Scoping Workshop on Mutual Learning Exercise on Performance Based Funding Systems

Resul TURGAY
TÜBİTAK
Department of Science, Technology and Innovation Policy

07.09 2016, Brussels
Our Performance Based Approaches

Highest Quality Research

Award According to Project Performance

Incentives for Quality Oriented International Publications

Research Centers

Centers of Excellence (1004)

Assessment of Higher Education Research Labs
Award and Awards for Highest Quality Research

Project Performance Award

• Up to 200 K TL award for successfully completed projects

Support increases due to performance!

Incentive Program for International Scientific Publications (UBYT)

• Up to 7,500 TL article support for researchers

• Incentive increases by folds due to quality!
• Each journal is assessed by objective criteria
Supporting Centers of Excellence

Support Program for Centers of Excellence (1004)

A new insight into specialization of Research Infrastructures in Turkey towards becoming Centers of Excellence

Infrastructure
Ministry of Development

Large Scaled Project Support
TÜBİTAK

Center of Excellence
Specialization

Qualified Thematic Research Centers

Consorsium:
• Center + Private Sector

Industry Stearing Board

Assessment of Higher Education Research Labs

Research Competency (%60)
Management Competency (%40)

Competency Evaluation Report
• Expert notes
• Evaluation Grade
• Feedbacks

Monitoring and Proficiency Assessment Committee

Research Infrastructures Board

Research Competency Criteria:
- Infrastructure Size and Human Resources
- Scientific Production and Academic Appeal
- Cooperation and Interaction
- Technological Production and Economic Contribution
- Education, External Use and Diffusion

Management Competency Criteria:
- Leadership and Strategic Management
- Human Resources Management
- Project Management
- Process and Quality Management
- Results Relating to Users
Assessment Model for Higher Education Research Labs

Qualitative Evaluation (Site Visit)

- Strategic Management
- Human Resources Management
- Collaboration Management
- Project Management
- Process and Quality Management
- Results Regarding Customers/Partners/Users

Quantitative Evaluation

- R&D Intensity
- Center Size and Human Resources
- Project Accumulation
- Domestic Collaborations
- National Collaborations
- International Collaborations
- Level of Scientific Activity
- Level of Technological Activity
- Accordance With National Policies

Site Visit Team:
- Evaluators
- Ministry of Development
- TÜBİTAK

Technical Evaluation Report

- Center Overall Score
- Site Visit Evaluation Report
- Research Center Feedback Report

TÜBİTAK
Major Challenges and Expectations

• Possible shortcomings of PBF
• Examining the qualitative and quantitative evaluations in the concept of RBF and their pro’s and con’s
• Experiences on effective assessment system for research laboratories
Thank You
PRFS in the Czech Republic based on new R&D evaluation methodology

Vlastimil Růžička, Tomáš Vondrák
Technology Centre CAS, Prague

Mutual Learning Exercise on Performance Based Funding Systems
(Scoping Workshop)

7 September, 2016
Brussels
A new R&D Evaluation Methodology and Performance based Research Funding System

- Project ran by the Ministry of Education, Youth and Sports (MEYS) between 2014-15, project team headed by prof. Jitka Moravcová (University of Chemistry and Technology)

- Objective: development a new R&D evaluation methodology (EM) and funding principles.

- The R&D EM:
  - Conducted on a national basis
  - To provide strategic information for all actors in the R&D system
  - Evaluation results → institutional funding system (PRFS)

- Developed by consortium led by Technopolis (UK)
  - Technology Centre CAS (CZ)
  - Nordic Institute for Studies in Innovation, Research and Education, NIFU (NO)
  - InfoScience Praha (CZ)
R&D Evaluation Methodology, expectations

- Both formative and summative functions
- Cover outputs, impacts, and institutional projections of research development
- Take into consideration the different missions of research organisations and the field specifics
- Evaluation processes resistant to clientelism and conflicts of interests
- Total costs should not exceed 1% of public institutional support for R&D in a five-year time period

Source: R&D Evaluation Methodology and Funding Principles, 2015
R&D Evaluation Methodology, key principles

