

# Academic Behaviours, Attitudes, and Productivity. Poland in a European Quantitative and Comparative Perspective

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Professor Marek Kwiek  
Director, Center for Public Policy Studies  
UNESCO Chair in Institutional Research and Higher  
Education Policy, Chair holder  
University of Poznan, Poznan, Poland  
kwiekm@amu.edu.pl

## Introduction: two decades of changes (from expansion to contraction)

- The expansion from elite to mass to universal higher education: abrupt, unplanned: gross enrollment rate:
  - 10 percent (1989),
  - 15.5 percent (1992), and
  - 51.1 percent (2007 and beyond).
- The phenomenal increase – in a much shorter period than in Western Europe.
- The expansion era: finished about 2006. The contraction era: next two decades.
- Polish higher education: a dual (public-private) highly differentiated, strongly marketized, and hugely expanded system.
- The unprecedented expansion of the system - the increase in the share of the labor force with higher education credentials to about the European average (24 percent in 2012).

# Introduction and the 3 themes:

- **Three major themes:**
  - (1) **University governance** (a powerful Ivory Tower university model, a professorially-coordinated “republic of scholars”).
  - (2) **Internationalization and research productivity** (Polish “internationalists” vs. “locals”), and
  - (3) The Polish **research ultra-elite** (highly productive academics: who they are, how they work?).
- Each dimension - in the context of 10 Western European comparator countries, including the UK

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## Data (1)

- 11 European countries involved in the CAP (“Changing Academic Profession”) and EUROAC (“Academic Profession in Europe: Responses to Societal Challenges”) projects: Austria, Finland, Germany, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Switzerland, and the UK.
- Cleaned, weighted and integrated into a single European data set by the University of Kassel team. The total number of returned surveys 17,211 and included 1,000 and 1,700 surveys in all European countries studied except for Poland where it was higher.
- Individual data files produced in all participating countries but all specifically national categories (faculty ranks, institutional type structures etc.) reduced to internationally comparable categories.
- The data cleaning process included the use of “survey audits” prepared by national teams. International data coordination, sample values weighted so that the national samples broadly representative of national academic populations for most independent variables (national-level sampling techniques: RIHE 2008: 89-178 and Teichler/Höhle 2013: 6-9).
  - Here: a subsample of 9,536 European academics who were employed full-time in universities (as defined by national research teams) only.

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# Data (2)

**Table 1.** Sample characteristics, by country.

	N	Universities %	Other HEIs %	Full-time	Part-time
<b>Austria</b>	1,492	100.0	0.0	65.8	34.2
<b>Finland</b>	1,374	76.5	23.5	82.4	17.6
<b>Germany</b>	1,215	86.1	13.9	70.7	29.3
<b>Ireland</b>	1,126	73.3	26.7	91.2	8.8
<b>Italy</b>	1,711	100.0	0.0	96.9	3.1
<b>Netherlands</b>	1,209	34.4	65.6	56.0	44.0
<b>Norway</b>	986	93.3	6.7	89.7	10.3
<b>Poland</b>	3,704	48.3	51.7	98.0	2.0
<b>Portugal</b>	1,513	40.0	60.0	90.3	9.7
<b>Switzerland</b>	1,414	45.6	54.4	58.5	41.5
<b>UK</b>	1,467	40.8	59.2	86.5	13.5

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# Data (3)

**Table 2.** Proportion of faculty by clusters of academic fields and sample size (N).

	Life sciences and medical sciences	Physical sciences , mathematics	Engineering	Humanities and social sciences	Professions	Other Fields	Total
<b>Austria</b>	20.2	9.8	11.9	41.3	8.7	8.2	1,492
<b>Finland</b>	15.7	9.7	21.5	18.6	12.1	22.4	1,374
<b>Germany</b>	29.3	15.2	14.8	15.6	11.1	13.9	1,215
<b>Ireland</b>	23.0	11.5	8.8	23.8	20.5	12.4	1,126
<b>Italy</b>	28.6	23.3	11.1	17.5	13.6	5.9	1,711
<b>Netherlands</b>	12.6	10.9	10.7	22.3	34.7	8.8	1,209
<b>Norway</b>	29.0	14.1	7.4	27.5	8.9	13.1	986
<b>Poland</b>	24.6	8.4	21.5	23.0	12.5	10.0	3,704
<b>Portugal</b>	16.9	7.9	20.4	10.5	20.6	23.7	1,513
<b>Switzerland</b>	30.8	10.2	12.7	16.9	23.9	5.5	1,414
<b>UK</b>	21.9	11.6	6.3	18.6	11.0	30.7	1,467

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# Overall approach: micro-level vs. macro-level

- A micro-level (individual) approach: relies on primary academic attitudinal and behavioral data, voluntarily provided by academics in a consistent, internationally comparable format. Only some references to macro-level secondary data (available from national and international statistics).
- The individual academic as the unit of analysis, rather than national higher education systems or individual institutions.
- A new “data-rich” research environment in the international comparative academic profession studies. Poland – and its comparative context.
- Similar studies never possible before!

