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PUBLIC FINANCING OF RESEARCH PROJECTS IN POLAND — ITS IMAGE AND CONSEQUENCES?

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Marzena Feldy, Ph.D.
Information Processing Institute - National Research Institute, Poland
Laboratory of Statistical Analysis and Evaluation
Marzena.Feldy@opi.org.pl
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Summary

Both the size of appropriation as well as their distribution have had a profound impact on the shape and activities of the science sector. The creation of a fair system of distribution of public resources to research that will also facilitate the effective implementation of the pursued scientific policy goals represents a major challenge. The issue of the determination of the right proportions of individual distribution channels remains critical. Despite this task being the responsibility of the State, establishing cooperation in this respect with the scientific community is desirable. The implementation of solutions that raise the concerns of scientists leads to system instability and reduced effectiveness which is manifest among others in a lower level of indicators of scientific excellence and innovation in the country.

These observations are pertinent to Poland where the manner in which scientific institutes operate were changed under the 2009–2011 reform. A neoliberal operating model based on competitiveness and rewarding of top rated scientific establishments and scientists was implemented. In light of these facts, the initiation of research that will provide information on how the implemented changes are perceived by the scientific community seems to be appropriate. The aim of this article is in particlar presenting how the project model of financing laid down under the reform is perceived and what kind of image has been shaped among Polish scientists. In order to gain a comprehensive picture of the situation, both the rational and emotional image was subject to analysis.

The conclusions regarding the perception of the project model were drawn on the basis of empirical materials collected in a qualitative study the specifics of which will be presented in the chapter on methodology. Prior to that, the author discusses the basic models for the distribution of state support for science and characterises the most salient features of the system in place in Poland. To conclude, the possible implications of the shaped image of the project model on the national science system will be presented.

Keywords: financing of research projects, public resources, distribution channels, scientific establishment, innovation

Basic models of public funding for science allocation[1]

The basic models of fund allocation to science can be identified: institutional and project. In the institutional model, resources for research are channelled to scientific establishments. Its task is rewarding quality and usefulness of research (achievement-oriented model) or boosting the research potential of the country (resource-oriented model). In the first approach, the basis for the disbursement of funds is an evaluation process of the achievements of scientific establishments, the second — a fixed algorithm of disbursement (taking into account, for instance, the number of scientists employed, cost intensity of research, etc.) or the outcome of budget negotiations (OECD, 2011).

Given the subject matter of this article, introducing to the specificities of the second of the aforementioned approaches to funding science is of paramount importance. In the project model, the direct recipients of the funds are scientists employed by the scientific institutions that either individually or in teams compete between themselves for resources in the framework of contests organised by the financing institutions. Here, two approaches can also be identified: the bottom-up model where scientists have flexibility in choosing the area of their scientific investigations, and the top-down approach where the decision makers have an impact on the topic of the conducted research, determining in advance the supported issues. The selection process of the best research proposals has a significant impact on the effectiveness of both the approaches mentioned above. Projects are usually qualified for financing based on *ex ante* reviews of the reserach proposals submitted by scientists, which are prepared by national or foreign experts. Committes comprised of scientists and officials can also be part of this process.

By assumptions, the project model is intended to facilitate comparison of many research concepts and through the selection of the best concepts to guarantee maximisation of the social and economic benefits of the investment in research in the context of limited resources. In practice, however, short-term projects are preferred which produce swift and local results. Because of this, permanent funding models that do not force scientists to artificially fragmentarise the research process into shorter

projects and divide their time between scientific work and preparation of grant applications (van Dalen et al., 2014) can be considred preferable.

The choice of the ways in which funds are appropriated to science is a policy decision which should take both government priorities as well as interests of all research market entities including scientists and scientific institutions into account. States usually establish hybrid funding schemes for science, the main challenge of which is determining the proportions between models promoting scientific excellence and emphasising rewarding the best scientific institutions and projects and those propagating egalitarianism, in which the funds are disbursed based on an assessment of genuine needs. The established relation between project financing and institutional funding indicates the level of competitiveness of the specific system. Attempts to increase the share of project financing have been undertaken to ensure effective use of public resources and enhanced scientific excellence of research projects. However, some research findings fail to confirm such a dependency (e.g., Auranen & Nieminen, 2010; Daraio et al., 2011; Sandström, Heyman & van den Besselaar, 2014). This is because an excessive increase of the share of project funding may have negative implications in the form of the destabilisation of scientific institutions[2].

Public financing system of science in Poland

Despite the internal expenditure on research and development in Poland increasing more than three fold over the decade according to the latest 2014 data of the Central Statistical Office of Poland (GUS)[3] reporting a value of PLN 16.1bn, compared to the GDP, they amount to a mere 0.9%. The share of government expenditure on science, despite declining year by year, still remains most significant and makes up over 45%. Budgetary appropriations in public scientific entities continue to be the main source of funding of scientific research and development works.

The Acts on the rules for the financing of science of 30 April 2010 (Journal of Laws No. 96, item 615), on the National Centre for Research and Development (Journal of Laws No. 96, item 616) and on the establishment of the National Centre for Research and Development (Journal of Laws No.