• The evaluation methodology (EM)
  ➢ Reflects the strategic policy objectives for the R&D system
  ➢ Acts as source for strategic information and directly informs public institutional funding for research organisations

• The evaluation
  ➢ Carried out at the level of field-defined Research Unit (RU) within an Evaluated Unit, i.e. a research organisation or in the case of the HEI, a faculty
  ➢ Based on informed peer review: metrics used but not a substitute for judgment
  ➢ Covers all research organisations above a critical size
  ➢ A single framework for assessment of all RO while allowing for a reasonable extent of field- and RO type-specific variations
  ➢ Robust process with a minimum possible cost and burden

Source: R&D Evaluation Methodology and Funding Principles, 2015
Funding system

- **Block grant**
  - to ensure trust, continuity and stability
  - based on past allocation
  - political decision

- **PRFS contract**
  - allocates funding based on the results of the new EM
  - allocates funding based on (past) performance

- **Performance agreement**
  - negotiated and concluded between research organisation and its funding ministry
  - focused on strategic projects to promote institutional development
  - future oriented

Source: R&D Evaluation Methodology and Funding Principles, 2015
Weight of funding system components

- Block Grant: 80 %, smooth transition from the previous EM
- Performance agreement: 5 %, *light touch*
- Performance based funding system: 15 %

Current state

Institutional funding ~ 50 % of public resources
Performance based Research Funding System (PRFS): funding principles

- Different **pots** (budgets) for different types of research organisations (RO).

- Different types of RO fulfil different missions in the research system - they should not compete for the same budget pot. Competition will be restricted to groups of RO with comparable mission.

- Allocation of money to different pots is a policy decision.

- Funding mix at the institutional level (i.e. funding shares of institutional/targeted/contract research) needs to be taken into account when deciding on size of pots.

- Changes in PRFS funding should be implemented gradually over the funding period.

Source: R&D Evaluation Methodology and Funding Principles, 2015
Translation of EM scores into funding

Source: R&D Evaluation Methodology and Funding Principles, 2015
# Research Organizations

<table>
<thead>
<tr>
<th>RO Category</th>
<th>RO sub-category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scientific Research Organisations, ScRO</strong></td>
<td>CAS</td>
</tr>
<tr>
<td></td>
<td>HEI - private</td>
</tr>
<tr>
<td></td>
<td>HEI – public &amp; state</td>
</tr>
<tr>
<td></td>
<td>Research Infrastructure</td>
</tr>
<tr>
<td></td>
<td>Research hospitals</td>
</tr>
<tr>
<td><strong>Industry &amp; Business services Research Organisations, IBRO</strong></td>
<td>AgriFood RTO</td>
</tr>
<tr>
<td></td>
<td>Industry RTO</td>
</tr>
<tr>
<td></td>
<td>Business services RO</td>
</tr>
<tr>
<td><strong>Public Services Research Organisations, PSRO</strong></td>
<td>Government Labs</td>
</tr>
<tr>
<td></td>
<td>Policy services RO</td>
</tr>
<tr>
<td><strong>National Resources, NatRes</strong></td>
<td>Cultural services RO</td>
</tr>
</tbody>
</table>
PRFS: Quantitative musing - weighting the evaluation criteria for different types of ROs

- EM output: scores from 1 to 5 for five categories:
  - Research environment
  - Membership in the (global and national) research community
  - Scientific research excellence
  - Overall research performance
  - Societal relevance

- PRFS pot divided into 5 “subpots”

- Independent pots for RO families
  - Separate pots for CAS and HEIs
PRFS: Quantitative musing - weighting the evaluation criteria for different types of ROs – scenarios, scenarios...

