Inconsistent Management of Financial Instruments: The Case of the Research Fund Allocated to Romanian Universities

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Abstract
In 2021, the Romanian Ministry of Education and Research enacted a significant shift in its academic management policy: it created a special fund dedicated exclusively to supporting universities' research activities. A dedicated methodology was devised to allocate this global pool of research funding to the more than 40 public universities active in the Romanian higher education landscape. This paper aims to analyze the methodology for allocating the research fund, focusing on how its criteria address the unequal sizes of the universities eligible for funding. This is achieved, on one hand, through comparative analysis of the annual methodologies and, on the other, through standard statistical analysis (frequency distributions, correlations, regressions) of key variables involved in the allocation of the fund, notably university size, as expressed through student numbers, used as a proxy for staff size, and annual Metaranking scores of universities – the main driver of the funding results. The contribution of the paper can be summarised as follows: (1) theoretically, it highlights the foundational problem of size-dependence of research outputs and outcomes as well as its inconsistent treatment across the criteria used for the allocation of the research fund; (2) empirically, it presents data that show how the funding methodology is generally biased – partly in favour, but overwhelmingly against – small universities. The paper argues that the dual, contradictory approach to accounting for university size in the funding criteria signals a lack of a clear identity for the research fund within the broader landscape of financial instruments for university research.

Keywords
Funding criteria; funding methodology; metaranking; research management; size-dependence; universities

Introduction

Since 2021, the Romanian Ministry of Education and Research (MER) has been distributing to the public higher education institutions a newly created fund for university scientific research (henceforth abbreviated as RF), designed specifically to support their research activities[1]. The fund is separate from competitive research funding sources and distinct from the main part of the institutional funding that the universities receive for the tuition of students (either in proportion to the students enrolled or upon further, quality indicator-based examination of some of their institutional features, e.g., education, research, internationalization, regional engagement, and social equity).

The stated aims of the RF are (1) to raise the quality of human resources involved in research, (2) to develop research infrastructure and finance research activities, and (3) to increase the performance and visibility of Romanian research. The net amount dedicated annually to the RF is 100 mil. RON (i.e., slightly less than €20 mil.). This value has stagnated between 2021 and 2025, meaning that, in real terms, adjusted for the high inflation rates that have been characteristic of the last years (e.g., 13.8% in 2022, 10.4% in 2023), its weight has in fact decreased. Only public universities are eligible for a share of the RF. To distribute the funding, a distinct methodology was adopted in 2021 and has been revised annually. However, the main determinant of the allocation of the RF has consistently been a self-styled Metaranking of the universities, which relies on (in)famous global rankings (e.g., the Academic

[1] See Ministry of Education and Research orders 3747/2021, 3126/2022, 3721/2023, 4067/2024, 3259/2025.

Ranking of World Universities - ARWU), which are known to be virtually inaccessible to small, young, or specialized universities.

Since the RF is still a rather novel approach to funding research in Romania, this paper aims to offer a critical examination of its methodology, focusing both on its theoretical construction but also on the empirical consequences of its application. The premise that motivates this paper is that Romanian universities display significant variability, notably in relation to their size and disciplinary profile. An adjacent premise is that size is a significant factor in institutional capacity to conduct research and to attract research funding. In particular, "the size of the faculty plays a crucial role in publication numbers and subsequent rankings" (Lee et al., 2025, p. 657). Research outputs, among other things, are a good exemplar of this critical issue of size-dependence: universities with more staff are expected to produce more research outputs, apply for more grants, and therefore secure more research funding, while smaller universities are less able to do so. Therefore, to have a fair and meaningful comparison, one must account for competitors' different sizes. A pertinent question is whether or not the RF methodology accomplishes this.

Background in brief

The funding of research in higher education institutions has long attracted the attention of scholars. A classic paper (Geuna & Martin, 2003) notes that research funding can be conceptualized as a continuum from pure performance-based approaches (relying on an post evaluation model) to allocation based on educational size (an ex ante indicator). A distinguishing characteristic of performance-based models is that they "replace methods of distributing block grants, including using a historical basis, i.e., the previous year's allocation, or formulas based on faculty or student numbers" (Hicks, 2012, p. 257). In essence, performance-based approaches reward outputs rather than inputs, while research funding models based on educational size favor only inputs. Forgoing criteria altogether, more unusual ideas, such as the random allocation of funding, have also been discussed in the academic literature (Bedessem, 2020).

