



# Attempting to develop research organisations with project funding instruments: An example from Estonia

Kadri Ukrainski<sup>1</sup> Hanna Kanep<sup>2</sup> Eva-Liisa Otsus<sup>3</sup>

## Background and objectives

- ✓ Share of project funding is extremely high in Estonian universities (Fig. 1).
- ✓ The research system has grown rapidly, which is caused by the EU Structural Funds invested in research (Fig. 2).
- ✓ The largest national funding instrument contributing to labour costs is IUT (Target Funding) (Fig. 2).
- ✓ IUT funding level stayed the same since 2008 (after the crisis).

- ✓ As the number of researches grew, the competition for the main funding instrument (IUT) intensified. The cycles represent the 6-years IUT project duration (Fig. 3).

How different institutes/science fields cope with intensified competition?  
Which instruments they use to fund their research?

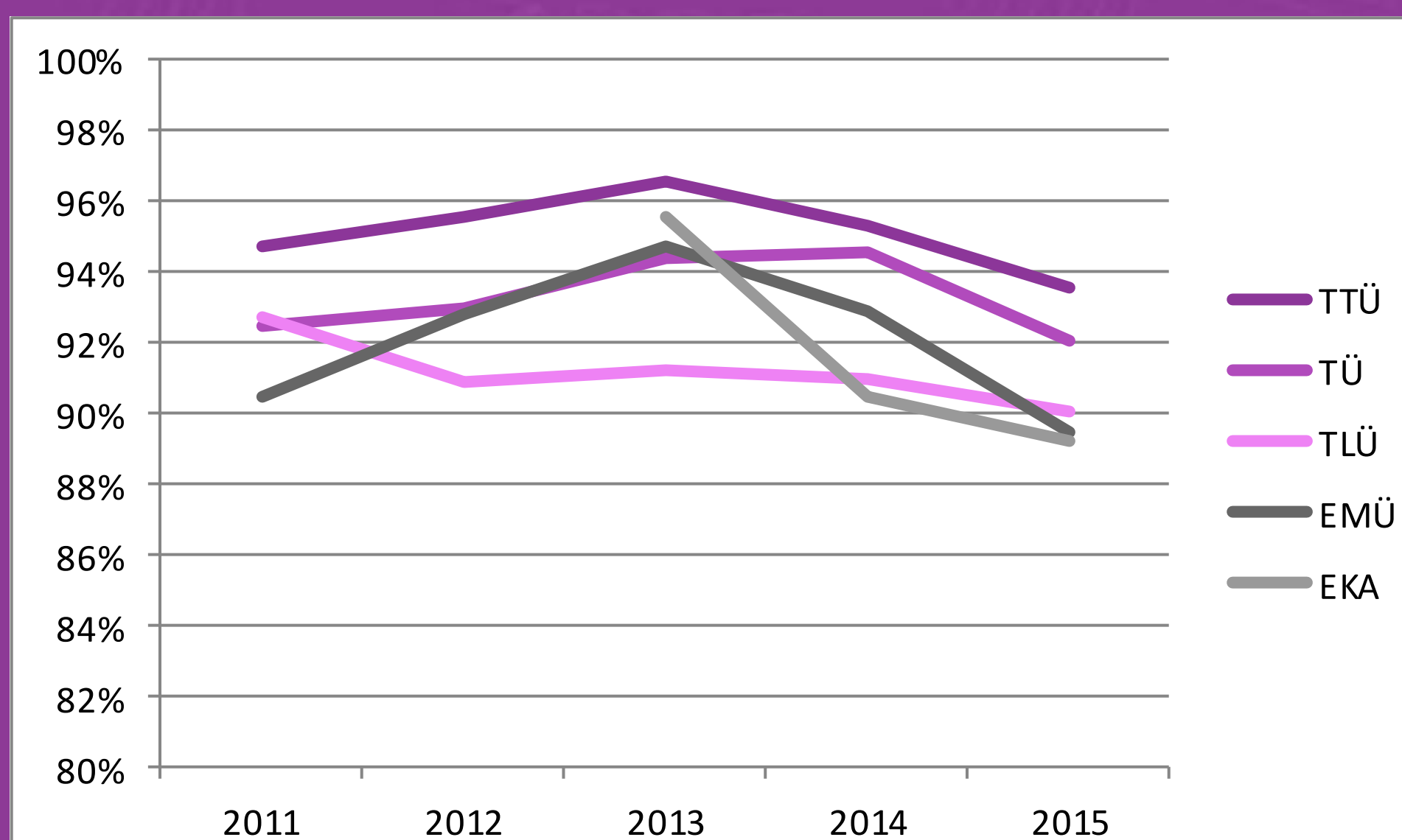


Figure 1. Share of project funding in Estonian universities (% Research funding, TTÜ: Tallinn University of Technology, TÜ: University of Tartu; TLÜ: Tallinn University; EMÜ: Estonian University of Life Sciences; EKA: Estonian Academy of Arts)

