Meritocratic Aspects Concerning Performance Evaluation in the Public Sector - A Case Study for Romania

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Meritocracy and performance

Meritocracy

Considering its most general meaning, meritocracy represents "a popular doctrine, according to which the access to power finds its legitimacy in the merits resulting from efforts, recognised by educational studies or labour market" (Mahé de Boislandelle, H., 1998: 263). Therefore, the approach of meritocracy accepts the hypothesis of a powerful connection between individual "merits" and social reward. For sociologists, meritocracy describes a social system that is presupposed ideal, holding the property to transmit totally the influence of social origin on the status, by means of education, and not by heritage, privilege etc. This type of social system is called "society without delayed effects" by Carlsson (1958) and "meritocratic society" by Boudon (1973). As specified by Krauze and Slomczynski (1985), the concept of meritocracy has been taken into consideration in the discussions concerning functional theory of social stratification (Wrong, 1964), acquiring the social status and research on mobility (Boudon, 1973, Jencks et al., 1972), future of the post-industrial society (Bell, 1972, 1973, Touraine, 1969), as well as in the theory on jobs competitiveness (Thurow, 1975).

In this context, the concept of meritocracy refers to a social system on a large scale, presenting a positive relationship between "merit" and certain desired common values, such as: income, power, prestige (Krauze, T., Slomczynski, M.K., 1985: 623).

It is obvious the fact that both in the public and private sector, the merits cannot be reduced to certain qualifications or acquiring a level of knowledge in one or more areas, as they include also personal qualities, deriving from behavioural and individual skills, mobility and flexibility in thinking and action as well as the managerial capacity.

This approach enables to apply a statistic treatment based on a formalised definition: a social system with the three characteristics - origin, educational level, status - is meritocratic only if the following probability is independent from the origin position o_j: an individual on an educational level e_j reaches a status s_k On the other hand, we could achieve measurable comparisons between the real and ideal situations (Vlasceanu, L, Zamfir, C.).

Administrative stratification

Focusing only on the public sector, meritocracy should represent an aggregated concept of the above-presented variables. In fact, meritocracy represents a system of governance or organisation where appointment to positions and assignment of responsibilities are based on demonstrated skills or merits and talent, rather than on material situation, family connections, class privileges, popularity or other key issues of social position or political power[1]. Adding the hypothesis of "administrative stratification" (Chevallier, 1994), we shall deduct an important characteristic of the public sector, thus "the power and consequently remuneration and prestige are distributed in an unequal manner in the public administration for various categories of employees" (Chevallier, J, 1994: 287).

The study about the civil service, no matter that it is based on employment system or career system emphasizes a nomenclature of the civil services, to which a nomenclature of titles, attached to the persons is corresponding.

This situation leads to grouping and distributing the public employees into hierarchical categories, with a corresponding social status, in sociological terms, as already mentioned.

"This stratification, that leads to regrouping the civil servants into distinct social groups is characteristic to global social stratification, tending to reproduce it; the administration holds a 'representative' dimension and the divisions of the administrative environment reflect the social divisions; this relation is emphasized by the analysis on the origin and behaviours of different categories of civil servants" (Chevallier, J, 1994: 287) .

Based on Max Weber's well known approaches on bureaucracy, the current organisational theories emphasise the fact that modern bureaucracy, as social corps with specific composition and internal structures is characterised as follows: " the civil servants are within an hierarchy of statuses and positions"

and their recruitment is "based on universal criteria: diploma or contest, depending on skills, which are public recognised" (Dunleavy, P., O'Leary, B., 2002: 135).

At the same time, Weber in his paper "Economics and society", states: "the development of bureaucracy has several implications, the trend to social stratification is significant, namely "plutocratisation", based on the time necessary in order to obtain technical background and required qualifications as well as the predominance of an organisational culture" (Lassman, P., 2004: 93).

Performance

The context of our proposed paper is adding the concept of performance to the above analysis. Understanding performance as "measure in which an organisation's member is contributing to achieving the organisation's objectives" (Johns, G., 1998:152), for its evaluation, we present "stable" factors, such as ability, easiness or difficulty for the mission and "unstable" factors, represented by own effort, chance etc.

According to a classification of assignments in view of performance (Mallius, L., 1997: 156), the ability is "an internal attribute", thus a result of a certain level of education and personal qualities. We would like to mention that assignation means the process by which people interpret the perceived causes related to behaviour. Consequently, the direct determination of performance related to the meritocratic aspects is similar.

