Discussing basic concepts on bibliometrics

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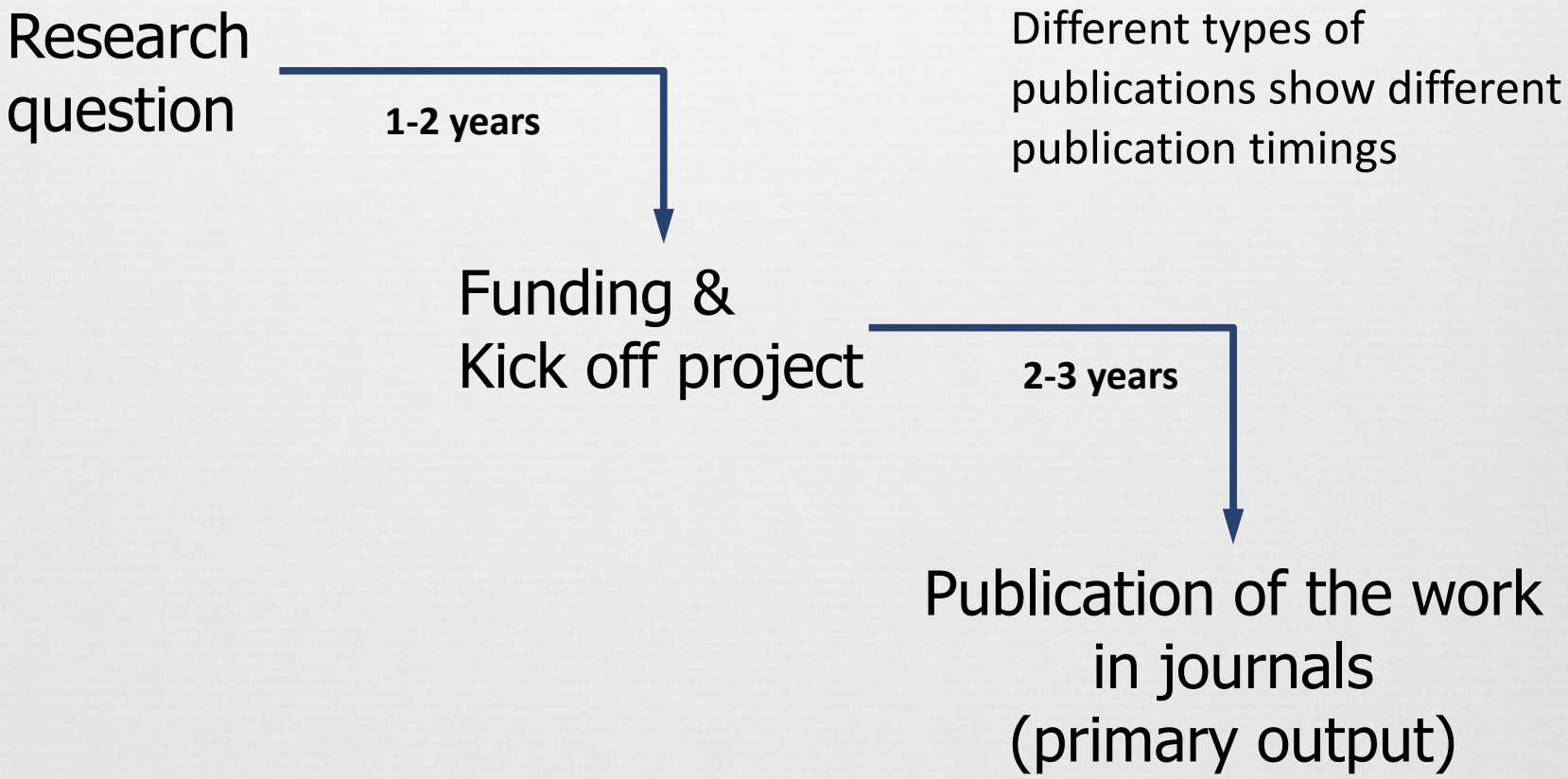
According to Frascati Manual[1]

- Bibliometrics is the generic term for data on publications.
- Originally, it was limited to **collecting data** on numbers of scientific articles and other publications, **classified** by **author** and/or by **institution**, **field** of science, **country**, etc., in order to construct simple "productivity" **indicators** for academic research.