96, item 617) have exerted a decisive influence on the present system. The mission of scientific research funding in Poland has been entrusted to two separate executive agencies of the Ministry of Science and Higher Education (MS&HE). The National Centre for Science (NCS), which began its operations in 2011, was designates to organise contests and finansing of basic research, while the National Centre for Research and Development (NCR&D), which was reorganised, has become responsible for the creation of programmes and financing of applied-research and innovation projects.

According to the Act on the rules for the financing of science, funds earmarked for science are mainly intended for NCS and NCR&D, and thereafter to statutory activity of scientific institutions. The Act foresees the expansion of the stream of funds distributed via the aforementioned financing agencies with the aid of competitive mechanisms like the cost of statutory activity. Moreover, the statutory subsidies are to be tied more strongly to the quality of scientific institutions established by the new system of parameterisation. These decisions illustrate that there has been a shift in the emphasis towards contest and achievement-based financing.

An analysis of the structure of the budget in the years 2012-2015 shows that the majority of funds were invariably allocated to NCR&D, and their share gradually increased (cf. Figure 1). NCS financing until 2014, on the other hand, reamined stable, not exceeding 13%, only to slightly decrease last year by almost once percentage point. However, the resources passed on to scientific institutions for their statutory activity in 2013 — in accordance with assumptions — declined so as to reach a stable level oscilating around 31% over the next few years. The changes observed highlight the significance of the competitive mechanism when applying for funds for research projects.

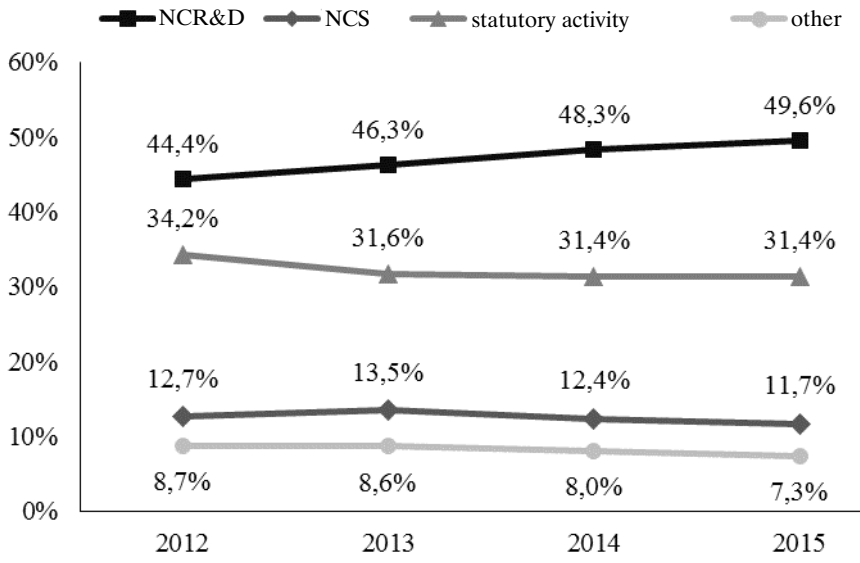
The contests organised by the NCS include domestic and international reserach projects performed by experienced scientists and researchers as well as doctoral scholarships and post doctoral fellowships. The beneficiaries of the offered support can include: scientific institutions, research teams, individual research workers or early-career researchers who do not hold a doctorate. Importantly, the NCS also finances grassroots projects.

The NCR&D subsidises applied research conducted in scientific institutions and companies that directly contribute to the innovative development of the economy and society. It contains instruments supporting cooperation between the business and science sectors on all

levels of technological readiness — right from the seed stage of conceptualisation of a particular solution up to the commercialisation stage. Unlike the NCS, a top-down approach is appropriate.

Transparency of funding arrangements is important both at the NCS and the NCR&D. At the NCS, the appliacations are assessed in a two-stage process of peer review. Once the formal requirements were checked by the agency, the submitted projects were subject to verification by the members of the panel of experts and external reviewers both from Poland and abroad. On this basis, the team of experts prepares a final rank order list. In NCR&D, applications are evaluated by experts from the world of science and economy, taking into account the scientific, technological and socio-economic objectives of the programmes. Selected projects are co-financed by the Centre from domestic and European funds.

Figure 1. **Structure of Ministry of Science and Higher Education budget expenditure (part 28, section 730 — Science) in the years 2012-2015**



Source: Own data based on MNiSW (2013). Report on the implementation of tasks and the budget in 2012 in the scope of Science and and implementation of the budget in part 28 — Science. Warsaw: MNiSW; MNiSW (2014). Report on the implementation of tasks and the budget in 2013 in the scope of Science and and implementation of the budget in part 28 — Science. Warsaw: MNiSW; MNiSW (2015). Report on the implementation of tasks and the budget in 2013 in the scope of Science and and implementation of the budget in part 28 — Science. Warsaw: MNiSW; MNiSW (2016). Report on the implementation of tasks and the budget in 2015 in the scope of Science and and implementation of the budget in part 28 — Warsaw. Warszawa: MNiSW.

Interest in the contests run by the NCS and NCR&D is growing from year to year, where the the programmes of the first agency are more popular. The smaller number of applications being filed in response to NCR&D contests may be down to the large scale of implemented projects and their specificity. The largest NCR&D beneficiaries are public universities and enterprises. The particpation statistics of various kinds of institutions in NCS contests indicate that representatives of public higher education establishments most commonly take part in them. Decidedly the highest factors of success for submitted applications and postulated financing are achieved by the staff of instututes of the Polish Academy of Sciences (Feldy et al., 2015).