This issue is supported also by a series of sociological theories, i.e. expectancy theory (Hoffman, O., 2004: 284-7), a theory with cognitive feature, according to which the individual is a rational person who is judging and making conscious decisions concerning his/her behaviour. According to the above theory, expectancy represents the probability perceived by the human being that a certain act is followed by a certain reward. Briefly, expectancy could be divided into two types: ratio between effort and performance (E→P) (I) and performance and result (P→R). As asserted by Hoffman (2004), an expectancy of the type: E→P represents a personal belief that the effort will lead to a certain expected performance and an expectancy of the type P→R (II) consists in the belief that certain results will follow if a person obtains good performance.

Consequently, coming back to the terms specific to meritocracy, adapting some approaches of the expectancy theory, we discover a dynamic relation between merits, as consequences of the own effort for knowledge, performance as assertion of expectancy determined by merits and result, considered as a reward, an expression of the success, with multiplying valences on merits.
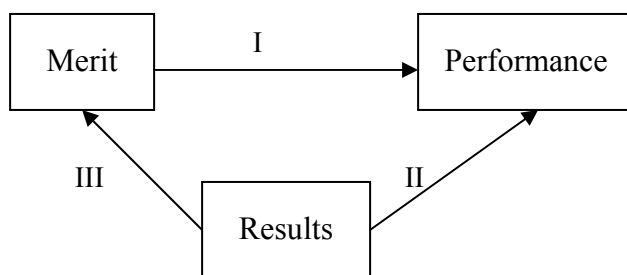

Figure 1 Model for meritocratic determination of performance

The model in Figure 1 represents a simplified image deducted from expectancy theory and it emphasizes the two levels of expectancies, I and II; to these levels we add the third level, with systemic origin, designed to valorise the results of a public action, involving an individual, on the level of personal merits.

Performance measurement in the public sector, and especially in the public administration, with special reference to the last quarter of the century, represents an important dimension of reform strategies. Pollit and Bouckaert (2000) underline the fact that this issue is inscribing within the trajectories for modernisation and public management reform (Pollit C., Bouckaert G., 2000: 78-116).

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Bouckaert (1995) emphasises several dimensions concerning performance measurement. These dimensions are taking into consideration the requirement that "measurement should become more extended", comprising "more levels .. more areas".

At the same time, measurement should become "more intensive" as several managerial functions are included, "open to external environment", referring also to "the members of the legislative corps and even to the public" (Bouckaert G., 1996: 223-37).

Pollit and Bouckaert (2000) assert: "a greater extent of performance measurement has been better exemplified in NPM countries.." (Pollit and Bouckaert, 2000: 106), fact supporting our approach.

The literature and specialised studies reveal an intrinsic connection between meritocracy and development. Evans (1995) as well as Evans and Rauch (1999) in their studies on bureaucratic performance achieved in 35 countries, based on the "hypothesis of the Weberian state" are asserting: "a professional state bureaucracy represents a necessary condition, but not sufficient for a "developing" state. The key of institutional characteristics, called "Weberian bureaucracy" includes meritocratic recruitment.

In this context, the current paper will briefly present a new statistical method, where for the national civil service systems it may be decided how close or far they are towards meritocracy.

Obvious, a meritocratic civil service system is an ideal system. Therefore, the method described below will reveal a certain state of the system and it will achieve a comparison with the ideal state, thus determining their "distance". Our approach, with a case study on the Romanian civil service system complies with Bouckaert's (1996) definition concerning the dimensions of extension and intensity for performance measurement process in the public sector.

At the same time, the above-presented issues are inscribing within NPM development, namely the transfer of some methods used by the private sector to the public sector.

Meritocratic civil service. An immediate perspective?

The further approach and analysis are based on some ideas presented by Krauze and Slomczynski (1985). The authors' approach remains up-to-date under the conditions, that at least for the public sector, the strategies of public management reform both in EU Member States and other organizations, such as OECD reveal as basic objectives the following: professionalisation of civil service, and consequently recruitment and promotion of civil servants exclusively on criteria of merits.

We find the arguments for such an approach in literature and specialized studies. Even not directly connected to the public sector, we quote Husen (1974), who is asserting: " .. the meritocratic trends .. are inherent in the powerful industrialized societies" (Krauze, T., Slomczynski, M.K., 1985: 625) or Bell (1972), who is asserting: "the post industrial society represents a meritocracy in its logic".

A model for evaluating meritocracy

The model proposed by Krauze and Slomczynski (1985) is based on some hypotheses that we shall use also, adapted to the context of the public sector:

a) The individual merits are circumscribed to the sphere of educational meritocracy. Therefore, any person who has acceded or accedes into a civil service system will have a certain educational level, acquired both by basic education in schools or universities and continuous education within the framework of some specific programmes, organized by specialized institutions. Related to the latter ones, we could distinguish several educational levels, e_i, $i = \overline{1, m}$, a certain number of persons corresponding to each level.

b) Within the public sector there is an administrative stratification, where each level of the civil service is characterized by a social status.