Performance-based funding models nonetheless receive more attention (i.e., are the subject of many more papers) than alternative, input-based models, which are generally receding in importance. One reason is that performance-based funding creates positive incentives that increase publication counts. One example focusing on Finnish universities can be found in Himanen and Puuska (2022), and a more recent systematic review of studies across 11 countries using performance-based research funding systems (Shin et al., 2024) also confirms that these systems generally improve research performance, especially when metric-based peer review is used.

In addition to being subjected to assessment in the context of performance-based research funding, universities are also faced with the pressure of international rankings, and improving rank positions has been a policy priority for many individual institutions as well as for countries around the world (Schmoch et al., 2016). Rankings have, in fact, become a justification for some national policies supporting university mergers (e.g., Kohvakka & Nevala, 2024). It is essential to note that international university rankings also strongly emphasize research outputs, are highly reliant on the indexing of these outputs in bibliometric databases, and, therefore, "are subject to all the shortcomings inherent in bibliometric databases (size dependency, disciplinary biases, Matthew effect)" (Kochetkov, 2024, p. 540).

Funding remains key to research quality and visibility, to research productivity, and, implicitly, to institutional performance in rankings.

The fact that research funded by the public sector consistently outperforms unfunded work on key performance indicators has been documented in several studies. Gök et al. (2016) analyzed funding acknowledgment data across six European countries and showed that the source and type of funding support relate directly to the citation impact of resulting publications. Yan et al. (2018) showed that funded articles receive significantly more citations than unfunded ones. Corsini and Pezzoni (2023) showed that articles supported by French competitive grants accumulate more citations over time.

Regarding productivity, Heyard and Hottenrott (2021) studied the effect of research funding on individual researchers, showing that Swiss grant recipients produced approximately 1 additional article per year in the 3 years following the funding and achieved broader dissemination (as indicated by higher Altmetric scores). A general comparison of China and the European Union (Wang et al., 2021) also highlighted the importance of funding as a driver of research behavior.

Benito et al. (2019) demonstrated that public funding is critical in the QS World University Rankings, with 84% of the top 300 universities being publicly funded; they also note that public funding explains up to 51% of the variability in ranking positions.

The funding of Romanian universities, notably the quality indicator-based component, which partly relies on research results, has been the subject of a limited number of prior studies (e.g., Miroiu & Vlăsceanu, 2012; Vîiu, 2015; Vîiu & Miroiu, 2015). These have highlighted (1) the fundamental significance of student numbers (i.e. university size) for the funding received by higher education institutions (even under the so-called quality indicators), (2) the fact that funding methodologies employ contradictory indicators that pull in opposite directions and tend to cancel one another's influence and (3) that overall, science technology engineering mathematics-oriented universities tend to outperform those in the humanities, arts and social sciences with regard to acquiring funding.

The specific research fund studied in this paper has, to the knowledge of the author, not been the object of any prior research.

Methodology

Against the background of the size-dependence of research performance (and historical significance of size to funding shares gained by universities), two research questions are formulated and investigated in this paper, an exploratory and theoretical one (RQ1) and a more focused, empirical question (RQ2):

(RQ1) How does the RF methodology address the problem of different sizes that characterize universities (and does it do so in an internally consistent manner)? Answering this question entails establishing whether the funding criteria attempt to correct for the different sizes of the universities. Furthermore, it entails determining whether the criteria consistently observe this requirement to address size-dependence or, to the contrary, noting that some of the criteria do not conform to this principle and are built on an opposing view.

(RQ2) Is there a significant impact of the size of the universities on their capacity to secure shares of the RF? This question is mainly motivated by the theoretical expectation that size is fundamental to universities' capacity to compete in any funding context. For this empirical question, we can formulate the hypotheses that *size and RF funding are strongly associated* and that, ceteris paribus, *larger universities gain a larger share of the RF*, while smaller universities receive smaller shares of this funding.

To address RQ1, which is mostly exploratory and descriptive in nature, the method used consists mainly of a *comparative analysis* of the yearly methodologies.

To answer RQ2, an *empirical investigation* was conducted into the relationship among the variables used in funding allocation. In early September 2025, data – university Metaranking scores – were collected from public reports on university Metaranking, which is used as the main criterion in the RF scheme. Additional yearly data from the National Commission (formerly Council) for the Funding of Higher Education (CNFIS) regarding the *total number of university students* enrolled were also collected at the same time[2].