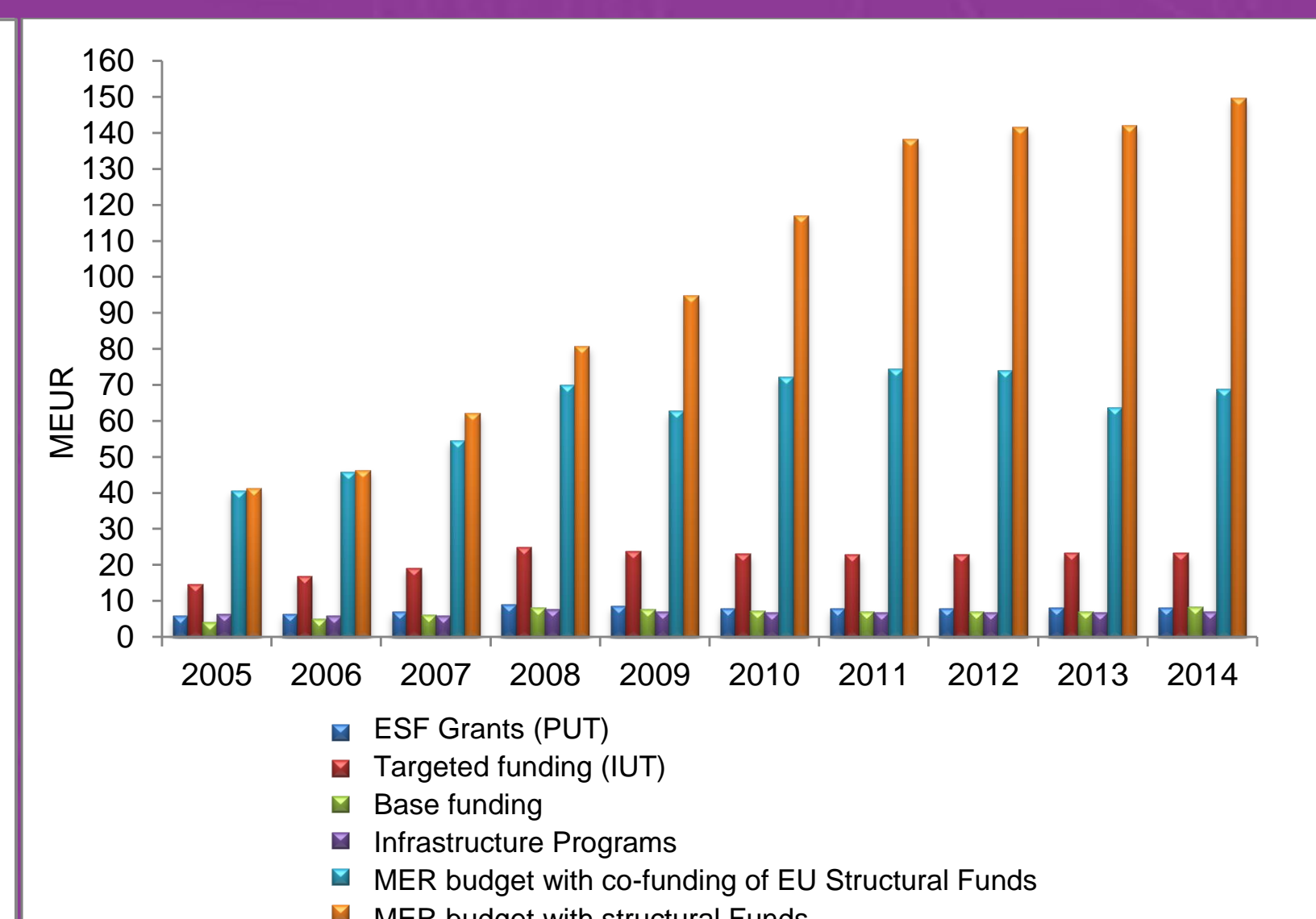


Figure 2. Budget expenditure of Ministry of Education and Research on R&D



Figure 3. Success rates in IUT, %

## Data and methods

Revenue structure variables	Obs.	Min.	Max.	Mean		Skewness		Kurtosis	
				Statistic	St. Dev.	Statistic	St. Dev.	Statistic	St. Dev.
Employees FTE	228	0.00	251.60	52.255	3.214	1.915	.161	3.739	.321
Total teaching funds €	228	0.00	5879190.00	773734.526	56144.697	3.006	.161	11.344	.321
Project share in teaching revenues	226	0.00	1.00	0.373	.018	.317	.162	-1.063	.322
Total research funds €	228	0.00	5788045.84	834677.002	83906.740	1.997	.161	3.115	.321
Project share in research revenues	225	0.00	1.00	0.936	.009	-4.131	.162	20.912	.323
TOTAL revenues €	228	0.00	10138089.00	1608411.528	122651.586	2.131	.161	4.466	.321
IUT (share in research revenues)	225	0.00	1.00	0.352	.018	.195	.162	-.822	.323
PUT (share in research revenues)	225	0.00	1.00	0.191	.012	2.013	.162	5.512	.323
Base funding (share in research revenues)	225	0.00	1.00	0.064	.009	4.131	.162	20.912	.323
R&D contracts (share in research revenues)	225	0.00	1.00	0.147	.013	2.103	.162	4.916	.323
International contracts share in research revenues	225	0.00	1.00	0.192	.015	1.668	.162	2.628	.323
Centres of Excellence (share in research revenues)	225	0.00	.54	0.018	.005	5.107	.162	28.875	.323
National Science Programmes (share in research revenues)	225	0.00	.35	0.017	.004	4.119	.162	17.415	.323