[1]Frascati Manual 2002: The measurement of scientific and technological activities, OECD, Paris, 2002

Timings in the productions of knowledge



Different types of publications show different publication timings

- Grant J, Lewison G. Science 1997; 278: 878-80.
- Grant, J. Research Evaluation 1999; 1: 33-8.
- Grant, J. et al. BMJ 2000; 320: 1107-1

Assumptions & Consequences I

Assumptions / facts
Scientific publications are primary output of scientific and technological research

Consequences
Information in bibliographic databases allow monitoring and assessing performance of…

Concepts & implications

Concepts	Implications
Collecting data	Issues related to the **data source**
Classification of data Required to calculate indicators and benchmarking	Requires **attributing** publications to…
	Territorires, fields -> ***MACRO*** level studies
	Sectors, fields, institutions -> ***MESO*** level
	Researchers and groups -> ***MICRO*** level

Quality of the results of bibliometric analysis depends almost entirely on the precision of the process of attribution of publications.

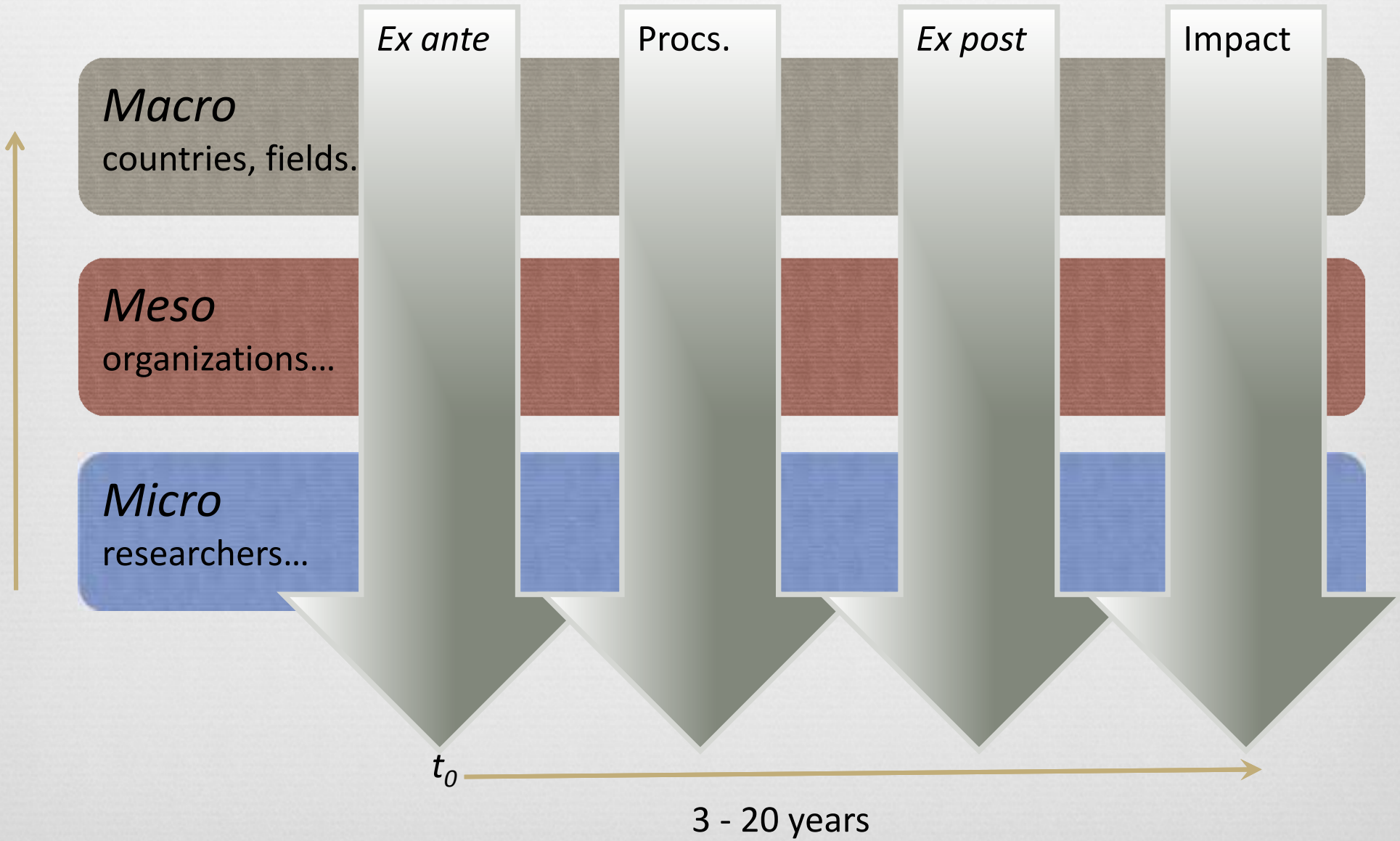
Are they the same size?