<table>
<thead>
<tr>
<th></th>
<th>ScRO</th>
<th>IBRO</th>
<th>PSRO</th>
<th>NatRes</th>
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<tbody>
<tr>
<td>Default scenario</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific research Excellence</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Overall research Performance</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Societal Relevance</td>
<td>10%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Membership of the res. comm.</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Research environment</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Medium scenario</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific research Excellence</td>
<td>20%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Overall research Performance</td>
<td>50%</td>
<td>50%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>Societal Relevance</td>
<td>5%</td>
<td>20%</td>
<td>30%</td>
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<tr>
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<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Research environment</td>
<td>15%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
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<tr>
<td>Radical scenario</td>
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<td></td>
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</tr>
<tr>
<td>Scientific research Excellence</td>
<td>70%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Overall research Performance</td>
<td>10%</td>
<td>10%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Societal Relevance</td>
<td>5%</td>
<td>70%</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>Membership of the res. comm.</td>
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<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Research environment</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>
Translation of evaluation scores into PRFS funding

• Allocation based on size in terms of FTE researchers, i.e. person scores
  – Definition of researcher
  – Reliable values for researcher FTE
  – Multiple roles of HEI academic staff

• Allocation based on relative scores
Example of allocation based on RU size

RU₁: 10 R&D FTE x score of 4 = 40 [weighted R&D FTEs]
RU₂: 18 R&D FTE x score of 2 = 36 [weighted R&D FTEs]
RU₃:  5 R&D FTE x score of 5 = 25 [weighted R&D FTEs]

→ total weighted R&D FTE = 101

Shares of PRFS pot:

RU₁: 40/101 x criterion weight of 10% = 3.96 %
RU₂: 36/101 x criterion weight of 10% = 3.56 %
RU₃: 25/101 x criterion weight of 10% = 2.48 %
Example of allocation based on relative scores

Set of rules: RO scores = weighted avg.(FTE) of RUs:

<table>
<thead>
<tr>
<th></th>
<th>Funding period 1</th>
<th>Results of evaluation</th>
<th>Period 2 funding</th>
<th>Budget adjustment coeff.</th>
<th>Funding period 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO1</td>
<td>20</td>
<td>25%</td>
<td>25</td>
<td></td>
<td>37.9</td>
</tr>
<tr>
<td>RO2</td>
<td>180</td>
<td>50%</td>
<td>270</td>
<td>1.5151</td>
<td>409.1</td>
</tr>
<tr>
<td>RO3</td>
<td>70</td>
<td>-50%</td>
<td>35</td>
<td>1.5151</td>
<td>53.0</td>
</tr>
<tr>
<td>Budget (pot)</td>
<td>270</td>
<td></td>
<td>330</td>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>
And the opposition is...
Fierce, at the least!

- General resistance of policy-makers
  Current “50:50” support viewed as a sufficient healthy competition which singles out the best and starves out the bad
- Distrust in the peer-review process
- Current EM (*coffee grinder/mill*) mastered by participants over the years, and viewed as impartial, low-cost, and harmless enterprise
- CAS – it’s own independent EM (own budget chapter) – indifference to the new EM
- HEIs – perceiving the new EM as an inroad into their independence
- Cost – tight R&D budget – *Rather give the scientists the dosh!*
And the challenges are... Formidable!

- Politicians must support introduction of PRFS (see U.K. and introduction of RAE/REF; statement of David Sweeny at HEFCE, Apr.2015: "our politicians support the REF")
- All stakeholders should understand and present clearly and convincingly merits of PRFS (see gradual introduction of PRFS at the Czech Academy of Sciences)
- An increase of public institutional funding should preceded introduction of PRFS
- Do not reduce the cost of research assessment to mollify opponents (the cost of the proposed Czech METODIKA was below 1 % of public institutional funding over a 5 year period)
- Fine-tuning of the PRFS design (negative experience of the Czech "coffee-mill")
And the challenges (rather questions to fellow participants) are...

• Experience of Italy:
  – Pros and cons of the heavily bibliometrics leaning evaluation

• Experience of Portugal:
  – FCT Evaluation of R&D Units 2013
  – Future steps? (if any?)