Infrastructure Programmes (share in research revenues)	225	0.00	.47	0.013	.004	5.506	.162	32.629	.323
Research funds € per FTE	225	0.00	42258.94	11724.432	604.648	1.009	.162	.485	.323
Teaching funds € per FTE	225	47.93	41880.67	16270.161	495.307	.425	.162	.678	.323
TOTAL revenues € per FTE	225	5871.66	63931.22	27994.594	652.737	.565	.162	.383	.323
Share of research funds in total revenues	226	0.00	1.00	0.392	.016	.586	.162	-.303	.322

Table 1. Descriptive statistics of revenue structure variables

- ✓ The sample consists of 34 institutes of University of Tartu in 2007-2013 (in total 225 observations).
- ✓ Database contains budget revenues by funding instruments and expenditure by categories (salaries, travel costs, investments, etc.).
- ✓ WoS publications in 2011-2013 were connected to the budget data

- ✓ To identify the patterns of funding, institutes were clustered according to the revenue profile. Variables (Table 1) were standardized first.
- ✓ Four clusters emerged, by science fields (Table 2). Most of the institutes remain in the same cluster throughout the years.

Field of Science	Cluster No.				Total
	1	2	3	4	
Humanities	0	7	24	18	49
Medical Sciences	1	7	8	20	36
Natural Sciences	39	0	0	0	39
Social Sciences	0	1	46	18	65
Mathematics and IT	0	1	7	13	21
Sports Sciences	0	0	1	13	14
Total	40	16	86	82	224