The social statuses s_j, $j = \overline{1, n}$ are distinct and the access to these civil services is achieved according to the conditions stipulated in specific laws.

c) The public sector is characterized at a certain moment t_s by a number N of persons, grouped into m educational levels, holding N civil services, grouped into n social statuses.

The status of the civil service system at that moment will be defined by a matrix

X = (x$_{ij}$) , 1 ≤ i ≤ m, 1 ≤ j ≤ n that describes an empirical, double varied distribution of the civil service, classified by education and status, entitled observed distribution.

Corresponding to this distribution, two ideal distributions are created, a "meritocratic" one, M = (m$_{ij}$), 1 ≤ i ≤ m, 1 ≤ j ≤ n, and a random distribution, R = (r$_{ij}$), 1 ≤ i ≤ m, 1 ≤ j ≤ n.

Analysing the meritocratic finality, the above-mentioned authors take into consideration possible theoretical transitions from the initial status, t$_s$, to above-defined final, ideal statuses.

Related to the "distance" to those ideal statuses, we could conclude on "proximity" to meritocratic distribution or the random distribution.

d) Transition from the actual, empirical distribution to another distribution requires a certain *mobility* of the status among the educational groups, a certain change for *determining* the status by education and a certain change in the *inequality* of the status. If the meritocratic thesis is valid, none of the three hypotheses should be rejected. (Krauze, T., Slomczynski, M.K., 1985: 626).

Briefly Krauze and Slomczynski (1985) formulate the following three hypotheses:

I1. Hypothesis concerning the mobility of status
In a public sector based on meritocracy, the number of the persons who would change the status as result of transition to meritocratic distribution is less than the number that occurs further transition to random distribution.

I2. Hypothesis on determining the status
The absolute growth in determining the status by education that would occur as result of transition to meritocratic distribution is less than the one that occurs due to transition to random distribution.

I3. Hypothesis concerning the inequality of status
The absolute growth due to inequality of status among groups as result of transition to meritocratic distribution is less than the one that occurs due to transition to random distribution.

e) Generally speaking, the meritocratic thesis has got the functional theory of social stratification as key pillar, transposed in terms specific for the public sector, in the so called administrative stratification. At the same time, meritocratic distribution represents the core objective of functional theory of stratification stipulating, as shown by Davis and Moore (1945), that the most appreciated public positions are "in a conscious manner held by the most qualified persons" (Krauze, T., Slomczynski, M.K., 1985: 626).

f) The sociologic literature defines meritocratic distribution in the principle: "higher is the level of education for a person, higher should be his/her social status" (Krauze, T., Slomczynski, M.K., 1985: 627).

g) Krauze and Slomczynski (1985) reformulate this principle, in order to be applicable and to enable transition from any observed distribution to meritocratic distribution. The new principle, obtained by reformulating the above-mentioned principle, using mechanisms of bivalent logic is expressed as follows: "the persons with higher education should not have a lower social status than those with less education" (Krauze, T., Slomczynski, M.K., 1985: 627).

The formal model
Based on the formal notations, we take into consideration for the levels of education the distribution e$_i$, i = $\overline{1,m}$, a fixed number a$_i$, a$_i$ > 0 of persons belonging to each level and for statuses s$_j$, j = $\overline{1,n}$, a number of civil services b$_j$, related to which the following conditions impose:

$$\sum_{j=1}^{n} x_{ij} = a_{i,} \quad a_i > 0, \quad i = \overline{1,m} \tag{1}$$

$$\sum_{i=1}^{m} x_{ij} = b_j , \quad b_j > 0, \quad j = \overline{1,n} \tag{2}$$

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$$\sum_{i=1}^{m} a_i = \sum_{j=1}^{n} b_j = \mathrm{N} \tag{3}$$

For the meritocratic distribution described by *M*, the hypothesis *e)* could be formalised by the following description: for each

$$m_{uv} > 0, \ m_{rt} > 0, \ u,r = \overline{1,m} \ , \ v,t = \overline{1,n} \tag{4}$$

$$e_u > e_r \implies s_v > s_t$$

where the elements of the distribution *M* are determined successively according to:

$$m_{ij} = \min \left(a_i - \sum_{k=0}^{j-1} m_{ik}, \ b_j - \sum_{k=0}^{i-1} m_{kj} \right) \tag{5}$$

where, in order to be rigorous, we should add the auxiliary formal constant elements:

$$m_{io} = m_{oj} = 0$$

The above quoted authors provide in the mentioned paper a concrete example in order to determine the elements for the meritocratic distribution.