• Future plans for Sweden?
  – Opposition from HEI, support from private RO

• Future plans for Austria?
  – Any consideration for introducing a PRFS for public universities?
Thank you for your attention

ruzickav@tc.cz
vondrak@tc.cz

www.tc.cz
Performance based R&D funding in Estonia

Rein Kaarli
Adviser, Research Policy Department, Ministry of Education and Research

Mutual Learning Exercise on Performance Based Funding Systems, Scoping Workshop, 7 September 2016
Outline

- Introduction
- Brief History
- Estoninian case
- Our expectations
Introduction and history

- Estonian R&D system since 1990, Estonian Science foundation was created
- Competitive grants since 1991
  - 1991 - 4,6%; 1995 – 28% (proposals in English introduced)
  - 1996 – 2005 -- ca 100%, targeted funding was introduced
  - 2005 – Baseline funding was introduced (Institutional in terms used in MLE)
    - Recommendations and wish is to reach 50:50 distribution without reduction of competitive funding in euros
- Eligibility criteria for RPOs is positive regular evaluation of institution. For baseline funding application not needed
Introduction and history 2

- Here we are talking about money which is not temporary, but regular, and comes to budget from local sources.
- If we look at the money from EU structural funds, most of the money which is used for research and approaches researchers, is competitive. It means, that taking into account EU structural funds does not increase the institutional money.
- Definitions have to be agreed. In Estonia Institutional Grant is based in heavy competition.
- If the type of funding is based on competition, what should be the success rate?
## Formula for performance based funding (PBF) in Estonia

### Formula for 2005-2016 (data for last three years)

<table>
<thead>
<tr>
<th>High level Scientific publications</th>
<th>Number of patents and patent applications</th>
<th>Revenue from 1) business and public sector R&amp;D contracts 2) from R&amp;D contracts with foreign partners</th>
<th>Number of new PhDs</th>
<th>Support to research of national importance in humanities</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td></td>
<td>40%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>95%</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

### Formula from 2017 (data for last three years)

<table>
<thead>
<tr>
<th>High level Scientific publications</th>
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<td>40%</td>
<td></td>
<td>50%</td>
<td>10%</td>
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<tr>
<td>95%</td>
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</tbody>
</table>
What we want to learn?

1) Eligibility criteria? Who is the target group of PBF? Which type of institutions are eligible?

   a) Is there a difference by legal status of institution? Does it include private RPO-s?

   b) Is there any threshold to get access to PBF? In Estonia the threshold is passing the institutional evaluation (assessment excercise, peer review with involvment of International experts, may include visits to the RPO). Not based on the count of publications. Valid also for private RPOs. Valid for 7-8 years.
What we want to learn?

2) Which indicators are used in different countries to measure:
   a) excellence,
   b) economic impact and knowledge transfer,
   c) societal impact,
   d) International cooperation,
   e) is the nurturing the next generation of scientists and career model included
   f) which indicators are used in addition

3) the weight of different indicators and other components (formula)

5) Are any conditions set for the use of money and if yes, which conditions?
   a) are there any schemes where the output targets or specific tasks/activities are set be done for that money?

6) Reporting? Especially interested in reporting of content. How the reporting on societal (and economic) impact is arranged?
R&D expenditure and intensity in Estonia

- **Business sector (left axis)**
- **Public sector (left axis)**
- **R&D intensity, % of GDP (right axis)**
R&D expenses in 2014
Source: Statistical Office
(Calculations and design MoER)

R&D Funder

GOVERNMENT 142 M€

ENTERPRISE SECTOR 106 M€

FOREIGN SOURCES 35 M€

Other 3 M€

R&D Performer

PUBLIC SECTOR 163 M€

ENTERPRISE SECTOR 124 M€

TOTAL: 286 M€

GDP

0.71%

0.53%

0.18%

0.01%

1.44%

Source: Statistical Office
(Calculations and design MoER)
Measures in the frames of implementation of EU Structural funds

Support for Structural Reforms in RD and HE institutions (110 M€)
Support for Centres of Excellence (35 M€)
Science Popularisation (4 M€)
Support for applied research for societal challenges (23,8 M€)
Support for scientific advisors in ministries
Support for applied research between business and academia (35,5 M€)
Scholarships for students in RIS3 areas (21,5 M€)
Support for Technology Competence Centres (40 M€)
Support for Clusters (10 M€)
Support for Start-Up programme (7 M€)
Innovative procurement (20 M€)
Internationalisation of Research and Higher Education (49,3 M€)
Support for Research Infrastructure Roadmap, including ESFRI (26,3 M€)

● Very roughly for direct support of R&D 135-170 M€ during 2015 – 2023
Tänan!

Eesnimi Perenimi
eesnimi.perenimi@hm.ee