Importance of financing model image for expeditious operation of the science system

Each change to the science system has an impact on the behaviour or individual scientists, the teams formed by them, as well as entire research institutes. This is why, according to Benedetto Lepori (2011), the model of public financing of science can be deemed as a system of partially overlapping and partially independent areas of interaction between funders and researchers. Although the course of these interactions are determined by the State, their particular patterns are to a large extent developed by scientists themselves. If they do not behave in line with the expectations of the agencies funding the research, the latter may have difficulties in achieving their set goals, which may lead to a State scientific policy fiasco.

In order to convince scientists to undertake the desired behavioural patterns from the point of view of the scientific policy and put a stop to the "gradual detraction of Polish science from academic centres (towards the academic peripheries) in Europe" pointed out by Marek Kwiek (2015, p. 8), a positive attitude to the implemented changes must be developed. In relation to the fact that the process of shaping beliefs and convictions is a drawn out in time, thus, they cannot be changed easily and it can be expected that any changes will take a longer period of time to set in. The starting point could be investigating how the implemented project model is perceived by getting to know the image that scientists have of it.

An image is defined as an overall impression that is created in the mind of an individual in the context of a specific object (Altkorn, 2004), in this case, of the project model. Every person creates such images of objects and phenomena as they make functioning in everyday life easier. Image can be considered in two aspects: rational and emotional.

The rational image relates to the opinions that people are aware of and which they directly express. It can be said that this is an "intellectual" image which is usually consistent in nature but can be skewed by the impact of social approval. Although it may provide lots of interesting information about the approach of scientists to the project model, the true treasure trove of knowledge in this scope will be provided by the emotional image. This is because emotional reactions may even appear before the conscious recognition of the stiumulus (Zajonc, 1985) and modify the course of the entire information processing process (LeDoux, 1998). This happens because the neuronal circuits participating in the evaluation processes are independent at least partially in relation to the circuits involved in non-evaluative processes.

The image of the project model is worth exploring in order to find out what impression it makes on scientists and, thus, how it may affect their choices and behaviour, which in turn have an impact on the implementation of objectives worked out under the State scientific policy.

Research Method

A qualitative methoed was used to examine the image in the project model. Individual in-depth interviews (IDIs) with Polish scientists were carried out in June and July of 2015. The target group covered by the study was comprised of persons with a doctorate of higher degree employed in research centres, that is, research institutes, institutes of the Polish Academy of Sciences and higher education establishments that have been conducting research for at least five years. The five years of experience in scientific reserach guaranteed that the respondents had sufficient time to form their own opinion about the institutional and legal environment and their functioning.

To ensure the representation of all areas of scientific disciplines and the presence in the sample of at least two representatives with the same

characteristics in two of three selection criteria, 18 in-depth interviews were carried out (nine with doctors without a habilitation up to 40 years of age and nine with persons over the age of 40 with a habilitated doctor's degree). Table 1 provides a detailed description of the sample structure. Given the sampling scheme applied it will be possible to draw accurate conclusions on the basis of the opinions and views presented by scientists.

Table 1. Struktura próby

	Humanities, social sciences and the arts(SH)		Life sciences (NZ)		Exact and technical sciences (ST)		Total	
	dr	dr hab.	dr	dr hab.	dr	dr hab.	dr	dr hab.
Research institute (IB)	1	1	1	1	1	1	3	3
Institute of the Polish Academy of Sciences (PAN)	1	1	1	1	1	1	3	3
Higher education establishment (SW)	1	1	1	1	1	1	3	3
Total	3	3	3	3	3	3	9	9

Source: own elaboration.

The interview guide contained direct questions on the basis of which the rational image of the project model could be identified. Furthermore, in order to reach the emotions of the respondents, the scenario envisaged the employment of projective techniques. This is because the respondents frequently cannot or are unwilling to verbalise their deeply hidden attitudes or motivations. Sometimes also they are unaware of them or fear that they will not be received well upon revealing the true motives of their actions. Projective techniques, which consist of the researcher "projecting" her/his experiences and feelings to other persons or objects to help overcome the aforementioned problems. By using symbolics, they encourage the individual to turn the internal censor off in the form of rationalisation and expressing subjective opinions indirectly.

Two projective techniques were used in the study. To start with, the respondents were asked to voice spontaneous associations with the project model. Then, each respondent had to imagine applying for funds within that model as a sports discipline and explain the reason for the referenced association. The emotions that were associated with applying for project funding were determined on this basis.

Rational image of the project model

The comments of scientists reveal that they perceive certain advantages of the project model functioning in Poland. The respondents mainly emphasised that grants constitute a source of additional funding which guarantee them their research freedom. What is more, they also allow resources to be allocated to trainings and conference trips. Apart from bringing economic benefits, they also contribute in many different ways to the development of a scientific career. They teach the formulation of research objectives and discipline on the study implementation stage, facilitate building a network of contacts and engage in international cooperation. The receipt of a scientific grant is also connected with immeasurable benefits in the from of recognition from superiors and from the whole research community. Thus, the project model may help build the position of the scientist and constitute a motivating factor to make that extra in their scientific work. Table 2 presents examples of statements of the respondents confirming the benefits linked to project financing perceived by them.