Hypothesis *c)* introduces the random distribution described by *R*. The construction of this distribution is also based on the empirical observed distribution *X* and it uses a well known formula in statistics concerning the independence of statistic variables.

In this context:

$$r_{ij} = a_i \, b_j \, / \, \mathrm{N} \tag{6}$$

Consequently, based on observed distribution, with the support of the described algorithm, two distributions will be created, related to which we shall make the analyses concerning the level of meritocracy in a civil service system.

We mention that in the whole construction, the educational level of each person is maintained constant and passing to meritocratic and random distributions requires a flexibility of the status of each person, namely some of them will have to change the status.

The evaluation concerning the minimum number of persons who, formally, should change the status in the meritocratic or random distribution may be achieved with the formula:

$$d\,(X,Y) = \tfrac{1}{2} \sum_{i=1}^{m} \ \sum_{j=1}^{n} \ \left| x_{ij} - y_{ij} \ \right| \tag{7}$$

calculated, of course under the conditions (1) and (2).

In the specialised literature, Sakoda (1981), formula (7) expresses the so called index of dissimilarity and it is calculated in the most general case for two matrices of the same type.

Using (7), the hypothesis concerning the mobility of the status (I1) will be formalised by:

$$d\,(X,M) < d\,(X,R) \tag{8}$$

signifying the idea that in terms of distances, the matrix X is "closer" to the meritocratic matrix than the random matrix. In order to estimate "how close" it is, using proportionality, it is necessary to determine the sub unitary number α so that

$$\frac{1-\alpha}{d(X,M)} = \frac{\alpha}{d(X,R)} \ \text{ and from here}$$

$$\alpha = \frac{d(X,R)}{d(X,M)+d(X,R)} \in [0,1] \tag{9}$$

thus, it can be interpreted as "degree of making meritocratic" the civil service.

In formalising the hypothesis for determining the status (I2), the above-mentioned authors are using e_i, respectively s_j as statistical variables as well as the Pearson correlation coefficient, described by:

$$r(X) = \frac{\sum_{i=1}^{m} \sum_{j=1}^{n} (e_i - \bar{e})(s_j - \bar{s}) x_{ij}}{\left[\sum_{i=1}^{m} (e_i - \bar{e})^2 a_i \right]^{1/2} \left[\sum_{j=1}^{n} (s_j - \bar{s})^2 b_j \right]^{1/2}} \tag{10}$$

where $\bar{e} = \dfrac{1}{N} \sum_{i=1}^{m} e_i a_i$ and $\bar{s} = \dfrac{1}{N} \sum_{j=1}^{n} s_j b_j$

Krauze and Slomczynski (1985) are demonstrating that the maximum value of r is obtained for the distributions from the meritocratic matrix.

We mention that for e_i, respectively s_j, we have taken into consideration the attribution of whole ordinal values so that the highest level of education, respectively the highest status correspond to the highest value.

Based on the above assertions, the hypothesis (I2) is transposed as follows:

$$\left| r^2(X) - r^2(M) \right| < \left| r^2(X) - r^2(R) \right| \tag{11}$$

The construction of the matrix R, based on the hypothesis of independency of variables leads to:
$r^2(R) = 0$; noting $r^2(M) = r^2_{max}$. We obtain an equivalent form of (11):
$$r^2_{max} - r^2(X) < r^2(X) \tag{12}$$
condition that should be checked with the experimental data.

The hypothesis on inequality of status uses the so called "Theil" measure, specific for the information theory, based on the notion of entropy.

Within the framework of our analysis, the entropy of a distribution for the social statuses could be regarded as a measure for the inequality of statuses.

Krauze and Slomczynski (1985) are using a decomposition of Theil measure inside the group belonging to the same educational level and among them.

Thus, we obtain:

$$T(X) = \sum_{i=1}^{m} a_i / N \frac{\sum s_j x_{ij}}{\sum s_j b_j} \log \frac{\sum s_j x_{ij}}{\sum s_j b_j} + \sum_{i=1}^{m} a_i / N \frac{\sum s_j x_{ij} T_i(X)}{\sum s_j b_j} \tag{13}$$

where

$$T_i(X) = \frac{\sum s_j x_{ij} \log s_j - \sum s_j x_{ij} \log(1/a_i \sum s_j x_{ij})}{\sum s_j x_{ij}} \tag{14}$$

$$T_b = \sum_{i=1}^{m} a_i / N \frac{\sum s_j x_{ij}}{\sum s_j b_j} \log \frac{\sum s_j x_{ij}}{\sum s_j b_j}$$

$$T_w = \sum_{i=1}^{m} a_i / N \frac{\sum s_j x_{ij} T_i(X)}{\sum s_j b_j}$$

In line with Allison's presentation, the above-mentioned authors are making the following comments for (13):

- T_b, representing the component between the educational levels is equivalent to the value T that "would have been obtained if each individual from each educational level has got the mean status for that level".
- T_w represents a mean of the inequality of status inside an educational level measured by T_i.