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## Internationalization (1)

- The need for more intense internationalization of Polish HE - a major theme in recent reforms. In particular, in policy debates:
  - internationally visible publications as part of “internationalization at home”, and
  - international research cooperation as part of “internationalization abroad”, to refer to Jane Knight’s (2012: 34-37) two “pillars of internationalization”.
- Scarce research resources, only recently unrestricted opening to global academic communities: but Polish academics relatively well internationalized
- The initial assumption: a substantial, structural lagging behind of Polish academics.
- Surprisingly (Table 3 below), Polish academics rank the lowest only in four out of 16 parameters of internationalization studied.
- All of them are research-related, and strongly linked to resources.
- The four areas of lagging-behind (green boxes):
  - international research orientation (Poland is the only country in which the majority of academics is *not* internationally oriented in research);
  - intense publishing in a foreign country (at least a half of one’s academic works – but not at least a quarter of one’s academic works);
  - publishing in a foreign language; and
  - employing in research primarily English.
- Poland is not lagging behind in 4 areas (blue boxes): dimensions of internationalization on which Poland can build in the future.

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# Internationalization (2)

**Table 3.** Various international activities, academics employed full-time in universities, by country (some answers from 1 to 5 on a five-point Likert scale, answers 1 and 2, “strongly agree” and “agree”, “very much” and “much” combined), in percent.

<i>The percentage of academics...</i>	PL	DE	AT	FI	IE	IT	NL	NO	PT	CH	UK	Mean
emphasize int'l perspectives or content	58.0	57.0	74.6	51.4	84.5	61.1	62.7	64.1	81.5	-	61.8	65.7
most grad students are currently int'l	2.0	4.4	9.0	8.8	20.5	1.9	33.1	9.4	1.8	20.1	36.7	13.4
employ in teaching primarily English	6.0	5.1	11.6	18.5	-	4.0	46.8	9.2	2.6	16.6	98.0	21.8
teaching any courses abroad	15.8	9.4	23.3	15.0	19.1	13.7	14.9	22.1	7.4	22.2	12.8	16.0
teaching any courses in a foreign lang.	35.6	24.0	42.2	50.0	6.5	23.9	60.0	61.5	18.0	43.9	3.6	33.6
primary research is int'l in scope	45.8	53.7	65.7	62.5	72.0	75.1	81.7	66.6	57.4	64.8	64.1	64.5
collaborating with int'l colleagues in res.	51.1	50.8	78.7	73.0	79.7	59.6	80.8	61.4	52.2	75.4	69.1	66.5
employ in research primarily English	37.1	51.7	64.9	69.9	-	64.9	75.2	55.6	63.5	75.5	96.7	65.5
publishing in a foreign country (>25%)	58.7	57.2	71.7	64.9	66.6	55.4	-	67.6	68.3	64.4	38.2	61.3
publishing in a foreign country (>50%)	38.9	42.1	59.9	53.8	53.2	46.3	-	57.6	51.9	55.2	20.2	47.9
publishing in a foreign language (>25%)	71.8	75.3	72.7	69.9	2.9	67.3	90.2	85.3	65.9	68.6	2.9	61.2
publishing in a foreign language (>50%)	50.7	59.9	61.1	59.3	1.4	58.4	82.5	74.5	48.1	57.1	2.0	50.5
works co-authored – int'l (>25%)	24.1	24.0	35.6	26.3	28.8	21.3	41.7	29.6	25.7	38.6	22.3	28.9
works co-authored – int'l (>50%)	12.3	9.1	16.4	12.4	12.4	9.9	21.2	13.0	8.8	19.4	7.7	13.0
research ext. funding comes from int'l org	24.1	9.8	19.9	11.6	15.4	12.4	20.8	8.5	21.2	10.2	16.7	15.5
at least two years abroad since PhD	20.6	14.9	28.3	20.0	48.2	24.6	29.7	27.7	17.9	39.9	30.2	27.5

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# Internationalization (3)

- In more detail: the role of international cooperation in research in Poland – fundamental for research productivity!
- The relationship between international cooperation and research productivity: a general assumption that collaborative activities in research increase research productivity (Teodorescu 2000, Lee and Bozeman 2005, He et al. 2009, Shin and Cummings 2010, and Abramo et al. 2011).
- Sooho Lee and Barry Bozeman (2005: 673) ask a question:
  - “the benefits of collaboration are more often assumed than investigated. ... Do those who collaborate more tend to have more publications?”. Very much so in Poland and Europe.
- Two specific aspects of internationalization in research studied here:
  - first, the correlation between international academic cooperation in research and academic productivity (Teodorescu’s 2000: 206 definition
    - research productivity as a “self-reported number of journal articles and chapters in academic books that the respondent had published in the three years prior to the survey” and,
  - second, the correlation between international academic cooperation in research and the co-authorship of publications with international colleagues, both at the aggregated European level and at a Polish national level, across five major clusters of academic fields (globally, see Rostan et al. 2014)

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# Internationalization (4)

- The analysis: two separate groups of Polish (and European academics):
  - “internationalists” (involved in international research collaboration), and
  - “locals” (not involved).
- The independent samples t-test was used: it is a parametric statistical test used for testing a null hypothesis of equality of the means in two independent subpopulations.
- Across all clusters of fields, European “internationalists” had published on average substantially more than their colleagues in the same academic field who were recently *not* collaborating internationally.
- “Internationalists” across all 5 major academic fields: on average about twice as many articles as “locals”; a large field differentiation.
  - From on average 140 percent (engineering) and about 120 percent (physical sciences, mathematics) more articles, to on average about 70 percent more articles (in humanities and social sciences, and professions)

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# Internationalization (5)

**Table 6.** Articles published by Polish academics in an academic book or journal by international collaboration and academic fields.