Table 2. Examples of statements demonstrating the benefits linked to the project model

Categories	Statements of the studied scientists
Additional financial resources	If one already has some sort of projects, there usually always is a fund for conferences, trips, delegations. (dr, ST, IB) If it only brings publications and cash, the management completely does not go into what we want to do or how we are going to do it. The management only evaluates by the effects of our work and this gives great scientific independence. (dr hab., NZ, PAN)
Supporting scientific career to develop	A system based on a project method is good because it teaches a certain kind of discipline, there has to be some sort of scientific effect. (dr, HS, IB) I saw how people work in other countries (...). I could compare our wirk with .work abroad. (dr, ST, SW) We have more results, we can publish more so this development is definitely there.. (prof. dr hab., NZ, IB)
Recognition	You have your project (...) and immediately you become a well-known person. (dr, NZ, PAN) Once we get these grants, then this is greatly regarded. In the sense that at all councils, meetings, annual summaries the team is praised greatly (...). Somehow this is motivating; it's nice that it's like this. I also feel that I am a part of something good. (dr, ST, PAN)

Source: own elaboration.

The interview participants voiced contradictory opinions on the question of certain issues associated with the project model. Most controvercies concerned the evaluation of the papers by reviewers and the criteria used in the selection of contest applications. Some scientists claimed that the contest criteria are clear to them and that the applications were assessed fairly. According to others, however, there was a problem of lack of transparency of the contest rules and injustice on the part of the evaluators of the submitted projects (cf. Table 3). These latter statements appeared relatively often. The respondents were convinced that the reviewers are unreliable also as a result of their large workload and little amount of time that they can dedicate to becoming familiarised with the contest application. The conflicting opinions presented in reviews also turned out to be a problem. Some researchers claimed that reviewers were lacking in knowledge and despite this didn't think of introducing quantitative indicators for the ratings. Moreover, the reviewers were also suspected of being subjective and guided by the person of the applicant instead of the submitted research concept. It was postulated that the anonimity of the reviewers be lifted and for the sevices of foreign reviewers to be used in order to counteract the formation of coteries.

Hence, the respondents were in agreement as to feeling the pressure of obtaining grants. Its source is, on the one hand, lack of resources for research and, on the other, pressure from an environment where getting a grant is regarded as "the done thing". The former of the reasons exerts particularly far-reaching consequences, which contribute to a sense of uncertainty in terms of research plans and lack of employment stability. Particular pressure to obtain project funding is felt by young scientists; it is not uncommon for this to lead to the most talented individuals giving up their academic careers and leaving the science sector. The hiring of scientists and researchers only for the needs of several projects not only makes soliciting valuable employees more difficult but also forces them to be laid off once the given research project has been completed. Furthermore, the lack of long-term financing results in scientists assuming a protective attitude by avoiding taking on risky research. The respondents are anxious that ambitious projects will end with failure and that they will have to return the funds obtained by them.

Table 3. Examples of controvercial opinions concerning project financing

Positive statements	Categories	Negative statements
In the case of NPRH, I must commend that they were straightforward and clear. They change each year but this isn't that bad in actual fact. Because somebody up top has a comprehensive view of it. (dr, HS, PAN) It is only thanks to this grant that I understood how big a problem we have with EU grants because it is presented to us that the Union is beaurocratic, that it "makes bananas straight" All of this is untrue, everything is so logical there, everything has its own explanation. (dr, ST, SW)	Transparency of contest criteria	I have the impression that this is not transparent because sometimes the parameters according to which a given project is assessed, in other words, what they truly expect from us, are not explained precisely. (dr, NZ, IB) We are writing, for instance, an EU project and there seemingly are assessment criteria but we never know what those people pay attention to. Because then you go to some meeting and someone says that we are going to make arrangements for this and that but this is nowhere to be found in official documents. (dr, ST, PAN)
It seems to me that my project was assessed fairly and substantively. But this was the first contest where the most money was and I think it was also to show that the new model of financing science is functioning well. (dr hab., NZ, PAN)	Integrity of work of reviewers	Sometimes it can be so frustrating when reading unqualified reviews. It's evident that the reviewer has no idea whatsoever about it because they are asking questions resulting from a lack of knowledge. (dr hab., ST, SW) Sometimes these reviews are like a harsh, unmeritorious response. (…) I have the impression that these applications are not read thoroughly all the way through; the only thing that counts is who wrote this request. (dr hab., NZ, PAN)

Source: own elaboration.

According to scientists, grant should in a way complement existing funding streams and not constitute the entire source source of funding for research. The respondents advocate the need to increase funds earmarked for contest funding so as to eliminate situations where worthy projects are rejected due to insufficient resources. They also see the need to eliminate the difficulting in soliciting funding under the project model for interdisciplinary research. The bleak prospects of getting a grant lead to some scientists trying to artificially fit the designed research to the contest requirements and expectations of experts when submitting financing applications.