Consequently, from (13) and (14) we obtain:

$$T(X) = T_b(X) + T_w(X) \tag{15}$$

and under the condition of formulating the hypothesis (I3), we obtain:

$$\left| T_b(X) - T_b(M) \right| < \left| T_b(X) - T_b(R) \right| \tag{16}$$

or, taking into account that $T(X) = T(M) = T(R)$

$$\left| T_w(X) - T_w(M) \right| < \left| T_w(X) - T_w(R) \right| \tag{17}$$

Concluding, the relations (8), (12) and (17) will represent statistical tests for validating or not validating the hypotheses (I1)-(I3) specific for our analysis.

Case study - Meritocracy and Romanian Civil Service

General data
The case study analyses the civil service system in Romania from the prospect of the proposed model.

Law no. 188/1999 on the Status of Civil Servants with further modifications and additions represents the fundamental legislative component.

The data are taken and processed from the reports[2] achieved by the National Agency of Civil Servants (NACS), body ensuring civil service management in Romania[3].

According to the legal provisions, civil service positions in Romania are organised on categories and classes. Synthetically, their development is presented in the following tables.

Table 1 Situation of civil service positions on 31.12.2006

Civil service positions	Number	%	Out of which there are occupied	
			Number	%
State public administration	9201	7.15	8762	7.85
Territorial public administration	61031	47.50	58123	52.07
Local public administration	58282	45.35	44739	40.08
Total	128514	100.00	111624	100.00

Source: NACS, 2006

Table 2 Evolution of the number of civil service positions during 2003-2006

Categories/classes of civil service positions	2003	2004	2005	2006
Executing civil service positions, out of which:	89.01	88.91	89.95	89.99
Class I	50.94	55.06	52.69	56.55
Class II	2.82	3.65	3.20	3.87
Class III	46.24	41.29	44.11	39.58
Managing civil service positions	10.71	10.87	9.79	9.87
Civil service positions in the category of high civil servants	0.28	0.22	0.26	0.14

Source: NACS, 2006

The statistical data from the mentioned sources as well as the interpretations of the legal provisions will represent the basis for processing them, taking into account the model of meritocratic analysis presented in the first part of the paper.

Educational levels and social statuses in the civil service system.

According to the Romanian specific and general regulations for civil service concerning education, 8 distinct levels of education could be defined in a decreasing hierarchy, necessary for occupying the civil service positions in Romania. (Table 3)

Table 3 Levels of education, specific for civil service in Romania

Level	Description
e_1	Long term higher education (4-6 years), with Ph.D studies
e_2	Long term higher education (4-6 years), with Master degree or specialised training programmes (at least 1 year)
e_3	Long term higher education (4-6 years), with short term training programmes, specific for civil service
e_4	Long term higher education (4-6 years)
e_5	Short term higher education (3 years) with short term training programmes specific for civil service
e_6	Short term higher education (3 years)
e_7	Upper secondary education, with short term training programmes, specific for civil service
e_8	Upper secondary education

Based on the Status of Civil Servants, related to categories, classes and levels of public administration, in a decreasing hierarchy we may define 7 social statuses, specific for administrative stratification (Table 4).

Table 4 Hierarchical levels of administrative stratification (public statuses)

Public status	Description
s_1	High civil servant
s_2	Managing civil servant in state public administration
s_3	Managing civil servant in territorial public administration

s_4	Managing civil servant in local public administration
s_5	Executing civil servant, class I
s_6	Executing civil servant, class II
s_7	Executing civil servant, class III

Construction of statistical data base, specific for the model of evaluating meritocracy in the civil service system

Considering the levels of education, e_i , i = $\overline{1,8}$ and public statuses s_j , j = $\overline{1,7}$, processing NACS statistical data, as well as those resulted from own researches and interpretations, we shall obtain distributions of civil service related to the levels of education and public statuses, that related to a sample of N = 10,000 civil service positions, are leading to observed matrices, X, in Appendix 1, corresponding to the years: 2003 – 2006.

Taking into account (4), the matrices corresponding to meritocratic distribution, M, are obtained using (5) and they are presented for the same period in Appendix 2.

At the same time, under the conditions imposed by (6), the matrices, R, corresponding to random distributions are those presented in Appendix 3.