Academic field	International collaboration	N	Mean no. of articles	SE	95% confidence interval for mean		t-test for Equality of Means	df	p-value
					LB	UB			
Life sciences and medical sciences	Yes	290	4.56	0.37	3.83	5.28	3.06	524.44	0.002
	No	239	3.07	0.32	2.45	3.69			
Physical sciences, mathematics	Yes	123	3.64	0.49	2.67	4.62	4.33	168.14	<0.001
	No	47	1.15	0.30	0.56	1.75			
Engineering	Yes	11	8.42	2.85	2.05	14.78	2.19	11.20	0.050
	No	30	1.95	0.76	0.41	3.5			
Humanities and social sciences	Yes	262	5.28	0.38	4.52	6.03	4.07	480.06	<0.001
	No	290	3.36	0.27	2.83	3.9			
Professions	Yes	57	5.70	0.94	3.82	7.59	1.13	93.37	0.262
	No	92	4.47	0.55	3.39	5.56			

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## Internationalization (6)

- The Polish subsample (N = 1,441) shows an almost identical cross-disciplinary pattern of research productivity: being strongly correlated with international research collaboration.
- Polish academics are less internationalized in all academic fields but cross-disciplinary differences in internationalization are much higher than in Europe.
- The two most internationalized clusters of fields are the same in Europe and in Poland: “physical sciences, mathematics” and “life sciences and medical sciences”.
- Polish „internationalists” on average publish more articles than „locals”, across all academic fields.
  - In particular, in engineering, they publish on average more than four times more (332 percent) articles, and in physical sciences and mathematics three times more (217 percent).
- The difference between average publication rates for “internationalists” and for “locals” is much higher in the case of Polish academics.
- Consequently: international collaboration has a more powerful impact on productivity in countries which are only entering European and global research communities.

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## Internationalization (7)

- The second aspect: the difference in the proportion of internationally co-authored publications between “internationalists” and “locals”.
- At an aggregated European level, the differences are consistent across all clusters of academic fields. In one sentence: “no international collaboration, no international co-authorship”.
- The average proportion of internationally co-authored publications for “internationalists” in Europe is 5-7.5 times higher. The pattern is consistently similar for all academics across all academic fields studied.
- „Locals” produce only a marginal percentage of their publications as co-authored with colleagues from other countries.
- Polish “internationalists” are more internationalized (that is, have a higher proportion of internationally co-authored publications) than European “internationalists” in all academic fields (except humanities and social sciences - slightly below the European average).
- Thus the European pattern not only holds in Poland, it is even stronger: while the multiplication factor between “internationalists” and “locals” for European academics is on average between 4 and 7.5, the same factor for Polish academics is between 4 in physical sciences and mathematics and 13 in life sciences and medical sciences.

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# Internationalization (8)

**Table 6.** Share of articles published by Polish academics in an academic book or journal by international collaboration and academic fields.

Academic field	International collaboration	N	Mean percentage of articles	SE	95% confidence interval for mean		t-test for Equality of Means	df	p-value
					LB	UB			
Life sciences and medical sciences	Yes	174	42.77	2.63	37.61	47.93	13.46	247.87	<0.001
	No	156	3.43	1.27	0.94	5.92			
Physical sciences, mathematics	Yes	72	44.42	4.48	35.64	53.20	4.54	65.54	<0.001
	No	30	11.38	5.74	0.14	22.62			
Engineering	Yes	7	66.07	16.92	32.91	99.23	3.62	6.51	0.010
	No	18	3.12	4.10	-4.91	11.15			
Humanities and social sciences	Yes	174	13.55	2.24	9.16	17.94	5.16	207.08	<0.001
	No	199	1.43	0.71	0.04	2.82			
Professions	Yes	39	21.58	5.30	11.18	31.98	3.23	50.91	0.002

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# Internationalization (9)

- To sum up the Polish case:
  - PL relatively well internationalized, despite being a newcomer
  - PL the least internationalized system in several research-related parameters, but differences not dramatic.
  - international publishing patterns fit well European patterns:
    - academics from hard fields are consistently more internationalized than their colleagues from soft fields across all major publishing parameters.
  - both Polish “internationals” and “locals” less productive than their European colleagues.
  - But surprisingly, in terms of the share of internationally co-authored publications, Polish academics in hard fields are above the European average, and in soft fields they are about the average.
- Research productivity (following European patterns) strongly correlated with international research collaboration: the average research productivity rate of Polish “internationalists” consistently higher than that of “locals” in all academic fields.
- Less internationalized in research than the European average but the productivity rate of Polish “internationalists” on average higher than that of Polish “locals”.
- The impact of international collaboration across all academic fields is much higher in Poland than in the European countries studied.