Respondents admit that they dislike applying for funding and often have a feeling of pointlessness when preparing their contest

applications. What is more, they treat a funding rejection as their failure. These negative feelings are exacerbated by the relatively high costs of applying for the financing of research, which also require them to put in a lot of time, including their own free time, into preparing the applications. This situation is made worse by the fact that applications for funding, as was noticed by the respondents, are modified and developed each year.

The necessity of subjecting their scientific career to contest schedules is an additional discomfort for the scientists. Time pressure appears not only on the application preparation stage but also during project execution. Numerous controls, drafing of reports and settlements of the finances turn out to be an additional burden. Respondents believe that too much attention is being paid to formal affairs during project settlement stage with neglect of the substantive content. The beaurocracy connected with public procurement procedures are particularly burdensome as they cause downtime and limiting research time. Hence, various forms of assistance provided in this respect by the institutions employing them have been enthusiastically welcomed. Table 4 contains examples of statements indicating the need to introduce changes to the project model.

Based on the conducted interviews, the rational image of the project model is ambiguous. Scientists generally hold unfavourable opinions of it in relation to the legitimacy of certain assessment criteria in contest applications, insufficient resources distributed through this channel, too short a financing period, pressure exerted on researchers, contributing to employment insecurity, having to artificially adjust research plans to the requirements of the contest and the expectations of the evaluators, as well as beaurocracy on the application preparation and project execution stage. Alongside these opinions are conflicting views on the credibility of the reviewers and the transparency of the assessment criteria applied by them. On the other hand, project financing is considered to have a positive impact on the research community by promoting scientific career development and making available additional funds for research as well as commending succesful researchers winning research grants.

Table 4. **Examples of statements indicating the faults of the project model**

Categories	Statements of the studied scientists
Lack os sufficient funding for research	If it was enough to cover 60–65% of the submitted projects, the poor projects would indeed be rejected while the good projects would successfully be completed. The way it is now, it is not even enough to cover the good projects. (dr, HS, PAN) The best people (...) leave, others go abroad if they want to work in science and if not, they go into business, (…) simply working behind a desk for several times greater pay; without having to stress over whether or not they get the grant. (dr, NZ, IB) As I'm writing this application I am 90% certain that it will be rejected and I really feel how pointless this action is. (dr hab., HS, PAN)
Short funding horizon	If a person gets project funding for three years, this means that large projects frequently cannot be executed because three years is not enough. (…) This time pressure is very disquieting because it leaves no room for this integrity. (dr, HS, PAN)
Employment instability	Right now, grants are close to depletion and finding employment for these people is a real problem (...) This is an ill where you emply somebody for four years for them to do their doctorate and this is an investment for the educational establishment, educating them, and then the establishment has to actually let the qualified employee leave. (dr, NZ, SW) The problems with grants is that this grantology itself forces hiring people for a while only, which sometimes makes it really difficult to find such people. (dr, ST, PAN)
Pressure to obtain grants	Obtaining grants exactly, now I know that this is what my educational establishment expects (…) I do try for this not to be blocking. Sometimes this scares me, sometimes it transforms into some sort of anxiety of whether or not I will be able to cope. (dr, HS, SW) There is an immense amount of pressure [on getting grants]. Here, it's mainly on this, perhaps even in first place in relation to publications. (…) This makes work difficult. Because of this, proper work of the scientific sort that something is published is not appreciated. (…) You can't develop the way you would want to. (dr, ST, IB) Someone just got a grant and said that they got it fourth time round but they never mentioned it earlier. He submitted it and got rejected, so it turns out that it's quite a difficult topic. People only talk about it once they succeed. Surely, though, talking about failing and what could be done to succeed could prove to be really helpful. But it's treated as a shortcoming and failure. If I failed to get it, you feel foolish, what's sure is that it's definitely not a comfortable situation. (dr hab., HS, IB)
Dubious assessment criteria of contest applications	If this project is for young doctoral students who do not yet have academic achievements, an evaluation of such achievements is pointless. (dr, NZ, SW) You have to have experience and this cannot always be acquired without resources to later apply for a larger project of some sort. It's a vicious circle. (dr, ST, IB) Certain NCS guidelines are strange. For instance, a manager who obtained a grant in the past will stand a better chance. This way of thinking a priori limits the number of people that can battle their way through the system. (dr hab., ST, SW)