All the three types of matrices were obtained respecting the hypotheses, notations and formalizations.

First conclusions

Calculating the distance between the observed matrix X and the two matrices that we created, M, respectively, R, we obtain the first evaluation results.

Using (7) and the data from appendices 1 -3, we obtain:

d_{2003} (X,M) = 250; d_{2003} (X,R) = 5338.

d_{2004} (X,M) = 1348; d_{2004} (X,R) = 5168.   (19)

d_{2005} (X,M) = 1107; d_{2005} (X,R) = 5304.

d_{2006} (X,M) = 614; d_{2006} (X,R) = 5470.

In order to obtain results that could be compared, we shall use (9) and we shall obtain the degrees of making meritocratic the civil service system:

α_{2003} = 0.95; α_{2004} = 0.79; α_{2005} = 0.83; α_{2006} = 0.90   (20)

showing, easily that since 2004, the evolution to making meritocratic the Romanian civil service is visible. Graphic 1 represents a more suggestive image for the relations (20).
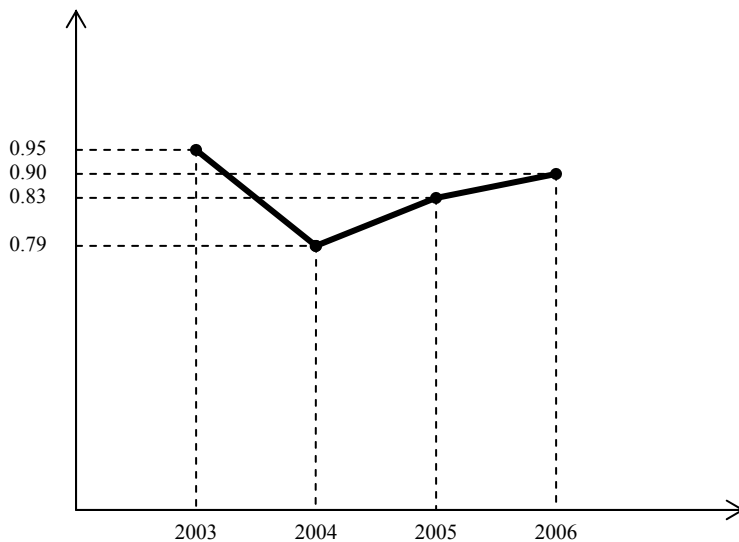
Graphic 1 Evolution of meritocracy in the Romanian civil service system.

At the same time, we should make the remark that for the civil service system, the hypothesis on the mobility of status, formalised by relation (8) is validated from the statistical point of view.

Validating the hypothesis on determining the status
Procedure for testing and validating hypothesis (I2) using the relations (10) and checking the relations (11), respectively (12).

In order to evaluate the respective relations, we used the data presented in Appendices 1 – 3 as well as a decreasing scale for variables e_i, respectively s_j, so that:

$$e_i = 8 – i, \ i = \overline{1,7} \quad, \ s_j = 9 – j, \ j = \overline{1,8} \ . \tag{21}$$

Under these conditions, Pearson correlation coefficient will be as follows:

Table 5 Evolution of Pearson correlation and mean coefficients

Pearson coefficient	**Year**			
	2003	**2004**	**2005**	**2006**
r(X)	0.917	0.907	0.907	0.919
r(M)	0.931	0.957	0.951	0.951
$\overline{e}$	3.36	3.71	3.77	4.01
$\overline{s}$	2.30	2.43	2.37	2.41

In our opinion, two remarks are to be specified concerning the statistic correlation of variation for the two variables. First of all, we mention a powerful correlation, that seems to be specific for the civil service system and in general to the systems that are regulated, from legal point of view, by special statutes. Taking into consideration the fact that the maximum value of Pearson correlation coefficient is 1, the data from the previous table are supporting the above-asserted powerful correlation.

Secondly, we mention the fact, that from the prospect of the evolution of the correlation coefficient, the evolution is not increasing, the years 2004 and 2005 marking moments to redirect the meritocratic evolution for the civil service system. At the same time, as it is natural, the two correlation coefficients for the observed matrix, respectively for the meritocratic one, do not vary in the same manner. Concerning this statement, it is worth an analysis based on the real data as inputs in the system.

Validating the hypothesis on inequality of public status
First of all, we should underline the fact that the entire logic of the current analysis is based on the mobility of public status, determining both modifications of the internal composition within the same educational level and among them. Consequently, as it is natural, we shall consider variations of the entropy for the civil service system, entropy evaluated according to the relations (13) and (14), specifying distinctly the modifications of entropy among groups, respectively inside the group, corresponding to an educational level. The evaluations among groups or inside groups are obviously complementary, as derived also from (15) – (17), the total entropy being the same, no matter the way they are organised or reorganised.