Table 2. Composition of clusters of institutes

## Results

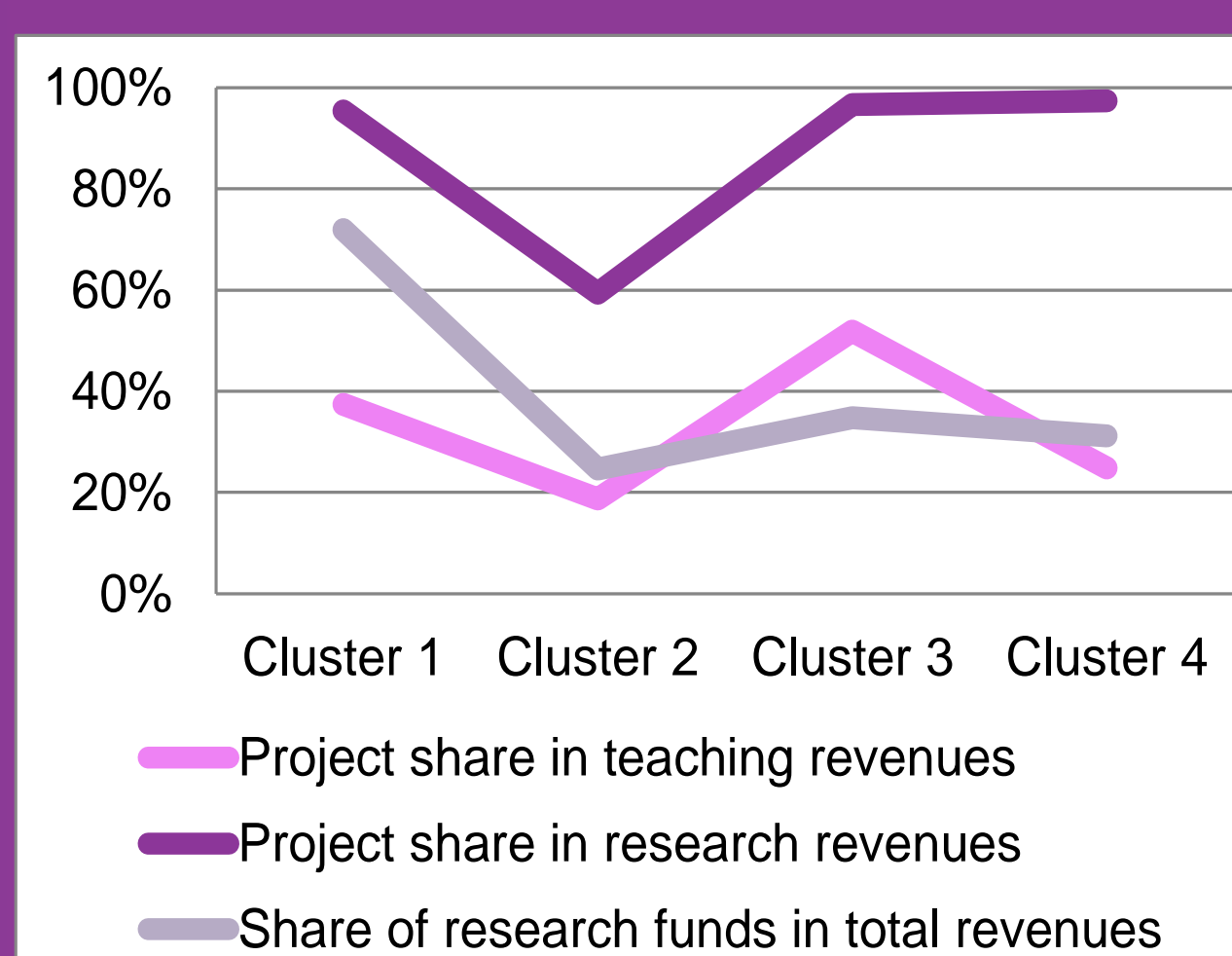


Figure 4. Mean share of project funding (%)