Cont. table 4

Categories	Statements of the studied scientists
Artificial adjustment to contest requirements	I have to adjust to meet the assement key. And I have to design the project to fit something that I don't truly like but if I don't prepare it in this way, I will not get the funding. (dr, HS, PAN) Grants are often not created because someone wants to conduct some sort of research but research concepts are created to get the grant. (dr hab., HS, IB)
Time-consuming nature application preparation	Getting the project ready — we have just been preparing for the NPRH — this ate of up one and a half months of work on the grant application alone. And if you try submitting an application three times a year, you then lose four and a half months which could have been dedicated to something more productive. (dr, HS, PAN) These new projects have more and more tables, involve more and more work, writing up every penny. (dr hab., NZ, PAN) It would be good it some of the work connected with preparing grant applications was taken on by the university. (…) Grant applications are usually completed twice a year, then let's say that there is a month of intensive work on the application alone. Of course, you spend the rest of your time thinking about what you could do there. (dr hab., ST, SW)
Beaurocracy on the project implementation stage	The implementation of the project alone is painstaking. (…) There are so many rules which, as a manager, I should know. (…) All the time this is consuming a portion of my time that I could dedicate to science. (…) 1/3 of it is conducting the research, he next 1/3 is reading and arranging research plans, and the last 1/3 is running the project: writing orders on suitable forms whether or not it is in agreement with the procurement list, with the Public Procurement Act, with the Institute's general policy, with general provisions… (dr hab., NZ, PAN) Handling is terrible once you get it and project administration is so time consuming and thi is unnecessary. We have overly developed, they become more and more complicated year by year. (dr hab., ST, IB)
Cumbersome public procurement procedures	We need computer equipment and we order it but it comes in half a year's time. How can they do this, surely, it will be out of date a long time ago; there are completely different things on the market from what we have ordered. (dr, ST, SW) Let us be entirely honest that public procurements are a tragedy. When I talked to many people around the country, computers to execute the project are roughly purchased over one year (...). If you take on a person for a project, they should already have a computer sitting on their desk. (...) Otherwise it is a waste of these people's energy. (...) They come to work and they don't have anything to work on. (dr hab., ST, IB)

Source: own elaboration.

Emotional image of the project model

Where in the case of statements of scientists concerning the rational image individual opinion apeared indicating the benefits of the project model, no such statements were recorded in the case of the emotional image. The association technique was the first one that was used in the interviews.Jako pierwszą w wywiadach stosowano technikę skojarzeń. Table 5 contains the results of this stage of the study.

Four categories can be identified from among the associations mentioned by the respondents. Project financing is associated, among others, with the possibility of obtaining addtional resources; however, in the context of severely inadequate research funding it is difficult to consider this statement as positive. Many associations refer to the little or no prospect of getting a grant and to the negative feelings that this fact invokes in the respondents. Researchers have a sense of the application for research funding requiring a great deal of work on their part, which is done in vain. Just as in the case of responses to questions directly concerning the rational image, statements indicating an excessive burden being placed on researchers when preparing their contest applications by the formal contest procedures and the sense of time loss have also appeared here. Moreover, some researchers see the weaknesses present in the evaluation of applications and the award of research funding on its basis.

The outcomes of the second of the applied projective techniques supply further knowledge about the emotional approach of researchers to the project financing model. The associations with sport disciplines provided by the respondents can be grouped into five categories (cf. Table 6).

Only one of the mentioned associations with team games is neutral and concerns the perception of the application process and then the execution of the project as a task, which cannot be successful without the involvement of the whole research team. Applying for grants is also strongly associated with rivalry where — due to the limited financial resources — one has to accept harsh evaluations on the part of the reviewers. Hence comparisons to brutal sport disciplines like boxing, hockey or rugby appear. On the other hand, through an association with weight lifting one of the researchers highlights the importance of many scientific achievements of applicants and therefore suggests the privileged position in contests of Warsaw and Cracow scientists.

Whereas the sport disciplines that the respondents referred to like sprinting and short-distance races demonstrate the time pressure felt when preparing applications and the negative emotions evoked by the fact of continuous changes being made in contest programme terms and conditions.

Table 5. Associations with the project model

Categories	Association of studied scientists
Financial resources	An additional source of funding without which we won't be able to survive, without which everyone will scarper. (dr hab., HS, SW)
Little prospect of getting a grant	Minimal chances of getting it. (dr, HS, PAN) That you won't get it [the grant] because only 10% are awarded. (...) There always was some kind of unpleasant objection that the achievements were too small in a contest where the achievements were meant to be small; too many achievements making it unreliable. (dr, NZ, PAN) Slim chances, that there's definitely strong competition, that no, what is the point of me even trying… (dr, ST, IB) A sense of such helplessness. (…) This helplessness or disappointment would be smaller if the content of the reviews actually substantively showed some kind of mistakes or flaws in the research project, and this was essentially missing from the reviews. (dr hab., HS, IB)
Difficulties of a formal nature on the funding application stage	Time pressure. (...) We had to prepare a grant application when it wasn't yet postedonline. And we spend a month on it, after which (...) two weeks before the date it suddenly turned out that the table concerning funding has been construed in such a way that we had to smash everything down (...). And this leads to a person having to redesign everything within the space of two weeks and it is definitely done less thoroughly this time round, spending less time on it than one would want to. (dr, HS, PAN) The effort of writing the application, struggles and nerves, and stressing over whether or not I will get the money. Because it is really a lot of work in reality. Three months I was writing to the NCS. Day in, day out, I did nothing but this. (dr, HS, SW) Beaurocracy. (…) You can write a project very quickly but later, in order to fulfil all these formal requirements, unfortunately it sometimes takes years to win some kind of project. (dr, NZ, IB) It is stressful like this participation in a contest. Whereas my highly negative associations are connected with the whole IPC system of filling in data.. This is very counter-intuitive; you really have to dig into the details and, speculate. (…) This whole background should bring greater transparency, facilitate writing. Sometimes this is tiring and frustrating. (dr, NZ, SW) That there are probably lots of papers, that you have to make your way through these rules and regulations, that this changes from competition to competition, (…) that there is too much of this and impatience, that you have to get through this, (...) that one could work on something else than scouring through this. (dr, ST, IB)