[2] These are available, for each year, here: https://www.cnfis.ro/finantare/finantarea-de-baza/

Student numbers were used as proxies for staff numbers, for which no granular data at the level of individual universities is publicly available. Statistical analyses were performed on the collected data in the R Language and Environment for Statistical Computing (v. 4.5.1) to: (1) map the sizes of universities across the five-year funding period of the RF and highlight the presence or absence of universities in the university Metaranking; (2) explore the evolution of the Metaranking scores of each university across the five years; (3) determine the statistical association of the yearly Metaranking scores; (4) test the relation between and effect of *size*, as expressed by the number of students, with and on the *Metaranking score* (which is further indicative of the share of RF funding secured).

Unfortunately, the actual funding received by each university through the RF was not publicly available at the time of data collection (e.g., on the MER or CNFIS website) and could therefore not be used. Such data would, of course, be useful for further understanding the implementation of the RF.

Results and discussion

(RQ1) The RF methodology and its inconsistent treatment of the size of universities

Table 1 summarises the criteria used to distribute the RF across the 2021 – 2025 period (note that the funding scheme relies on data from the previous year; e.g., the funding in 2025 is contingent, inter alia, on the Metaranking scores from 2024). Aside from the first year (3 criteria), the methodology relies on 5 criteria – conventionally labeled below *A-E* – to determine the share of RF to each university. Without going into the full technical details of their calculation, it is important to highlight that more impactful changes were enacted for the 2022 and 2025 funding years. By analyzing the criteria, we can deduce some of their properties and consider their underlying logic, especially if the criteria treat university sizes consistently.

Table 1. Synopsis of criteria used in the methodology for allocating the research fund to universities and the [percent share] of funding allocated through each criterion over the 2021 – 2025 period

2021	*2022, 2023 & 2024*	*2025*
A. Equally divided fixed amount: 0.5 mil. RON / university; 46 universities [23%]	**A.** Equally divided fixed amount **[20%]**	**A.** Equally divided fixed amount **[20%]**
B. University Metaranking score: 0.25 mil. RON / point [40.75%]	**B.** University Metaranking score **[45%]**	**B.** University Metaranking score **[50%]**
C. (remaining amount) Share of study programs in priority fields (67%) + number of researchers (33%) [36.25%]	**C.** Students enrolled in priority and arts study programs (BA, MA, PhD) **[20%]**	**C.** Students enrolled in arts study programs (BA, MA, PhD) **[5%]**
	D. Researchers and PhD supervisors **[10%]**	**D.** Research positions and PhD supervisors **[20%]**
	E. Score for research results (IC 2.3) **[5%]**	**E.** Score for research results (IC 2.3) **[5%]**

Source: Author's research based on MER orders 3747/2021, 3126/2022, 3721/2023, 4067/2024, 3259/2025

Criterion A is not, in fact, a typical indicator, as it consists of granting each public university a fixed, equal amount (about 20%) set aside from the total RF pool. Since this share is given to universities simply because they are in operation, it does not differentiate between their academic profiles, sizes, or performance. For example, large universities with many fields of study receive the exact same amount as smaller, specialized universities, which therefore favors the latter. Criterion A may be viewed as a type of basic, ad-hoc input indicator.

Criterion B – an outcome indicator – is the main driver of the RF, now responsible for 50% of the fund, and relies on the results of the distinct Metaranking of universities that is supervised and formally regulated by the MER. The essence of the Metaranking is that universities receive points that are aggregated into a single score based on their presence and rank in a set of international rankings

that address institutions globally, i.e., independently of their constituent study fields, e.g., ARWU[3], Leiden[4], etc.

Universities not present in the rankings are simply deprived of the possibility of receiving funding on this criterion. It is important to note that all these university rankings are biased against small, specialized universities. This is formally enacted in their methodologies with the requirement to have a *minimum (significant) number of papers indexed in the main bibliographical databases*, Web of Science or Scopus, or by simply establishing an *arbitrary cut-off for the number of universitie*s presented in the ranking, e.g. 2000 for ARWU (2500 since 2025) and CWUR[5] , 2025 (in 2025) for NTU[6], 3000 for URAP[7], 2250 for US News[8], 5051 for SCIMago[9]. International rankings are known to favor large universities (Docampo & Cram, 2015), typically multidisciplinary and with a strong STEM component. Criterion B in the RF is thus intrinsically biased against small universities and, like A, does not take their size into account. Although it scales each university's score relative to the cumulative score of all universities in the Metaranking, this does not address the root problem of universities' size, which is fundamental to their initial access to the individual rankings that the Metaranking relies on. One must also consider that these rankings are highly correlated with one another (e.g., Shehatta & Mahmood, 2016, given that they use roughly the same raw research data (publications and citations) as inputs.