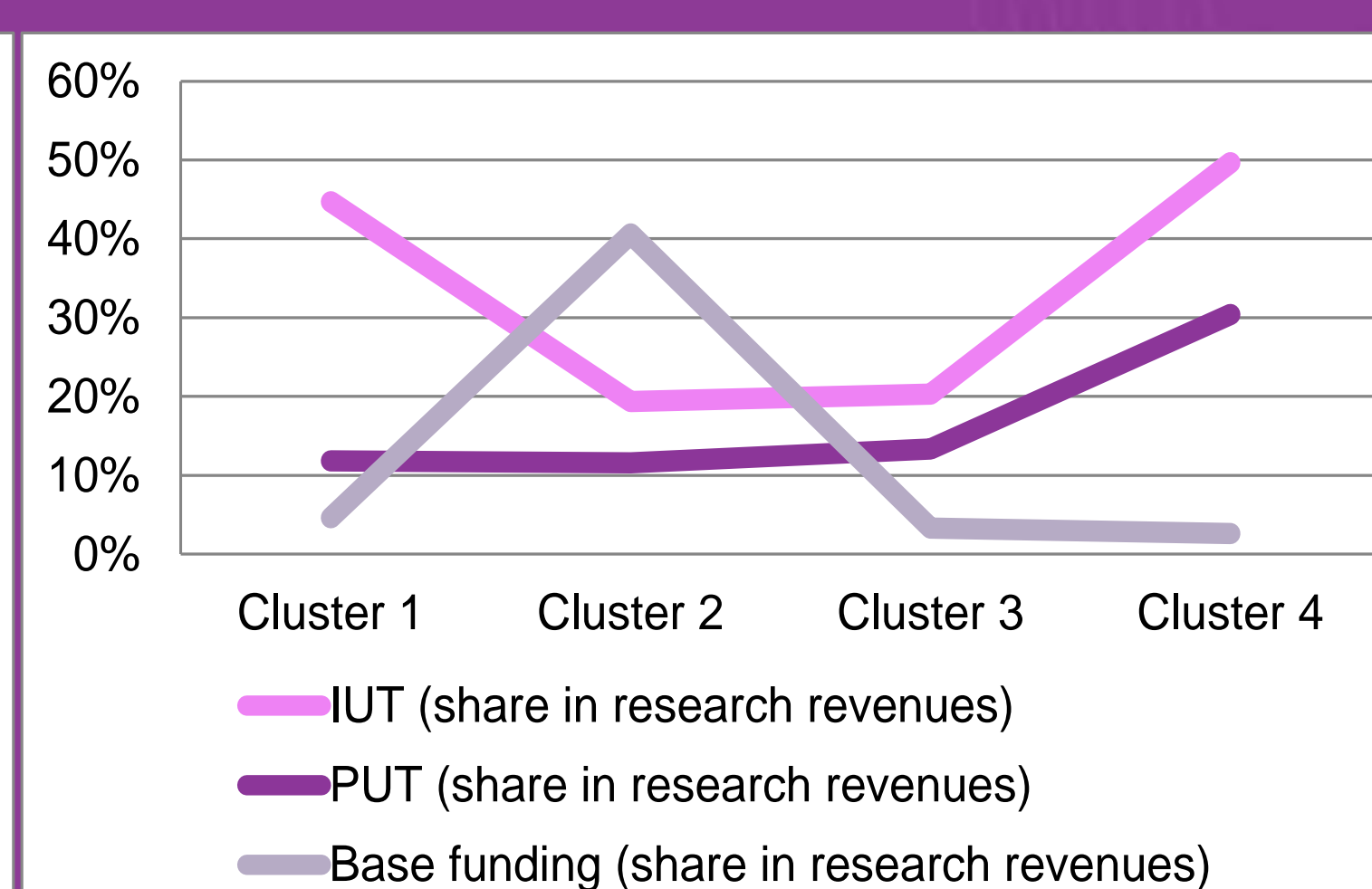


Figure 5. Mean share (%) of research funding from IUT, PUT and Base Funding

