on the basis of equations (9) and (10).

Table 4.6. Average Standardized Income for Educational Groups in the Observed and Meritocratic Allocation, Poland, 1988 and 1998

Education	Year of study					
	1988			1998		
	Observed status value S_o	Meritocratic status value S_m	Ratio (S_o / S_m)	Observed status value S_o	Meritocratic status value S_m	Ratio (S_o / S_m)
College or above	1.240	1.671	0.742	1.495	2.297	0.651
Secondary completed	0.904	1.038	0.871	0.986	0.891	1.107
Basic vocational	1.008	0.706	1.428	0.825	0.521	1.583
Elementary or less	0.862	0.408	2.113	0.597	0.262	2.279

redistribution. For example, the influx of foreign investment may create more white collar jobs for well-trained and highly experienced young professionals, while the lifting of sanctions on the private sector opens a new

arena for those who lack educational credentials and who were originally rejected from the circle of the elite. The mechanisms underlying the labor market have been experiencing significant changes, which makes attempts to predict them difficult.

The significance of the difference between the two Theil indexes indicates that the social inequality in Polish society increased during the second period. My second research hypothesis is thus accepted. It would be of academic interest study changes in respondents' income relative to meritocratic prediction.

Meritocratic Mobility

As indicated in Table 4.6, the average status value for a specific educational level on the basis of the meritocratic principle is different from the observed average status value. An individual's status value is either higher than, equal to, or lower than the status value that is predicted on the basis of the meritocratic principle. Such deviations may be due to effects of mediating factors such as Communist Party membership, occupation, and social network. For example, under a socialist regime, Communist Party members were likely to get higher rewards for their educational attainment than were their plebian counterparts. From changes in respondents' relative positions to meritocratic prediction, we may learn something about changes in mechanisms underlying social stratification.

Table 4.7 illustrates changes in respondents' relative positions to meritocratic predictions from 1988 to 1998. The overall turnover rate is rather high, with more than 450 out of 1,000 respondents changing their relative positions during the ten years; and 120 out of the 1,000 respondents managed to exploit more rewards for their educational attainment in 1988, but lost advantages during the transition. Forty of the 1,000 respondents, who received lower income than meritocratic predictions in 1988, earned more in 1998 than deserved on the basis of the meritocratic principle. Even though Polish society became closer to a meritocracy, educational attainment was not the only determining factor of income both before the emergence of social change and during the transitional period. More than half of college graduates got less remuneration than meritocratically deserved both in 1988 and in 1998, whereas around 70 percent of respondents with only elementary school education managed to earn more than meritocratic predictions both in the old and in the new social settings.

Table 4.7. Total Rates of Social Mobility Among Relative Positions, Standardized to N = 1,000, for Educational Groups, Poland, 1988–1998

Observed position, relative to meritocratic one, 1988	Observed position, relative to meritocratic one, 1998			Total
	High	Medium	Low	
A. Total				
High	196	95	38	330
Medium	97	146	102	345
Low	39	104	182	325
Total	332	245	323	1,000
B. College and above				
High	14	14	27	55
Medium	27	89	171	288
Low	34	103	521	658
Total	75	205	719	1,000
C. Secondary completed				
High	62	47	33	142
Medium	135	193	135	462
Low	51	167	178	396
Total	247	407	345	1,000
D. Basic vocational				
High	310	204	56	569
Medium	116	171	51	338
Low	23	51	19	93
Total	449	426	125	1,000
E. Elementary or less				
High	711	118	26	855
Medium	39	13	0	53
Low	53	26	13	92
Total	803	158	39	1,000

In comparison with a meritocracy, the existent social stratification order tends to underpay college graduates and overpay people with elementary school education. However, there has been encouraging progress in the direction of a meritocracy during the transition period. In 1998, 75 out of 1,000 respondents with college education obtained more monetary rewards

than meritocratic predictions, whereas only 55 respondents successfully parlayed their college degrees in 1988. People with secondary school education benefited the most from the transition. Their observed average status value increased during the period, as indicated in Table 4.6, and more people earned a salary equal to or higher than meritocratic predictions in 1998 than was the case in 1988, as shown in Table 4.7. In contrast, people with basic vocational education or with elementary education or less suffered from the transition. Fewer of them were paid a salary higher than meritocratic predictions in 1998 than in 1988. The situation for those who maintained their income levels equivalent to meritocratic predictions also worsened, simply due to the fact that meritocratic status values depreciated during the transition period.