In contrast to the preceding criteria, which neglect university size in funding allocation, the following two criteria include a form of effective normalization or scaling that modulates the share of the RF a university can receive relative to its size. *Criterion C*, formerly focused on students enrolled in certain programs (but addressed since 2025 exclusively to universities with arts study programs), allocates RF funding to a university based on the share of its students among all universities' students. Similarly, *Criterion D* allocates its corresponding slice of funding in proportion to the share of researchers a university has among all researchers engaged across all universities. Criteria C and D may be viewed as input indicators.

Criterion E, on the surface, appears to account for the size of each university by benchmarking its research output score against the cumulative score for all universities' research outputs. However, given its technical definition of the score – as a *share* of funding already received under a different quality indicator, IC 2.3, from a separate funding methodology – it does not, in fact, resolve the issue of size-dependence. Criterion E may be viewed as an (indirect) output indicator.

The conclusion of this summary analysis is that the RF methodology is internally inconsistent: Criteria A, B, and E substantively ignore the size of the universities, whereas Criteria C and D follow the opposite logic and allocate funding in proportion to the universities' size, expressed either in terms of students or researchers. An interesting aspect to note is that, in the case of Criteria A and B, where university size is ignored, the expected effect is quite different: Criterion A favors small universities, while Criterion B (dominant in the RF architecture) favors large universities. Criterion E is also biased in favor of larger universities.

Since Criterion A cannot be the subject of substantial analysis and Criteria C–E are now collectively responsible for less than a third of the RF, they will not be the object of further investigation in the empirical section[10]. This section will focus on the main criterion – B, and its relation to the size and profiles of the universities.

[3] https://www.shanghairanking.com/rankings/arwu/2025
[4] https://www.leidenranking.com/ranking/2024/list
[5] https://cwur.org/2025.php
[6] http://nturanking.csti.tw/methodoloyg/sampleSelection
[7] https://urapcenter.org/Methodology
[8] https://www.usnews.com/education/best-global-universities/articles/methodology
[9] https://www.scimagoir.com/rankings.php?sector=Higher%20educ
[10] Lack of publicly available data on the distribution of the RF and on the contribution of each criterion to the amount of each university is also a very pragmatic reason for not further analysing these criteria.

(RQ2) University size and its relation to the Metaranking scores and the RF methodology

Figure 1 presents an overall snapshot of the size of the 46 (now 45) public universities eligible for RF, expressed as the total number of students enrolled (BA, MA, PhD, subsidized, and tax-paying). The figure highlights the presence or absence of each university in each yearly Metaranking. This shows that universities with fewer students, usually fewer than 5000, are generally left out of the Metaranking. These universities are typically focused on the arts or have a narrow specialization. In total, 14 public universities have consistently been excluded from the Metaranking exercise.