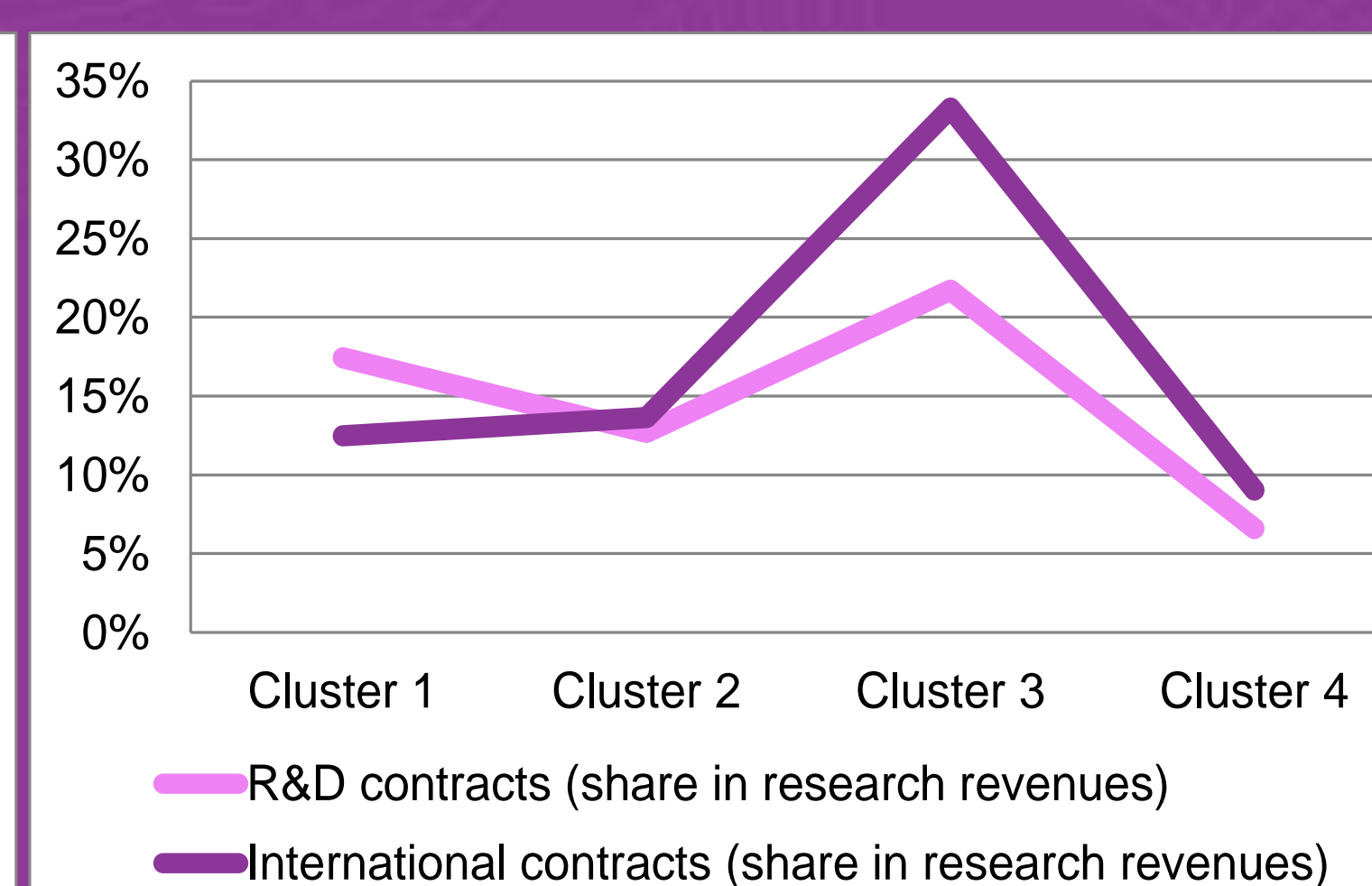


Figure 6. Mean share (%) of research funding from R&D contracts and international contracts