Cont. table 5

Categories	Association of studied scientists
	Not again... Again, that is, the torment begins. (...) The section titled cost estimate gives rise to quite negative feelings in me because I believe that nobody should demand that I have to know how much a good quality computer costs and what am I meant to do to this computer, how much should I buy it for, for it to meet some kind of assumptions, or that I have to be capable of valuing the work of a hired IT specialist.. (...) This year, for instance, because I was submitting an application for this, I lost one month's of this other, useful work on preparing the grant application (dr hab., HS, PAN) Jesus, I'm going to have to fill in these papers again. (dr hab., NZ, PAN) There simply is beaurocracy, which you have to get through. (prof. dr hab., ST, PAN)
Complaints against application evaluation	When I once saw this list of results, it was terrifying how unfairly these funds were distributed. (dr hab., HS, SW) With the reviews. That in reality the experts are not experts. (...) We should be assessed by those that dwell in these realities. And from a specific field, and it can't be a biochemist or biologist assessing in agricultural sciences because they will have a completely distorted understanding of what is possible. (prof. dr hab., NZ, IB)

Source: own elaboration.

Associations grouped into the fifth category which refer to the perception of application assessment criteria and review fairness are particularly significant. The mentioned comparisons (races between marathoners and cyclists, banging one's head against a brick wall, jumping with a parachute that does not open) demonstrate the extremenly unfavourable perception of aspects of the project model by researchers./ The respondents are particularlyy critical of the lack of clear and transparent information about contest requirements and the inadequacy of the criteria used. The comparison of application evaluations to figure skating scores leads to some interesting reflections. According to a researcher representing social sciences and the humanities,the evaluations of reviewers are essentially subjective. A representative of exact and technical sciences believes the opposite and highlights their measurability. The mentioned differences in opinions emphasise the domination of negative opinions on project funding especially among the representatives of the social sciences and the humanities.

Table 6. Project funding as a sporting discipline

Sporting disciplines	Substantiation
Category I	
Team game	There definitely is a need for a team because nobody can create a project on their own. (dr, NZ, IB)
Volleyball	Because the team and other team games have a greater negative contact with other teams and the net is here. (dr, ST, SW)
Category II	
Hurdles	Several people want to be first in the sense of winning something, so they are striving to the same goal but that they have some sort of obstacles along the way. Some do better, some worse and ultimately only one of them wins. It's obvious that it is not just one here, there always is some kind of ranking. (dr, ST, IB)
Boxing/ice hockey/rugby	It is a fierce battle, however, a truly heavy battle. Because if I read that 15% of applications get it. When reading the reviews of some reviewers, it is like a 'beat 'em up'. It's close combat. (dr hab., NZ, PAN)
Category III	
Wightlifting	If a given laboratory is capable of taking on a lot, demonstrating many achievements, win people with their achievements, they will always get it. And those that don't have many, that haven't achieved a great deal yet in this sector, then even if they have interesting ideas, they have a very faint chance. The Jagiellonian University, the University of Warsaw, the Nencki centre (...) will always get them because these are heavyweight institutes. (dr, NZ, PAN)
Category IV	
Sprinting	Persistent reform makes a person feel like a sprinter who wants to meet all the requirements but cannot meet them because the Ministry has changed something yet again. (dr, HS, PAN)
Short-distance race	Where many people are competing with each other. (…) Later, everyone gets so tense and tries to quickly do this quickly, in ever-shorter periods of time. (dr, ST, PAN)
Category V	
Races between marathoners and cyclists	We ride on something completely different from psychologists. Comparing conclusions that go through political science panels, they have it easier there because there is no such comparison, and sociologists will always fare worse compared to psychologists because they have higher journal ratings. (dr, HS, IB)
Jumping with a parachute that doesn't open	Hurdles, with obstacles. At the end there is some sort of parachute jump with a parachute that doesn't open, you just land flat on your face. I'm saying this in the context of the risk involving me losing time, several months; I truly simply work my guts out and later the effect is that I get a really ridiculous review. (dr, HS, SW)

Cont. table 6

Sporting disciplines	Substantiation
"Banging your head against a brick wall"	...Or the competition in which you don't know the rules well. (...) Conflicting information from two different employees have also repeatedly happened. Then if the institution involved in the substantive preparation of the principles of functioning of this very grant system does not have any clarity, how is the applicant meant to have clarity and where are they to obtain this information from? (...) The low probability of obtaining this grant is the most discouraging factor because I think that if it was the case that we file for every second grant, then we get it, then a person can see the point to this. (dr hab., HS, PAN)
(NOT) figure skating on ice	You have to present it so that others will like it. Because in figure skating on ice 50% or 80% of the contestants do not fall down and get points for the created impression. (dr hab., HS, IB) However, we have the advantage of these being the exact sciences and they cannot be evaluated completely ad lib. It's not like dancing on ice where judges rate the aesthetics. (prof. dr hab., ST, PAN)

Source: own elaboration.