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# Internationalization (10)

- A powerful policy conclusion: more international cooperation as the best way to have more internationally visible national research output. And: “no international collaboration, no international co-authorship”.
- Polish academics involved in international collaboration differ much less from their European colleagues involved in international collaboration in terms of patterns of research productivity than commonly assumed.
- The real problem: the lower research productivity of academics not involved in international collaboration and a very high percentage of consistent non-publishers in the university sector (43 percent).
- Recent reforms (2009-2012) resort strongly to new internationalizing mechanisms, though:
  - revised institutional research assessment exercises (termed “parametrization”), closely linked to an institutional funding stream,
  - revised preconditions of access to individualized competitive research funding, and
  - changed requirements for academic promotions. In all three areas, the internationalization of research as important as never before.

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# The Ivory Tower (1)

- Briefly university governance and organization, and specifically: the unfading power of the traditional Ivory Tower ideal in Poland.
- We analyze here four statements directly related to the Ivory Tower ideal (viewed here as the low connectedness of universities to the outside social and economic world
  - (percent “agreeing”; we refer to percentages of answers 1 and 2 combined, on a five-point Likert scale: from 1= strongly agree to 5= strongly disagree and from 1= very much to 5 = not at all, depending on the question; full-time academics, universities only):
    - ● “Scholarship includes the application of academic knowledge in real-life settings” (B5/2): Poland, together with Austria, ranks the lowest (59 percent agreeing vs. the European average of 74 percent).
    - ● “Faculty in my discipline have a professional obligation to apply their knowledge to problems in society” (B5/8): Poland ranks the lowest (40 percent agreeing vs. the European average of 57.3 percent).
    - ● “Emphasis of your primary research: applied/practically oriented” (D2/2): Poland ranks the lowest (45.5 percent very much vs. the European average of 60.9 percent).
    - ● “Emphasis of your primary research: commercially oriented/ intended for technology transfer” (D2/3): Poland ranks the lowest (9.8 percent very much vs. the European average of 15.4 percent).

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## The Ivory Tower (2)

- Conclusion: Polish universities differ substantially from universities in the ten comparator European countries: they seem much more isolated from the needs of society and economy.
- They are closer to the ideal of the Ivory Tower than universities in any other European system studied based on academics' beliefs (and based on national-level statistics, Poland was criticized in international reports on higher education published by the World Bank and OECD).
- This micro-level picture of the low connectedness with the outside world is complementary to the macro-level picture provided by institutional and national higher education and R&D statistics
  - through such parameters as: total income from the industry, the share of income from the industry in total income, either at the national scale or at the scale of operating budgets of particular institutions.

Our study shows an uncommonly low – compared with other European countries – level of readiness on the part of university academics to professionally connect with the outside world. It is demonstrated at the level of academic beliefs and attitudes.

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## The Ivory Tower (3)

- Reforms and the emergent conflict between two visions:
  - the vision of the university (Olsen 2007) shared by the Polish academic community (the value-based, autonomy-driven “community of scholars” model, linked to the Ivory Tower ideal) and
  - the vision shared by the Polish policy-making community (instrumental and externally-driven model).

An emergent conflict about “basic values” (Howard R. Bowen and Jack H. Schuster' (1986: 53): “derived from long academic tradition and tend to be conveyed from one generation to the next”.

Academics strongly support the Ivory Tower ideal - but Poland is expecting to be brought in line (through reforms) with other European systems. And they are already driven increasingly by instrumental logics at both national and EU-levels.

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# The Ivory Tower (4)

- The instrumental model of university organization massively promoted in reforms of 2009-2012 - may be gaining influence in the coming years through changes in university funding and governance mechanisms.
- The logics of current reforms dooms both models to be in a powerful conflict, grounded in the incommensurability of academic values - and values promoted by higher education policymakers.
- European experiences tend to show that academic values and rules will be gradually gravitating towards the second, instrumental model, promoted in reforms, and away from the first, institutional model.
- But, positively, Polish universities will move away from the Ivory Tower model and become less isolated from the outside social and economic world.
- Consequently, Polish universities can be expected to be “in transition” in the coming years to a much higher degree than the Polish academic profession desires. With a new wave of value-driven conflicts.

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# Research ultra-elite (1)

- Top research performing academics in Poland: 10 percent of academics ranked highest, across 5 major clusters of academic fields.
- What makes some academics substantially more research productive than others in Poland (and across 10 national systems)?
- The unit of analysis: the individual faculty member.
- The proxy: the number of journal articles (and book chapters) published in a period of 3 years preceding the survey conducted in the 2007-2010 period).
- Faculty research productivity (and its predictors) have been thoroughly explored in the academic literature in the last four decades. But mostly in national contexts of Anglo-Saxon countries, and much less often in cross-national (and European) contexts.
- The distribution of faculty research productivity across the European academic labor force, and the correlates of research productivity of a distinctive subgroup of research top performers, have not been explored so far (“star scientists” in Giovanni Abramo et al. (2009), Italian academics).
- Academic profession studies have not researched top research performing academics across different systems so far.
- Highly productive scientists were mentioned in passing but never studied in more detail, either quantitatively or qualitatively, and either in single-nation studies or in (more recent) cross-national studies.