Organitzacions	nDocs	nCites
Institut de Recerca Vall d'Hebron (IRHUVH), Barcelona	10,726	211,053
Complejo Hospital Clínico de San Carlos, Madrid	10,318	130,178
Institut d'Investigació Biomèdica de Bellvitge (IDIBELL)	8,634	170,470
Complejo Hospitalario la Paz, Madrid	8,444	102,045
Centro de Química Orgánica Lora Tamayo, CSIC, Madrid	7,983	107,312
CIEMAT, Madrid	5,989	85,800
Instituto de Ciencia de Materiales de Madrid (ICMM), CSIC, Madrid	5,959	89,408
Museo Nacional de Ciencias Naturales, CSIC, Madrid	2,715	39,756
Consejería de Economía, Innovación y Ciencia (CICE), Anadalucía	1,153	9,180
RENFE, Madrid	1,130	15,374
Fundació Puigvert, Barcelona	766	9,564
Thomson-Reuters, Barcelona	605	2,124
Institut d'Estudis Catalans (IEC), Barcelona	422	5,651
Laboratori Almirall, Barcelona	396	5,544

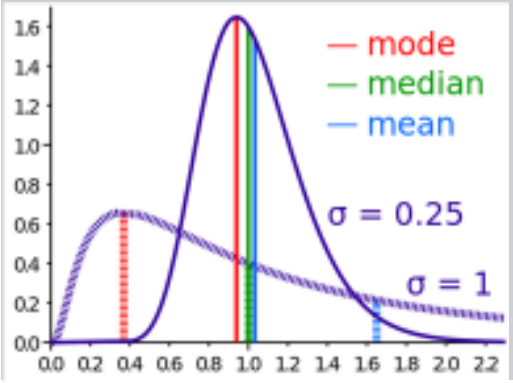
Other issues…

Time & Type analysis - But always of past vevents-	Transversal & longitudinal
	Before hand -> ***ex ante***
	At the end of activities -> ***ex post***
	Quite some time after… -> ***impact assessment***

General schema



Bibliometric indicators

Different types 	**Activity** / **size**: #Documents
	Visibility / **impact**: based on the #citation*
	Excellence: analysis of the right tale of distrib.
	Cooperation: concurrence of territories, orgs, sectors and actual authors

*the number of citation to a papers depends on the time elapsed from its publication, the field in which was classified, as well as on the type of the document being published. The number of citations per papers is always positively skewed

Assumptions & Consequences II

Assumptions / facts
Researchers acknoledge peer's contribution by citing their previous work