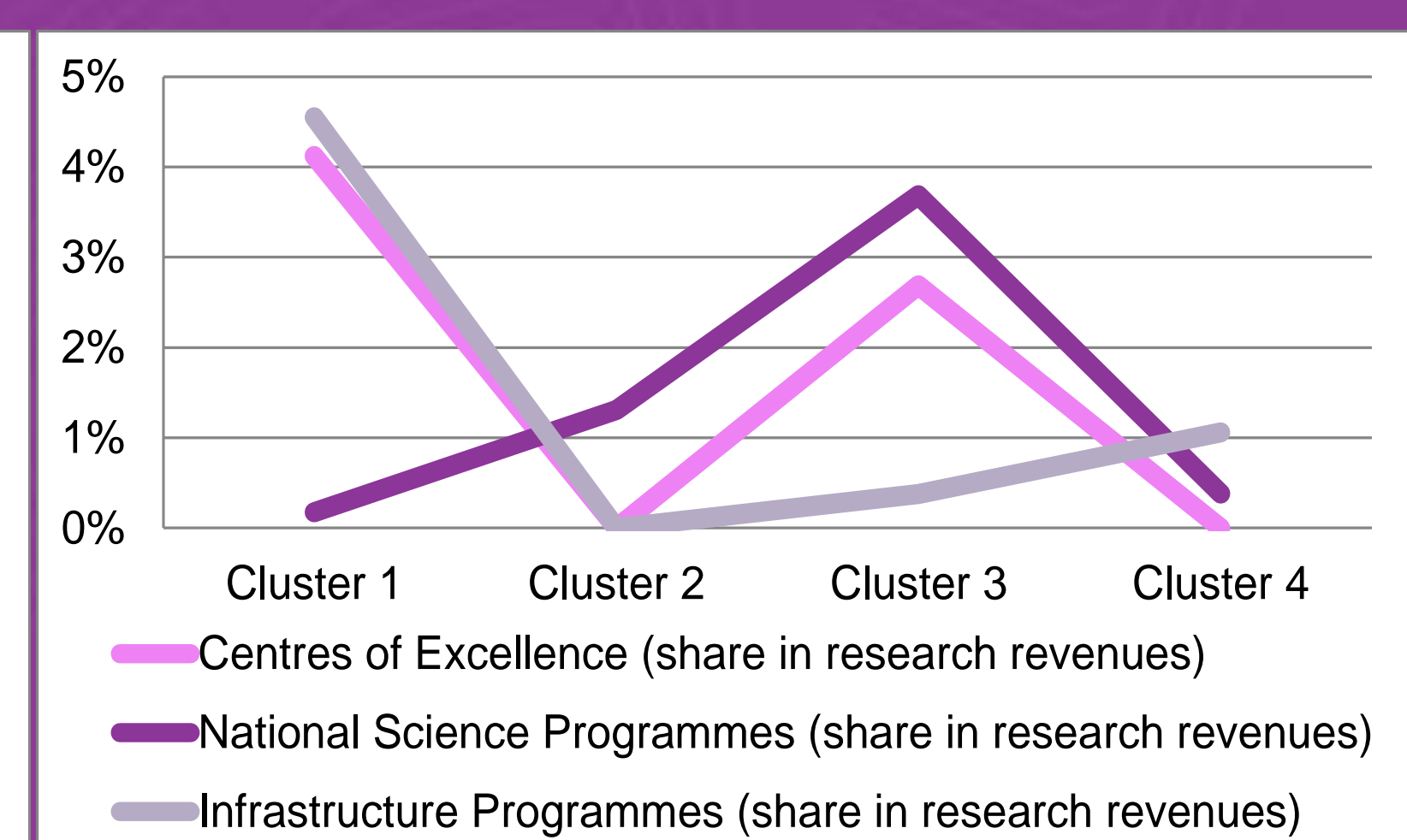


Figure 7. Mean share (%) of research funding from Centres of Excellence, National Science Programmes and Infrastructure Programmes

## Conclusions

- ✓ Clusters of institutes have very diverse funding profiles.
- ✓ Open calls as funding mechanism can cause misalignments in research funding at the level of institutes (also fields of science).
- ✓ Institutes have stable funding profiles, suggesting that they would be sensitive to major changes in instruments (or success rates), especially if the variety of (domestic) funding sources is low.

- ✓ Institutes in different clusters could employ various strategies (incl. strategic cooperation) to diversify their revenue profiles.
- ✓ The greatest mismatch was identified in case of Cluster 1 (Natural sciences), which have on average 3.0% infrastructure revenues from total revenues, but infrastructure costs amount to 16% from total costs. Gross salaries are the lowest in this cluster (annual gross salary per FTE is 12631 €).

<sup>1</sup> kadri.ukrainski@ut.ee. School of Economics and Business Administration, Narva 4-A212, Tartu, 51009 Estonia

<sup>2</sup> hanna.kanep@ern.ee. Universities Estonia, Ülikooli 18, Tartu, 50090 Estonia

<sup>3</sup> eva-liisa.otsus@etag.ee. Estonian Research Council, Soola 8, Tartu, 51013 Estonia