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## Research ultra-elite (2)

The data:

- academic behaviors (working hours and their distribution),
- academic attitudes (teaching/research role orientation), and
- research productivity (papers and book chapters only).

A subpopulation of the most productive academics (the top 10 percent, or N=1,583 in Europe), contrasted with a subpopulation of 90 percent of the rest of academics.

European academics: two complementary subsamples:

- academics reporting *not* being involved in research.
- academics reporting research involvement, and

Then the first subsample divided into two subgroups:

- “research top performers” (identified as academics ranked among the top 10 percent of academics with the highest research performance), and
- „the rest” (the remaining 90 percent of academics reporting being involved in research).

General reservations: productivity vs. creativity; frontier/breakthrough research vs. publishing; quality vs. quantity; publishing rates vs. citation rates, etc.

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## Research ultra-elite (3)

Table 5. The distribution of the sample population, by country.

	All	Research-involved (N)	% Research-involved	Research top performers	% Research top performers
Austria	1,492	1,297	86.9	146	11.3
Finland	1,374	1,063	77.4	126	11.9
Germany	1,215	1,007	82.9	110	10.9
Ireland	1,126	865	76.8	101	11.7
Italy	1,711	1,674	97.8	191	11.4
Netherlands	1,209	536	44.3	61	11.4
Norway	986	876	88.8	106	12.1
<b>Poland</b>	<b>3,704</b>	<b>3,659</b>	<b>98.8</b>	<b>411</b>	<b>11.2</b>
Portugal	1,513	944	62.4	104	11.0
Switzerland	1,414	1,210	85.6	138	11.4
United Kingdom	1,467	777	53.0	89	11.5
<b>Total</b>	<b>17,211</b>	<b>13,908</b>	<b>80.8</b>	<b>1,583</b>	<b>11.4</b>

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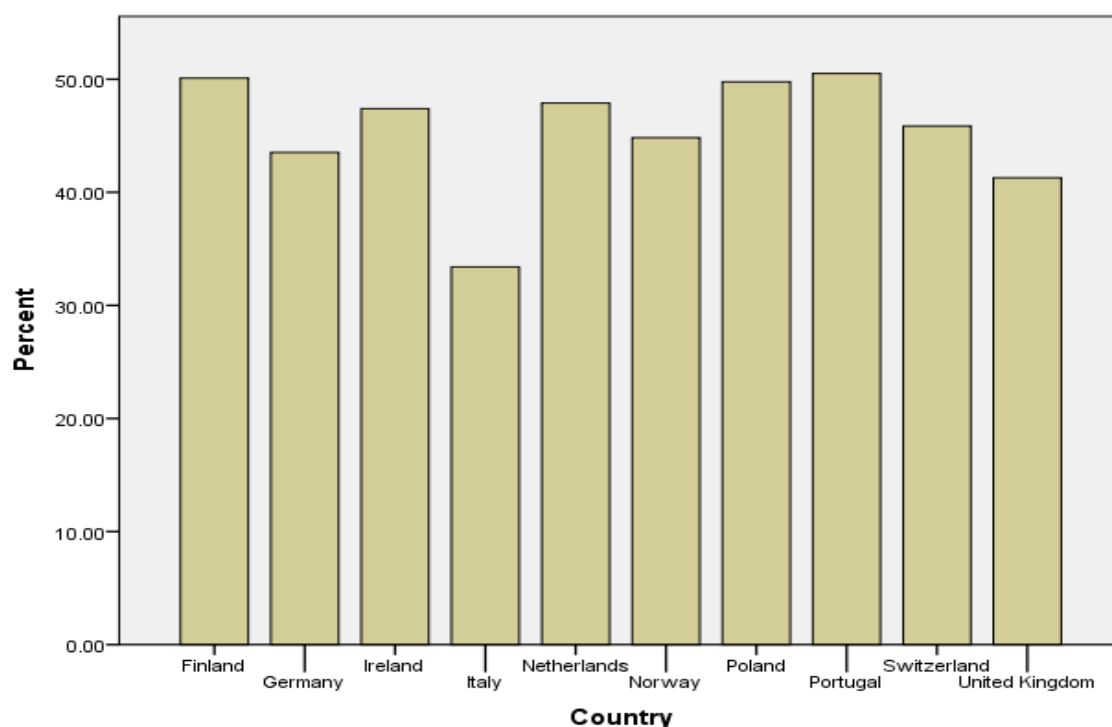
## Research ultra-elite (4)

- Evidence found for a thesis that in Poland:
  - “only a small proportion of scientists produce the bulk of science which emerges from the scientific community” (Cole and Cole 1973: 59).
- Consistently with previous research, academic knowledge production in Poland is highly stratified:
  - “no matter how it is measured, there is enormous inequality in scientists’ research productivity” (Allison 1980: 163, see Stephan and Levin 1991) because
  - We provide large-scale empirical support from Poland (and Europe) to conclusions from previous, usually single-nation and smaller-scale, research studies.
  - Our evidence is cross-national and European.
- Amazing finding: in Poland an exact half (50 percent) of all academic research production comes from about 10 percent of the most highly productive academics (“research ultra-elite”).
- In the UK, the share is 41 percent, European mean: 46 percent. See below.