Table 4.8 shows the outflow mobility from relative meritocratic positions in 1988 to relative meritocratic positions in 1998 for educational categories. While 59.4 percent of the respondents who had higher income than meritocratic predictions in 1988 remained at such an advantage in 1998, 56 percent of the respondents who received less remuneration than meritocratically deserved were still underpaid in 1998. These statistics reveal the fact that some mechanisms underlying social stratification continue to exert mediating effects on monetary rewards for educational attainment even in the new social context. Turnover rates differed across educational categories. Only one out of four respondents who had a college degree and earned more than meritocratic prediction in 1988 continued at such an advantage until 1998. However, of those who had elementary education or less and earned more than meritocratic predictions in 1988, more than 80 percent would continue to be overpaid in 1998. The social change created more opportunities for those with higher educational credentials, but, at the same time, these people ran higher risks in parlaying their human capital in the new social context. Members of the former power elite were more likely to be affected during the process. However, social reforms seldom touched the grass roots. The people with lower educational attainment remained relatively intact. It is plausible that such an advantage enjoyed by people with lower educational attainment may be partly due to the downward structural mobility. The seeming advantages may instead reveal their predicament in the new social environment. One may question whether, along with chaotic political change, East European countries have really experienced ultimate changes in their social and economic infrastructures.

The inarticulate pattern of change in relative meritocratic positions from 1988 to 1998 reveals the fact that old and new mechanisms became interwoven, and this reshuffled the social stratification order. During the

transition, Polish society was decidedly not made up of systems organized around a single logic, and it is not likely to become a society with a single-system identity in the post-socialist epoch. Change in post-socialist societies is not a passage from one order to another, but a rearrangement in the patterns of the interweaving of multiple orders.

Table 4.8. Percentage Outflow Rates of Social Mobility Among Relative Positions, for Educational Groups, Poland, 1988–1998

Observed position, relative to meritocratic one, 1988	Observed position, relative to meritocratic one, 1998			Total
	High	Medium	Low	
A. Total				
High	59.4	28.8	11.5	100
Medium	28.1	42.3	29.6	100
Low	12.0	32.0	56.0	100
Total	33.2	34.5	32.3	100
B. College and above				
High	25.5	25.5	49.1	100
Medium	9.4	30.9	59.4	100
Low	5.2	15.7	79.2	100
Total	7.5	20.5	71.9	100
C. Secondary completed				
High	43.7	33.1	23.2	100
Medium	29.2	41.8	29.2	100
Low	12.9	42.2	44.9	100
Total	24.7	40.7	34.5	100
D. Basic vocational				
High	54.5	35.9	9.8	100
Medium	34.3	50.6	15.1	100
Low	24.7	54.8	20.4	100
Total	44.9	42.6	12.5	100
E. Elementary or less				
High	83.2	13.8	3.0	100
Medium	73.6	24.5	0.0	100
Low	57.6	28.3	14.1	100
Total	80.3	15.8	3.9	100

Conclusion

The findings of this chapter provide empirical evidence to support Nee's (1989) market transition theory. During the transition period, Polish society became closer to a meritocracy, and disparity in income between people with higher educational achievement and those with less education increased. Emphasis on party loyalty, the egalitarian principle in redistributing valuable resources, and the socialist ideology of dictatorship of the proletariat compromised the determining effects of education on income under the former socialist regime. The emergence and prosperity of the private sector provided an alternative arena for underdogs in state socialism to accomplish upward mobility, where human capital, as measured by educational attainment, is expected to get higher rewards. However, during the transition, the income variation in each educational category was distended. The mechanisms underlying the social stratification order underwent fundamental change and became more complicated, with new mediating factors becoming involved in the new social context. Concomitant with the trend toward meritocracy, social inequality in Polish society increased significantly. Democratization imposed a positive influence on social inequality, which contradicts Muller's assertion about the inverse relationship between democracy and social inequality. Only a small percentage of college graduates who earned more than meritocratic predictions in 1988 retained such an advantage in 1998, whereas retention rates for people with less education were relatively higher. Social change tends to create more opportunities, as well as higher risks, for well-educated people, while most people with less educational attainment lacked alternatives to change their lives, even in the new social settings. Furthermore, the tendency to downward structural mobility may worsen the predicament challenging people with less educational attainment, even though they manage to earn more than meritocratically predicted.

It is premature for sociologists to conclude that there is a causal relation between a trend toward meritocracy and social inequality. Answers to research questions such as how the penetration of foreign capital affects redistribution policy, how the emerging private sector is operating, and what roles state-owned enterprises are taking in the new social environment may help us to learn more about change in the social forces underlying social stratification.

Meritocracy is a kind of absolute inequality on the basis of educational attainment, considered a valid indicator of cognitive ability. It is difficult to make an ethical judgment on the progress toward a meritocracy. Socialist

regimes tended to give rise to the formation of a bureaucratic power elite, but the ideology of egalitarianism might keep enormous social inequality from emerging. Ironically, the working class – the constituency of democracy and the initiators of social change – suffered the most during the transition. They bade farewell to the power elite, but have had to subject themselves to a new meritocratic elite. To them, democracy may be just a disillusioning fairy-tale. Unintended consequences of collective action again prove to be a golden rule in social change. The openness of educational institutions may be of critical importance to the people stuck at the bottom of the newly shuffled social hierarchy.