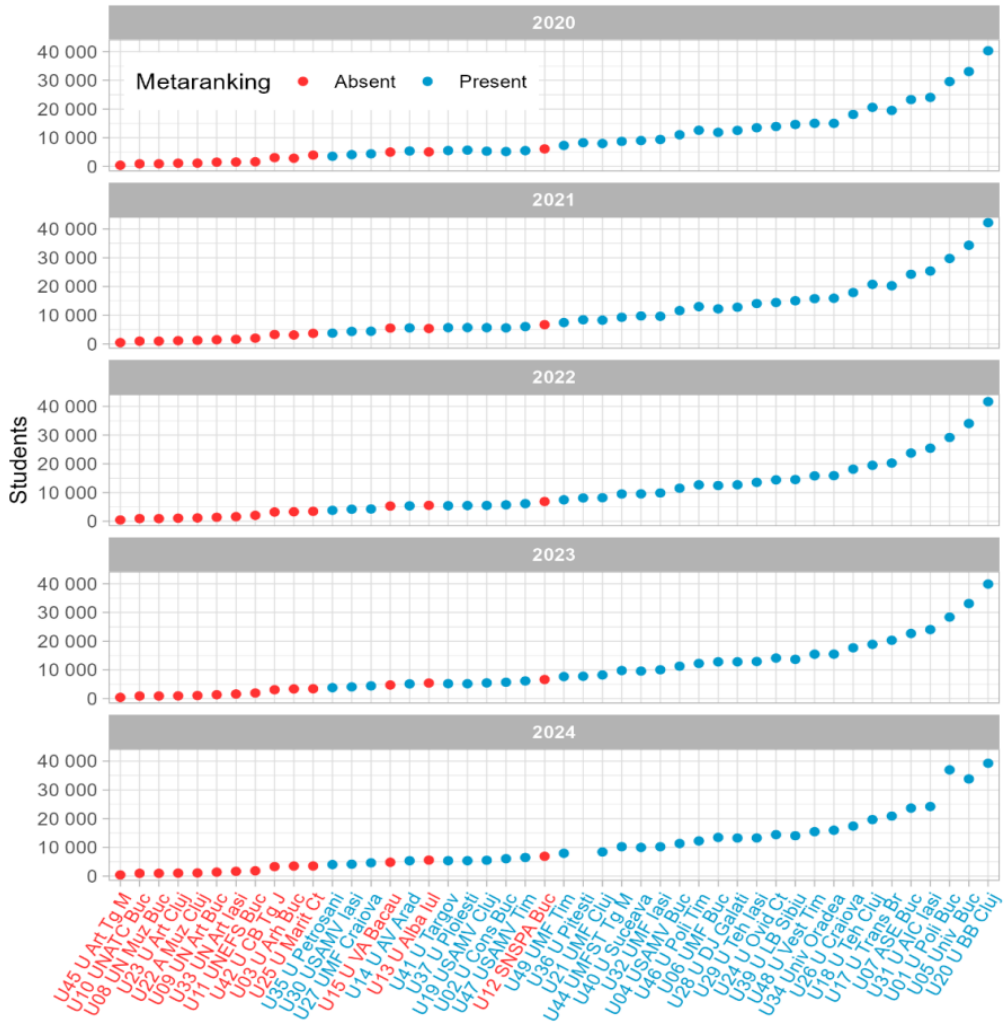

Figure 1. Total students in public universities (subsidized & fee-paying; BA, MA & PhD), 2020–2024, highlighting universities' presence in the annual Metaranking. Note that in 2024, U36 is no longer present in the Metaranking due to its merger into U01 (whose 2024 score includes that of U36)
Source: Author's research

On the other hand, universities with significant student numbers (also expected to have significant staff numbers) are generally present in the Metaranking. Empirically, we can determine that all universities with at least 7000 students managed to be included in the Metaranking in all five years. In total, a

maximum ranging from 28 to 30 public universities were present in the Metaranking, meaning that in each year they were present in at least one of the (typically eight) individual rankings taken into consideration by the MER-appointed working group tasked with conducting the Metaranking exercise.