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## Research ultra-elite (5)

Fig. 3. Research output (=total number of journal articles) of research top performers as a share of total research output from all academics involved in research, all countries (in percent).



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## Research ultra-elite (6)

Fig. 3. Research output (=total number of journal articles) of research top performers as a share of total research output from all academics involved in research, all countries (in percent).

	Papers by Top Performers	Papers by the Rest	Total	% papers by Top Performers
Finland	2,445	2,435	4,880	50.1
Germany	2,702	3,506	6,208	43.5
Ireland	2,419	2,684	5,103	47.4
Italy	5,096	10,162	15,259	33.4
Netherlands	1,513	1,647	3,160	47.9
Norway	1,902	2,340	4,243	44.8
Poland	6,767	6,831	13,599	49.8
Portugal	1,992	1,952	3,945	50.5
Switzerland	2,798	3,304	6,102	45.9
United Kingdom	1,740	2,475	4,215	41.3
Total	32,706	38,543	71,248	45.9

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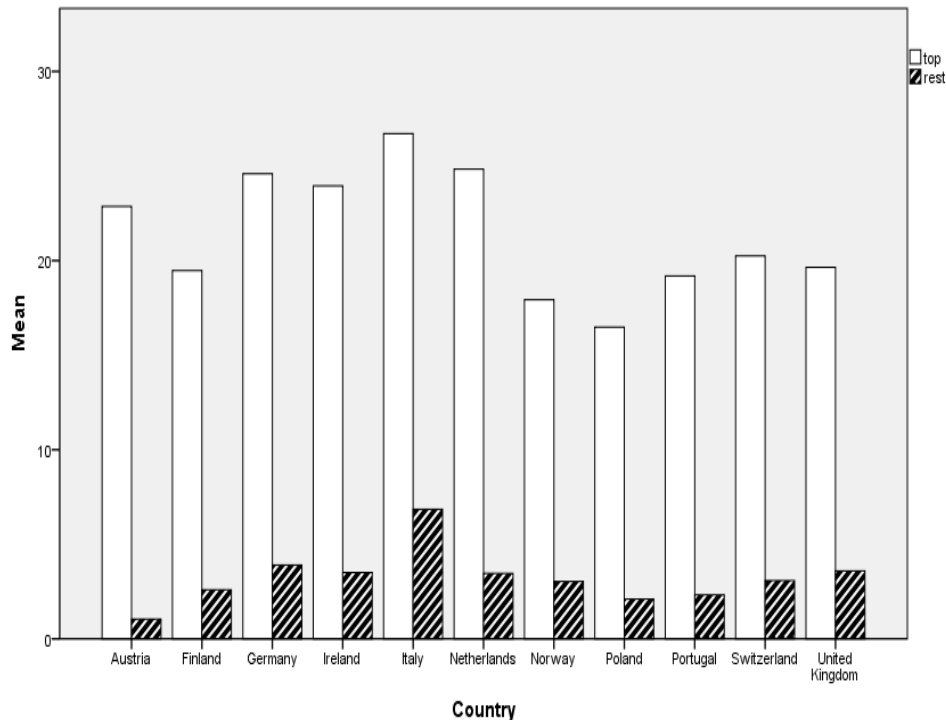
## Research ultra-elite (7)

- Our findings surprisingly consistent with the productivity patterns by Derek Price in the 1960s (in *Little Science, Big Science*, 1963), who referred directly to Alfred Lotka's paper on "The Frequency Distribution of Scientific Productivity" (1926).
- The so-called "Lotka's law" (an inverse-square law of productivity):
  - "the number of people producing  $n$  papers is proportional to  $1/n^2$ . For every 100 authors who produce but a single paper in a certain period, there are 25 with two, 11 with three, and so on" (Price 1963: 43).
  - Or, as Cole and Cole argued in their study of American physicists (1973: 218), "using Price model, we can estimate that roughly 50 percent of all scientific papers are produced by approximately 10 percent of the scientists".
  - This is exactly the Polish case today: 50 percent.
- 50 years after Derek Price's estimations, this productivity distribution pattern strongly holds for Poland (and for most European HE systems).
- We expected it – but there was no large-scale, cross-national evidence so far.
- Poland: thus a typical knowledge production system, with typical top performers.
- TPs not different! The major difference: less productive the rest of 90% academics, and a huge share of non-publishers (43 %).
- The productivity distribution pattern consistent across all clusters of academic fields (40% - 60 %).
- The mean rate of productivity of TPs across all systems: 7 times higher (i.e. they produce on average seven times more articles), as shown below in Fig. 4.

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# Research ultra-elite (8)

Fig. 4. Research productivity (= mean number of journal articles): research top performers vs. the remaining 90% of academics involved in research, all countries.



# Research ultra-elite (9)

- Working patterns (academic behaviors) of Polish top performers similar (comparator 10 systems). Also research orientation similar.
- The annualization of the estimates of the academic time distribution: a 60 percent teaching period and 40 percent non-teaching period formula.
- The mean of the annualized total working time differential between top performers and the rest of academics is about 6 hours, ranging from 2 hours in Italy to 10 hours in Norway.
- Top performers in almost all countries also work consistently longer research hours, from 2 more hours in Italy and Norway, to as many more as about 5 hours in Germany, Poland and Portugal, 6 hours in Ireland, and 8 hours in the UK.
- In other words:
  - Polish TPs (vs. the rest of Polish academics), spend yearly in academia on average additional 33 full working days (5 hours times 52 weeks divided by 8 hours per day) on research, and
  - British TPs yearly on average additional 52 full work. days on research.
  - TPs spend more time on all activities, across most systems and across most clusters of academic fields studied.
  - Considering all academic activities, they just work on average (much) longer hours: week by week, month by month, and year by year.