In this context, we shall opt for evaluating the expression T_w representing a mean of inequality of status in the 8 educational levels. The calculations being extremely long, we shall provide an example concerning the situation in 2003, thus obtaining:

Table 6 Evaluating the inequality of public status in 2003

Inequality of status among groups	Observed matrix X	Meritocratic matrix M	Random matrix R
T_1	5.425	5.489	3.554
T_2	7.251	7.245	7.311

T_3	6.008	6.000	6.067
T_4	8.596	8.594	8.655
T_5	4.584	4.584	4.651
T_6	5.398	5.398	5.465
T_7	6.378	6.378	6.446
T_8	8.871	8.871	8.938
T_w	3.659	3.629	3.466

A simple calculation leads to the conclusion that relation (17) is checked and consequently, also the relation (16), under the conditions (15).

Analysing the data, we agree to consider true the validation of hypothesis (I3) also for the period 2004 – 2006.

As important observation, we can emphasise the visible proximity between the evaluations corresponding to matrices X and M, fact demonstrating once more the trend to meritocratic approach, specific for civil service systems.

The evaluations of the random matrix R are non standard, being on average also less for the level e_1 and higher for rest.

The detailed analysis could reveal also other conclusions, close to reality.

Conclusions

The current paper undertakes an idea, existent in the specialised literature, adapting it to the civil service system. The conclusions related to the initial approach, specific for the private sector are different, the method, including the hypotheses for validation being totally checked for the civil service system in Romania.

The mechanisms grounding this method presuppose the use of advanced, statistical knowledge, calculation of matrices, accompanied by specific interpretations and evaluations.

The conclusions will be more relevant if the data base expresses adequately that status of a public system at a given moment in a determined period of time.

For Romania and other European countries, the presented method could be extended also for other occupational categories: academic staff, sanitary personnel, police, justice, benefiting of special statuses that are regulating special labour or job relations.

The presented method could be extended concerning the thorough analysis under the conditions of a more detailed data base concerning the composition of the civil servants corps.

At the same time, the analysis could be extended with researches and sociological analyses that should emphasise more obvious the direct correlation between meritocracy and performance in the public sector.

Notes
1 See online Wikipedia Enciclopedy, http://wikipedia.org/wiki/Meritocracy
2. See the Report of the National Agency of Civil Servants, 2006, www.anfp.mai.ro
3 See Law no. 188/1999 on the Status of Civil Servants, republished, Official Journal of Romania, no. 365/2007

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Appendix 1 Statistical breakdown of civil service positions related to the levels of education and public statuses during 2003 – 2006

Observed distribution - 2003

Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total (a_i)
e_1	4	6	5	3	0	0	0	18
e_2	9	38	118	51	23	0	0	239
e_3	15	10	45	30	0	0	0	100
e_4	0	30	390	345	4312	0	0	5077
e_5	0	0	0	0	0	51	0	51
e_6	0	0	0	0	0	200	0	200
e_7	0	0	0	0	0	0	647	647
e_8	0	0	0	0	0	0	3668	3668
Total (b_i)	28	84	558	429	4335	251	4315	10,000

Observed distribution - 2004

Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total (a_i)
e_1	3	7	8	3	0	0	0	21
e_2	14	49	153	66	130	0	0	412
e_3	3	20	148	41	411	0	0	623
e_4	0	12	275	340	4336	0	0	4963
e_5	0	0	0	0	0	81	0	81
e_6	0	0	0	0	0	242	0	242
e_7	0	0	0	0	0	0	841	841
e_8	0	0	0	0	0	0	2817	2817
Total (b_i)	20	88	584	450	4877	323	3658	10,000

Observed distribution - 2005

Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total (a_i)
e_1	4	6	7	2	0	0	0	19
e_2	19	63	198	85	169	0	0	534
e_3	4	10	185	51	813	0	0	1063
e_4	0	4	162	287	3714	0	0	4167
e_5	0	0	0	0	0	105	0	105
e_6	0	0	0	0	0	180	0	180
e_7	0	0	0	0	0	0	1731	1731
e_8	0	0	0	0	0	0	2201	2201
Total (b_i)	27	83	552	425	4696	285	3932	10,000

Observed distribution- 2006

Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total (a_i)
e_1	4	5	8	2	0	0	0	19
e_2	10	61	257	111	220	0	0	659
e_3	1	8	161	143	1016	0	0	1329
e_4	0	0	66	123	3876	0	0	4065
e_5	0	0	0	0	0	175	0	175
e_6	0	0	0	0	0	174	0	174
e_7	0	0	0	0	0	0	2250	2250
e_8	0	0	0	0	0	0	1329	1329
Total (b_i)	15	74	492	379	5112	349	3579	10,000