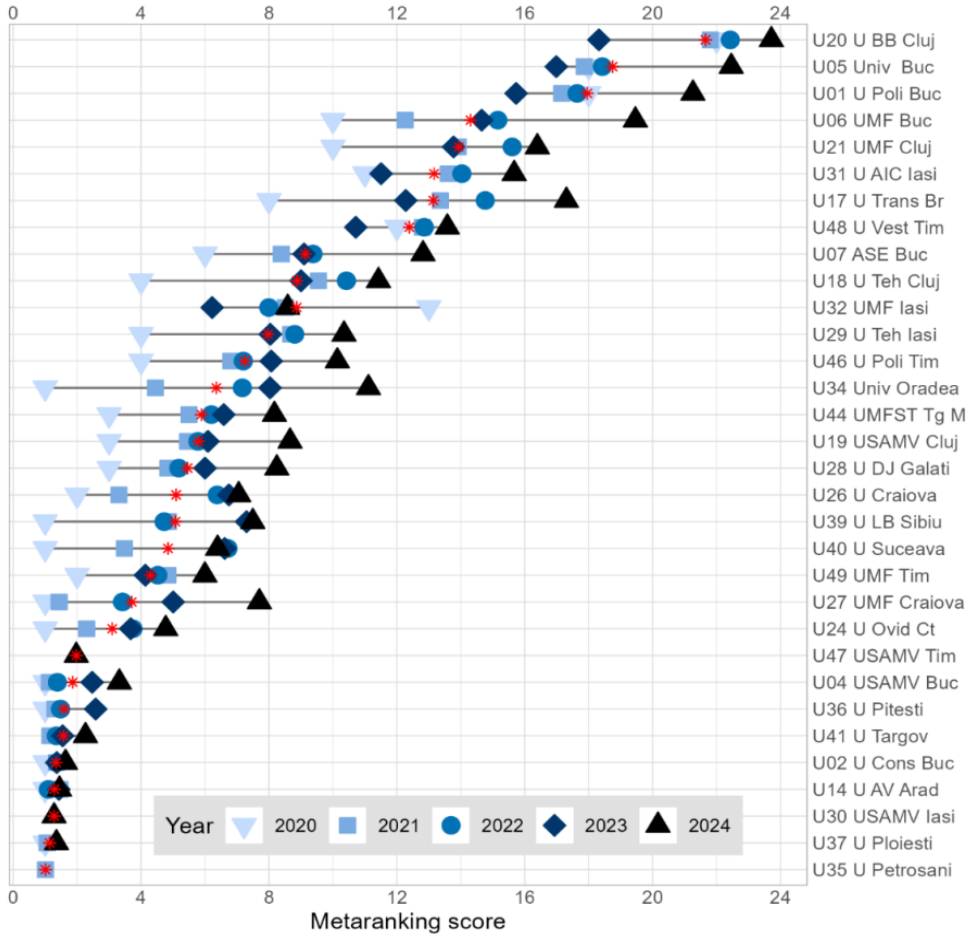

Figure 2. Metaranking scores of all universities present in any of the 5 editions used in the allocation of the RF in the 2021-2025 period. Universities are sorted by their mean score (shown with "*"), as computed over the 5 (or fewer) years in which they were present in the Metaranking.
Source: Author's research

Figure 2 describes the evolution of the Metaranking scores of all the universities that were included in at least one edition of the Metaranking. This shows the universities with the best performance and highlights some additional interesting features. For example, there is less variability among the universities placed in the last positions of the Metaranking, and somewhat greater variability in the middle and upper portions of the rankings. In addition, already well- and very-well-performing universities typically further increased their scores over the five years. Overall, between 2020 and 2024, 26 universities improved their score, either marginally (e.g., U37, U14, U02) or by very large values (U34, U06, U17).

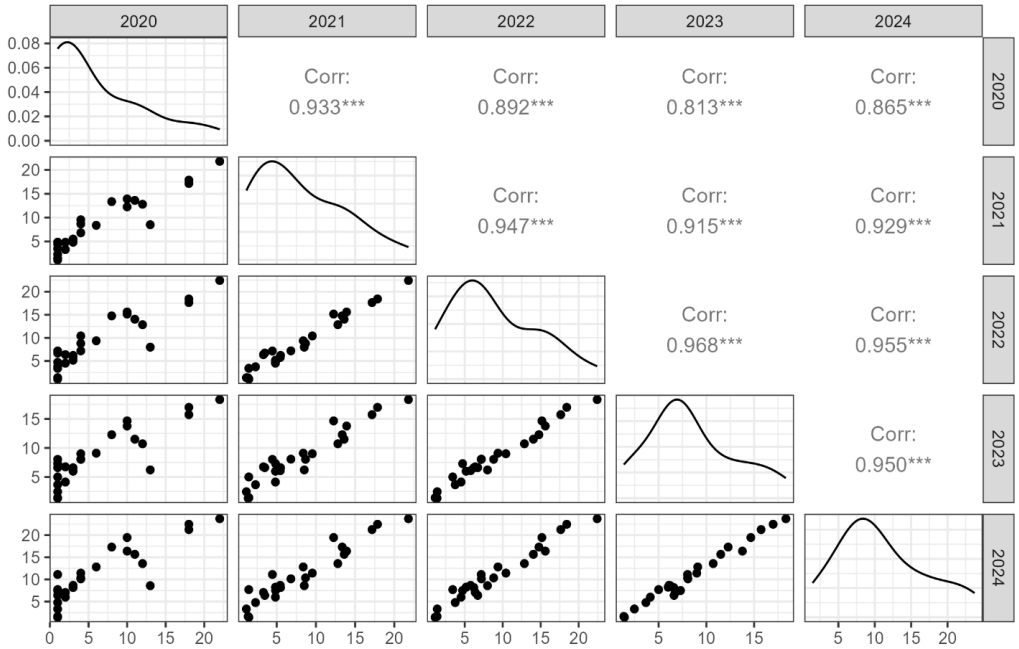

Figure 3. Pairwise correlations between the yearly Metaranking scores of the 26 universities present in all 5 editions of the Metaranking. The subplots on the diagonal show the distribution of scores in each year. Scatterplots of each pair of variables are drawn below the diagonal, and Spearman correlation coefficients are listed above the diagonal.
Source: Author's research

Given the overall picture presented in Figure 2, which typically indicates a similar rank order of the universities, it seems reasonable to ask to what extent the universities' scores in a given year in the Metaranking are correlated with their scores in other years. Figure 3 shows this analysis for the 26 universities consistently present in all five editions of the Metaranking. This figure shows very high correlations – with values ranging from 0.813 to 0.968 – between the yearly scores of the universities. In other words, higher scores in one year are associated with higher scores in another year, and the same holds for lower scores. It is important to underline the consistency over time (high correlation across all pairwise comparisons), which indicates a clear trend: the performance of the universities remains relatively unchanged over the years.