# Research ultra-elite (10)

- Two ends of research productivity rates:
  - research top performers
  - research non-performers (non-publishers; Cole and Cole's "silent" scientists).
- Consistent non-publishers (among research-involved faculty) employed full-time in the university sectors across Europe). Their contribution to measurable national research output is zero.
- Their massive institutional existence: surprising from a traditional perspective prevalent prior to the emergence of the massified university.
- In Polish universities, their share is unprecedented: 43% (UK: 5.7%).
- Huge policy implications for Polish reforms: our disagreement with Mary Frank Fox (1983: 299) – the burden of unproductive faculty members is too heavy, and policy measures (now being taken!) need to be harsh.
- Competitive systems vs. non-competitive systems (universities, faculties, research groups, academics...): a lot can be done about „silent” scientists:
  - „Little can be done to affect the least productive, and nothing need be done that could affect the most productive. However, the scientists in the middle who offer a good deal but do not benefit from cumulative advantage may be an effective target for efforts to increase both opportunity and productivity in science”.

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# Research ultra-elite (11)

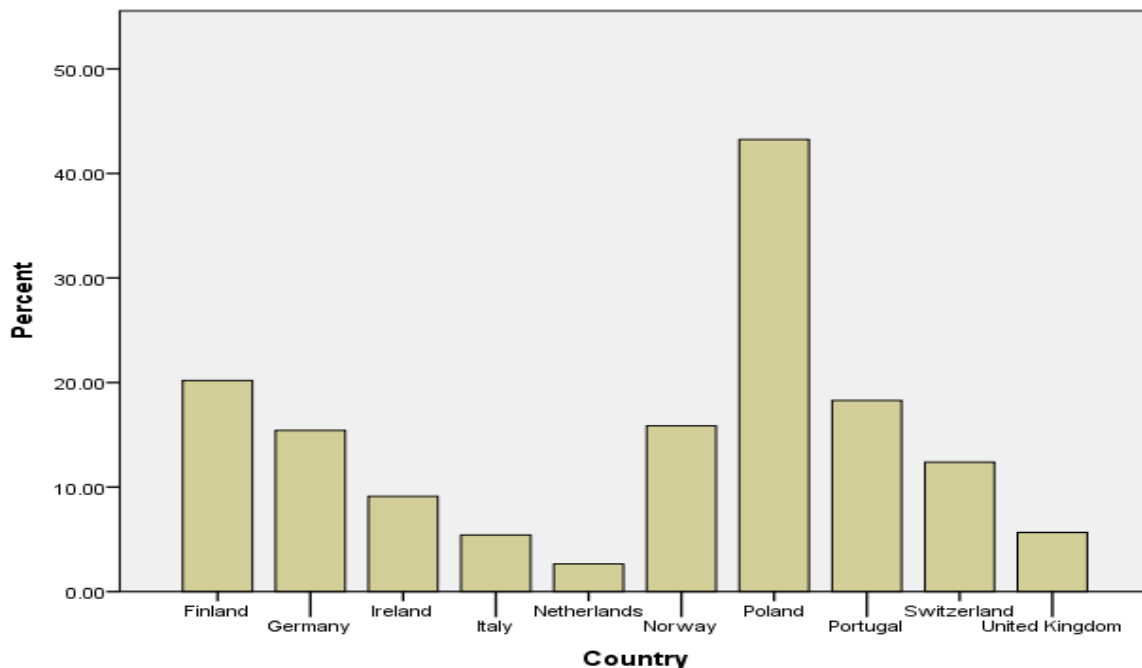
- A traditional account of the scientific community: full-time academic faculty employed in (Humboldtian, Continental) European universities who do not produce do not belong to it:
  - Warren O. Hagstrom's (1965: 43, *The Scientific Community*): published articles and books are “the most important channel of communication from the standpoint of the larger community. Those who do not contribute at all through this channel cannot be considered scientists”.
  - Consistent non-publishers would not belong to the larger academic community also according to:
    - Logan Wilson's *The Academic Man. A Study in the Sociology of a Profession* (1942),
    - Paul Lazarsfeld and Wagner Thielens' *The Academic Mind. Social Scientists in a Time of Crisis* (1958)
    - Theodore Caplow and Reece McGee's *The Academic Marketplace* (1958).
    - John D. Millett's *The Academic Community. An Essay on Organization* (1962) and
    - Paul Goodman's *The Community of Scholars* (1962)
- Wilson's (1942: 197) argument: „intellectual inquiry, unlike the growing of mushrooms, is not carried on in hidden recesses away from the public gaze. There is the necessity for bringing results to light in the form of publication, for in the academic scheme of things results unpublished are little better than those never achieved”.
- Millett's (1962: 82) argument: scholars are permanently subject to the critical scrutiny of their peers:
  - “each published article, each book review, each research project recorded, each participation in professional discussion, each book – all are carefully observed and remembered. No faculty member can escape the judgment of his colleagues or university and in the scholarly world at large”.
  - Thus: where do the consistent non-publishers („involved in research”) in Poland belong (see below)? New reforms – research-funding starvation; no further promotions/retantion.