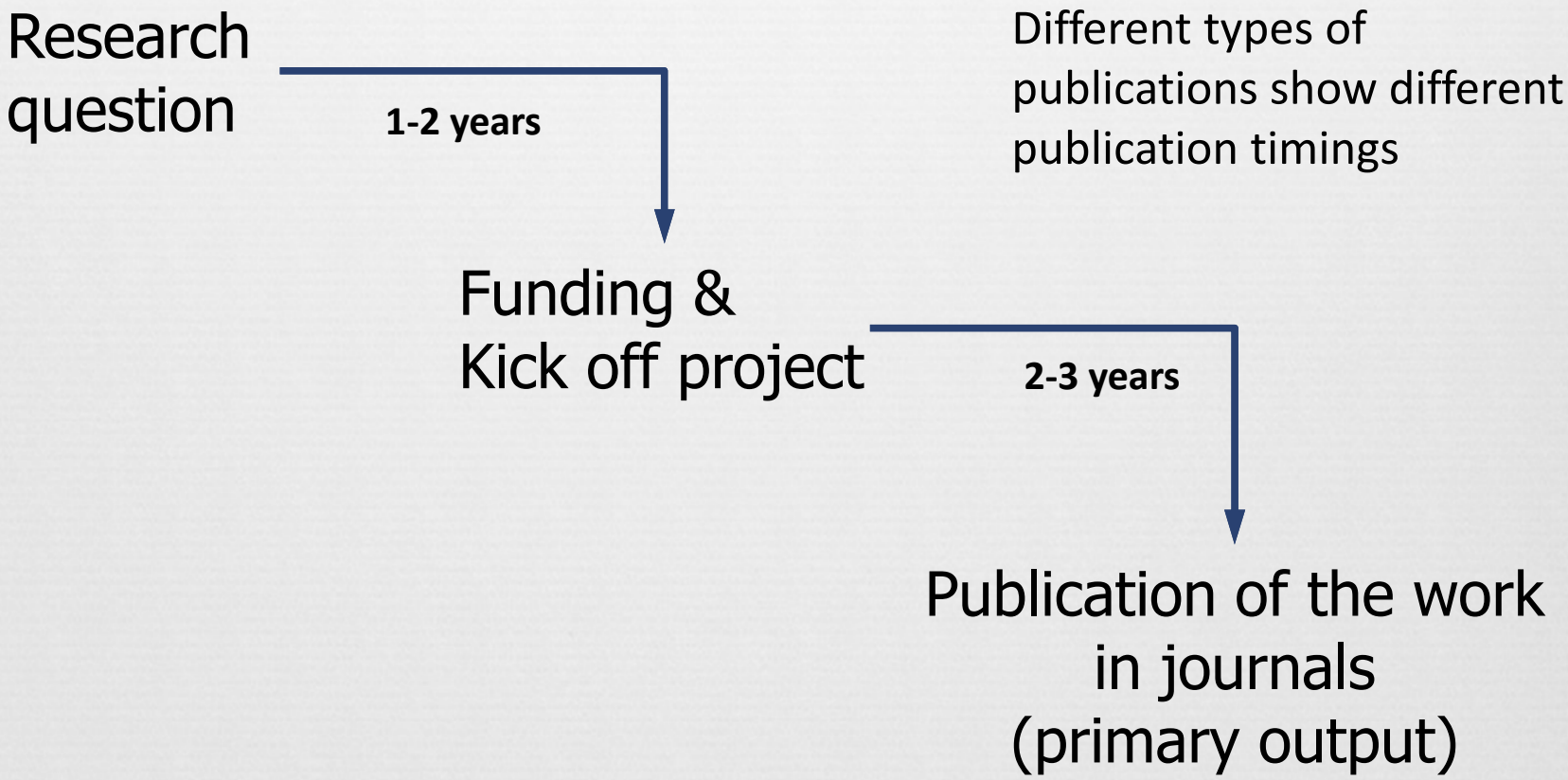
Consequences
#Citation might be considered a proxy of influence, visibility, prestige, quality of the work published

Assumptions & Consequences III

Assumptions / facts
Published papers reflect actions taken in the past and NOT those taken by the time of the analysis, nor in the presente time.