This finding can be supported by further examination of the rank order of universities according to their Metaranking scores (i.e., not the scores themselves). Figure 4 below shows this rank order for the 26 universities that were consistently present in all five Metaranking exercises (to avoid overlap caused by multiple universities occupying the same rank, a feature of the 2020 Metaranking, the data for this year are omitted). This figure demonstrates that it is typical to see more abrupt changes in rank from year to year (i.e., of 3 or more positions), especially in the bottom half of the list of universities included in the analysis.

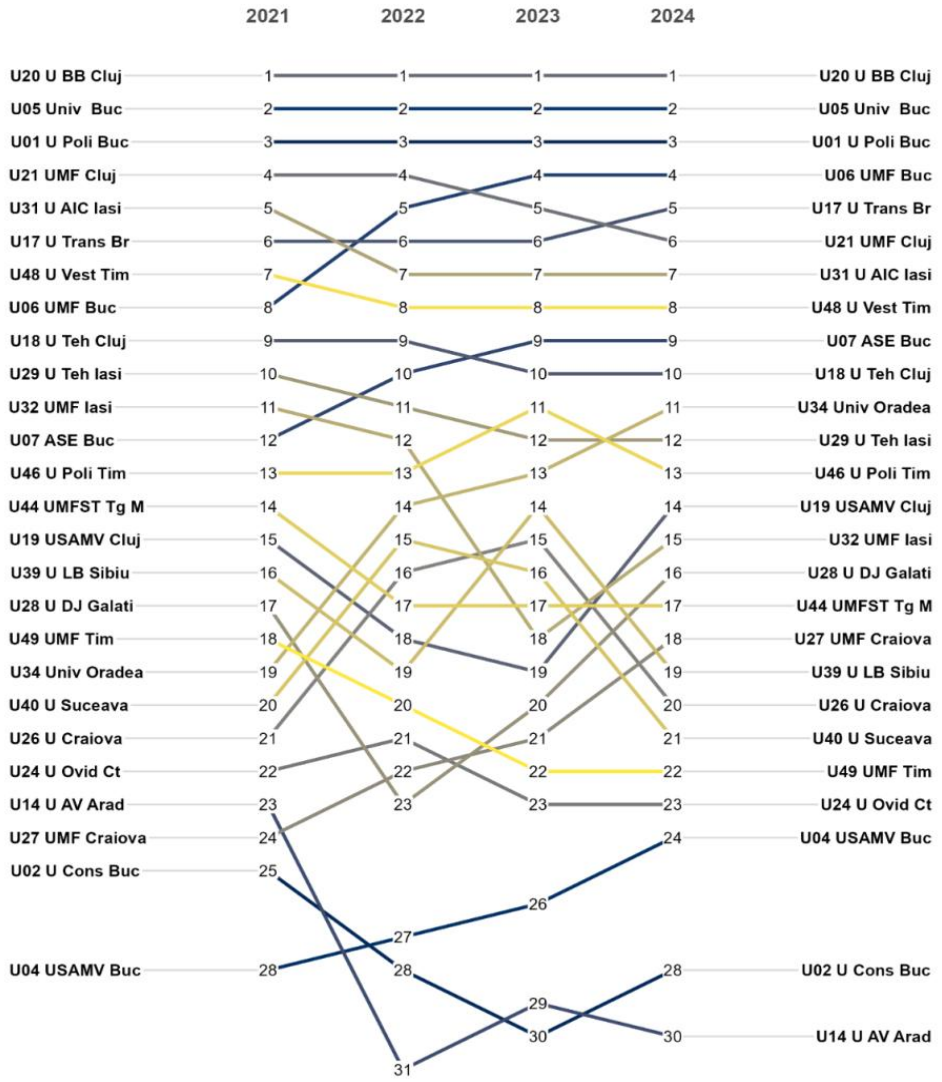

Figure 4. Evolution of rank order based on Metaranking scores for the 26 universities present in all five years of the Metaranking. The 2020 data are omitted due to numerous ties in ranks.
Source: Author's research

Finally, to assess the impact of university size on Metaranking scores, simple linear regression models are presented in Figure 5. As anticipated, these show a significant positive relationship between size and scores. Most of the variance (i.e., about two-thirds) in the Metaranking scores seems to be explained by the number of students, and the statistical models predict that, for each additional 1000 students, universities will have a 0.5-point increase in their Metaranking score. This confirms the hypothesis that larger universities gain a larger share of the RF.