The conducted analysis indicates the existence among researchers of a negative emotional image of the project model. Researchers perceive striving to obtain grants as a difficult rivalry which requires large amounts of work to be undertaken in a short period of time (especially in order to meet the formal requirements) and is likely to end in failure. What is more, the mentioned associations, similarly to the statements concerning the rational image, point to scientists holding unflattering conceptions about contest criteria which, according to them, are inadequate, unclear and are subject to change too often. Complaints about the unreliability of reviews and the resulting ailings in grant distrubution could also be found in the collected statements. A very strongly negative image of project funding can be found among humanists and social researchers. This may result from the fact that the discussed model has completely overturned their priorities and ways of operation, introducing rigorous monitoring of scientific work and depending research funding on formalised measurements of scientific productivity.

Implications of the image of the project model

The two investigated dimensions of the project model image, that is, the rational and emotional dimensions largely correspond with each other. Researchers, especially humanities and social science investigators have a rather unfavourable image of project financing. It is also quite symptomatic that the few positive opinions on the discussed model occurred only in the form of a response to a direct question. However, there was a lack of statements with such a load appearing when spontaneous associations describing the emotional image were being provided. This may be caused by the need for social approval arising in some researchers during the first part of the interview. The introduction of a system which is based on applying for research funding on a competition basis under the banner of the development of science and enhancing scientific excellence could have prevented some researchers from its overt criticism, suggesting that they cannot find themselves in this new reality.

In order to change the way in which the project model is perceived, it turns out that the application procedures and IT systems used for this purpose must be optimised. Agencies organising contests should also carefully look at the legitimacy of implementing certain contest criteria such as, for instance, requiring extensive achievements from young researchers. The criteria applied should also be adjusted to the expectations of the representatives of given research disciplines. Furthermore, researchers want to the formal requirements on the execution and project settlement stage to be simplified. Irrespective of this, researchers expect to receive support in administrative matters from the scientific institutions employing them.

The implementation of these changes alone may not necessarily lead to an improved image of project financing if they will not be supported by relevant information measures. Based on the conducted interviews it is clear that the current level of knowledge of the formal contest requirements is on an unsatisfactory level. This is why additional activity will have to be undertaken to explain to scientists in detail the contest requirements and their underlying reasons once the proposed improvements have been introduced. These actions should also include the provision of arguments supporting the adopted solutions, which will dispel

clichéd patterns of thought (e.g., increased mobility of scientists perceived as a loss of qualified professionals). By increasing the level of understanding of contest requirements, it will be possible to secure greater acceptance for them of the academic environment. Importantly, large-scale information measures should be undertaken in good time to ensure that scientists are not so pressed for time by having more convenient dealdines for applying for resources.

In line with the expectations voices by scientists, efforts should be made to create, on the one hand, long-term project financing possibilities and, on the other — providing support of interdisciplinary reserach under the project. It is also recommended that more care and attention is paid to the selection of reviewers. As for researchers, a task approach to participation in contests should be facilitated, which will help offset the unfavourable phenomena resulting from treating grant application denials and failures too emotionally.

Typically, some of the negative views held by researchers were not influenced by their own experiences but the grant application stories repeated by academia. The clash of these stories with the relatively low coefficients of success when applying for funds from research funding agencies evokes feelings of pointlessness naukowców among scientists and fear of failure. Combatting these tendencies is extremely important as they build an intimidating atmosphere around contests. This atmosphere leads to a general disapproval for the new research funding system and may detract people from submitting contest applications and, in extreme cases, contribute to pushing more talented individuals/units outside the science sector in Poland. This is why the decision-makers and financing institutions should undertake communication campaigns aimed at combating distrust towards contests and helping to dispel the myths surrounding the allocations of funding under the project model (e.g., presentation of positive stories of scientists that successfully obtained funding and managed to complete their innovative research). The positive image of project financing is worth building through communication emphasising the advantages of this model already niticed by some researchers, like: access to additional research resources, research freedom and recognition, research career development and the opportunity of cross-border cooperation.

Ending

One of the key issues in shaping scientific policy remains the choice of the right proportions of institutional and project funding, This will help finding a compromise between egalitarianism and an elite approach to the promotion of science to ensure optimum development of the scientific potential of the country. Since there is no single, objectively the best funding system, the implementation of solutions inspired by models that proved successful in other countries may prove inadequate. Such a system shouldd be adjusted the economic, social and cultural conditions of the relevant country. The disproportionate from the point of view of researchers increase in selectivity as to the disbursement of funds may in the long-term constitute a threat for the development of certain scientific disciplines and imply a loss of diversity in science. What is more, the insecure financial position of scientific institutions may lead to organisational and management problems that will inevitably have consequences for researcher engagement in scientific activity and for the quality of the research conducted by them. This is why a diagnosis of the project model image reinforced in Poland and its optimisation based on the research results obtained remain so crucial. The adaptation of this model to the expectations of researchers will allow it to receive greater approval among them, which will translate into a higher level of scientific excellence and innovation in the country.

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Marzena Feldy, Ph.D., Information Processing Institute — National Research Institute, Poland — doctor of economics in the field of management studies, assistant professor at the Information Processing Centre - National Research Institute. She manages the work in the Laboratory of Statistical Analysis and Evaluation (IPC NRI) that runs research on scientific and innovation policies. Author of many publications and analyses of the science and higher education sector as well as consumer behaviours and marketing communication. Graduate of the Warsaw School of Economics and the Faculty of Psychology at the University of Warsaw. She applies interdisciplinary approaches in her research harnessing knowledge from both management and psychology.

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al. Krakowska 110/114
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