Appendix 2 Meritocratic distribution of civil service positions related to the levels of education and public statuses during 2003 – 2006

Meritocratic distribution - 2003							
Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e_1	18	0	0	0	0	0	0	18
e_2	10	84	145	0	0	0	0	239
e_3	0	0	100	0	0	0	0	100
e_4	0	0	313	429	4335	0	0	5077
e_5	0	0	0	0	0	51	0	51
e_6	0	0	0	0	0	200	0	200
e_7	0	0	0	0	0	0	647	647
e_8	0	0	0	0	0	0	3668	3668
Total	28	84	558	429	4335	251	4315	10,000

Meritocratic distribution - 2004							
Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e_1	20	1	0	0	0	0	0	21
e_2	0	87	325	0	0	0	0	412
e_3	0	0	259	364	0	0	0	623
e_4	0	0	0	886	4877	0	0	4963
e_5	0	0	0	0	0	81	0	81
e_6	0	0	0	0	0	242	0	242
e_7	0	0	0	0	0	0	841	841
e_8	0	0	0	0	0	0	2817	2817
Total	21	88	584	450	4877	323	3658	10,000

Meritocratic distribution - 2005							
Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e_1	19	0	0	0	0	0	0	19
e_2	8	83	443	0	0	0	0	534
e_3	0	0	109	425	529	0	0	1063
e_4	0	0	0	0	4167	0	0	4167
e_5	0	0	0	0	0	105	0	105
e_6	0	0	0	0	0	180	0	180
e_7	0	0	0	0	0	0	1731	1731
e_8	0	0	0	0	0	0	2201	2201
Total	27	83	552	425	4696	285	3932	10,000

Meritocratic distribution- 2006							
Status / Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e_1	15	4	0	0	0	0	0	19
e_2	0	70	492	97	0	0	0	659
e_3	0	0	0	282	1047	0	0	1329
e_4	0	0	0	0	4065	0	0	4065
e_5	0	0	0	0	0	175	0	175
e_6	0	0	0	0	0	174	0	174
e_7	0	0	0	0	0	0	2250	2250
e_8	0	0	0	0	0	0	1329	1329
Total	15	74	492	379	5112	349	3579	10,000

Appendix 3 Random distribution of civil service positions related to the levels of education
and public statuses during 2003 – 2006

Random distribution - 2003							
Status \ Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e_1	0	0	1	1	8	0	8	18
e_2	1	2	13	10	104	6	103	239
e_3	0	1	6	4	43	3	43	100
e_4	14	43	283	218	2201	127	2191	5077
e_5	0	0	3	2	22	1	23	51
e_6	1	2	11	9	87	5	85	200
e_7	2	5	36	28	280	16	280	647
e_8	10	31	205	157	1590	93	1582	3668
Total	28	84	558	429	4335	251	4315	10,000

Random distribution - 2004							
Status \ Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e_1	0	0	1	1	10	1	8	21
e_2	1	4	24	18	201	13	151	412
e_3	1	5	36	28	304	20	229	623
e_4	10	44	290	223	2420	160	1816	4963
e_5	0	1	5	4	40	3	28	81
e_6	1	2	14	11	118	8	88	242
e_7	2	7	49	38	410	27	308	841
e_8	5	25	165	127	1374	91	1030	2817
Total	20	88	584	450	4877	323	3658	10,000

Random distribution - 2005							
Status \ Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e1	0	0	1	1	9	0	8	19
e2	1	4	29	23	251	15	211	534
e3	3	9	59	45	499	30	418	1063
e4	12	35	230	177	1957	119	1637	4167
e5	0	1	6	4	49	3	42	105
e6	0	1	10	8	85	5	71	180
e7	5	14	96	74	813	49	680	1731
e8	6	19	121	93	1033	64	865	2201
Total	27	83	552	425	4696	285	3932	10,000

Random distribution - 2006							
Status \ Education	s_1	s_2	s_3	s_4	s_5	s_6	s_7	Total
e_1	0	0	1	1	10	1	6	19
e_2	1	5	32	25	337	23	236	659
e_3	2	10	65	50	679	46	477	1329
e_4	7	30	200	154	2078	142	1454	4065
e_5	0	1	9	7	89	6	63	175
e_6	0	1	9	7	89	6	62	174
e_7	3	17	111	85	1151	79	804	2250
e_8	2	10	65	50	679	46	477	1329
Total	15	74	492	379	5112	349	3579	10,000