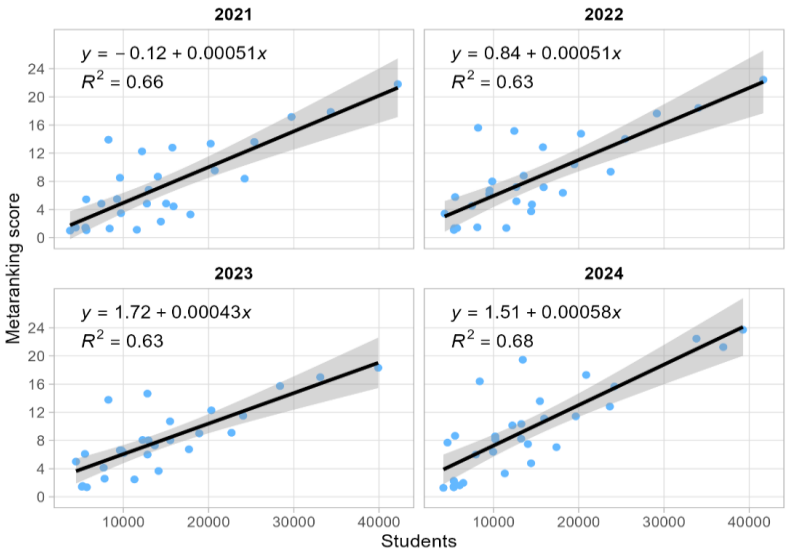

Figure 5. Linear models of Metaranking scores vs. total university enrollment (2021 is omitted for brevity, but yields comparable coefficients: slope of 0.00052, R^2 of 0.58)
Source: Author's research

Conclusions

This paper has analyzed the methodology used by Romanian policymakers to allocate a newly created institutional research fund to public universities. It has focused on the conceptual treatment received by the problem of size-dependence in the five individual criteria used to allocate distinct shares of the RF (ranging from as little as 5% to as much as 50%) to universities, which are shown to have quite different magnitudes (and therefore research capacities). The empirical part of the paper has shown the clear significance of size to universities' ability to compete for the RF, notably in Criterion B, currently responsible for distributing half of this fund. The analysis of the RF methodology leads to the conclusion that it is a mix of contradictory criteria: some fail to address the problem of size-dependence, while the others directly address this issue and scale the funding allocated to universities in accordance with their concrete dimensions, such as students (Criterion C) and research staff (Criterion D). In some respects (Criterion A), the inconsistent approach to the issue of the size-dependence of research outputs places small universities in a more advantageous position relative to larger ones. However, overall, more benefits accrue to larger universities in what some will surely recognize as a sui generis manifestation of the Matthew effect in science.

One fundamental issue that may be indicated by the problem of poor internal consistency that has been shown to characterise the RF methodology is the following: the RF is still a somewhat new, ad-hoc financial instrument that does not yet have a clear identity in the funding landscape: in a small part (Criterion A as well as the current form of Criterion C) it seems to be intended as a non-competitive minimum support for universities. However, the content and weight of the other criteria, especially the one based on the Metaranking results, indicate a competitive approach to funding, relying on rankings, anticipated research capacity, and past research performance. If the RF continues to exist as a distinct financial instrument leveraged by the MER in the national management of research, then its placement on the competitive versus non-competitive spectrum of funding instruments should be among the first issues addressed to overcome its current strange duality. To arrive at this clarification, policymakers should consider whether all three broad goals repeatedly stated for the RF (improved human resources, infrastructure, and research activities, performance, and visibility) are, in fact, tenable. It may well be the case that very few concrete objectives can realistically be pursued with the limited RF contribution (€20 mil. divided among 45 universities ultimately amounts to a rather diluted impact). Clarity in one

or two well-chosen objectives should then more naturally translate into a consistent set of criteria for evaluating the universities.

A significant limitation of this paper is that the data on the distribution of RF to universities are not publicly available and cannot be used directly for analysis. If and when they become available, additional investigation into RQ2 may be conducted to further test and demonstrate the influence of size on the distribution of the research fund among higher education institutions.

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