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# Research ultra-elite (12)

Fig. 5. Non-performers (=non-publishers), full-time academics, universities only, by country (in percent).



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# Research ultra-elite (13)

- Polish top performers – characteristics and predictors:
  - show substantially different academic attitudes: consistently more research-oriented (also across all national systems studied). 20-30 pp. on average.
  - the combined proportion of academics indicating their primary interest lies “primarily in research” and “in both, but leaning towards research” among top performers substantially exceeds the share among the rest of academics
  - logistic regression analysis to identify and test the predictors of research productivity of academics across eleven European systems – not reported here. Pearson Rho’s correlation tests and the predictors were entered into a four-stage logistic regression model. Results show: international research collaboration, overall research engagement (peer reviewer, research time), and high academic rank (professor).

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## Research ultra-elite (14)

- Thus: all the research-active European academics divided into two halves,
  - the upper most productive half - more than 90 percent of all articles, and
  - the lower most productive half produces less than 10 percent.
- Research-active employed full-time in universities only: picture only slightly different.
- Specifically, 30% of European academics self-describing themselves as research-active actually show marginal or no research production (0-4 papers in 3 years).
- Leading to the redefinition of the meaning of what “average” and “low” research performance currently means.
- The distribution of academic knowledge production in Poland (and in Europe) not only skewed towards some institutional types (e.g. national flagship universities; or scattered); it is skewed most towards individual high performing academics, wherever they are institutionally located.
- Different institutional cultures lead to different research productivity. Institutions of low academic standing may belittle the significance of academic research while institutions of high academic standing may exert normative pressures on academics to get involved in research (Blau 1994: 24). In Poland, TPs are scattered across the country – but concentrated in 5 cities: Warsaw, Krakow, Poznan, Wroclaw and Lodz (NCN data).

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## Research ultra-elite (15)

- In Poland, a new funding regime (individual-based grants) heavily supports top performers wherever located.
- Before (and in systems with largely institutional-based funding, like Italy), top performers in less-performing institutions were penalized.
- Passage from the inbalance between institutional and individual research assessment exercises. Today no penalty for working in a non-competitive location.
- Dilemma: supporting high-performing individuals – or supporting highly-ranked institutions (towards concentration of talents in several institutions only, with forced mobility)?
- Danger: TPs in isolated islands; in unfavorable institutional cultures – how to do research in the „minor league” universities; mobility and inbreeding (Crane 1965)?
- Countries with high investments in academic research (most of 10) vs. low investment countries (PL). Competitive (most of 10) vs. non-competitive systems (PL, IT). „Once in – forever in” vs. „up or out”.
- PL towards a highly competitive, individuals-based system, with low investments. Growing productivity inequalities, academic stratification, haves and have-nots. No more evenly spread funding.

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# Conclusions and policy implications (1)

- Conclusions: the Polish academic profession:
  - Top performers (TPs) (upper 10%): similar in academic behaviors (working habits), academic attitudes (research orientation), and academic productivity
  - The remaining 90%: working (much) longer teaching hours, much less research-oriented, and with much lower research productivity
  - Unique in Europe: 43% of non-producers. Otherwise similar patterns of productivity distribution: 50% of national output – by TPs. Consistently similar patterns across Europe, PL included.
  - If non-producers removed from the sample of research-involved academics („silent” scientists cannot be research-involved), then actual average research productivity in the university sector is only slightly lower.
  - Lower levels of internationalization in research – but similar cross-disciplinary patterns.
  - „Internationals” in PL structurally similar, and more internationalized
  - Much bigger impact of international research collaboration on publishing productivity and international co-authorship levels: more collaboration needed!
  - The lowest readiness to connect to the outside social and economic world (the ivory tower university model strong; power of academic bodies)
  - Policy challenge: non-performers and low performers. What to do?

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# Conclusions and policy implications (2)

- Conclusions: the Polish system:
  - Huge ongoing conflict of values: academics vs. policymakers and reformers.
  - Institutional vs. instrumental visions of the university in a fundamental conflict. The former doomed to lose – an inefficient and underperforming system today.
  - Powerful government tools used in reforms: new, individual-based research funding (previously: institutional-based) to increase national research output.
  - A transition from an underfunded non-competitive system to an underfunded highly competitive system
  - A decade of system contraction, combined with new structural reforms based on new values and rules of the game: accelerated changes after two decades of changes.
  - But: Reforming universities does not lead to reformed universities. Policymakers tend to view universities as ‘incomplete’. Reforms are intended to make them ‘complete’ institutions (Brunsson 2009). Reforming universities is thus leading to further waves of university reforms (Maassen and Olsen 2007; Clancy and Dill 2009).

We thought we have been living in interesting times in the last 25 years of postcommunist transitions – but the coming decade is bound to be even more interesting (also for us, higher education researchers!)

Thank you!

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