Consequences
Bibliometrics refers always to the past. Only trends and extrapolations can offer information about future outcomes

Timings in the productions of knowledge



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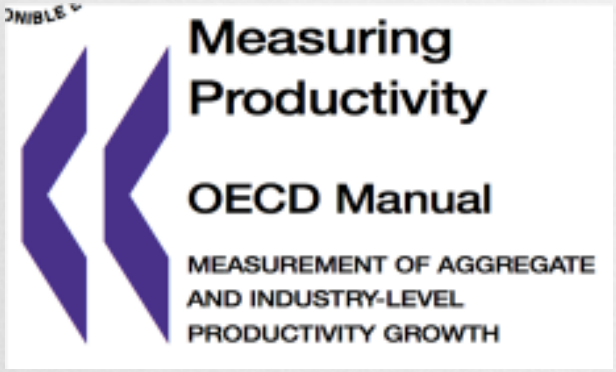
Main limitation to the advance of bibliometrics

- Lack of international stantards despite the great value developed countries put in the creation of knowledge.

According to the OECD:

*"Science and technology activities are a **major driver** of **productivity** and **economic growth**."*



Canberra Manual

MANUAL ON THE MEASUREMENT OF HUMAN RESOURCES DEVOTED TO S&T

Normalització d'autors

Namesakes

- MORENO, A
  1. Moreno Zamora, Ana
  2. Moreno Ribas, Antonio
  3. Moreno López, Ángela
  4. Moreno Berto, Arnaldo Vicente
  5. Moreno Pérez, Agustín
  6. Moreno, Alberto
  7. Moreno, Ana
  8. Moreno, Armando
  9. Moreno, Almudena
  10. Moreno, Alfonso
  11. Moreno Camacho, Asuncion
  12. Moreno Moreno, Andrés

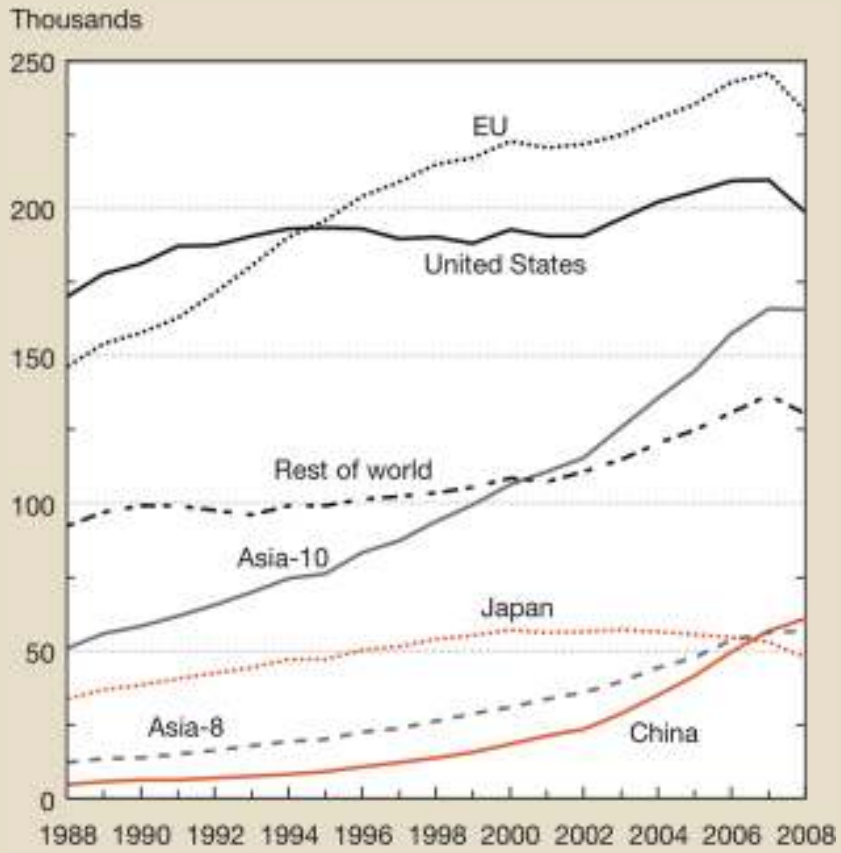
Synonyms

- Morales Suárez-Varela, María Manuela del Mar
  1. MORALES SUAREZ VARELA, M
  2. SUAREZ VARELA, MMM
  3. SUAREZ VARELA, MM
  4. MORALES, MM
  5. SUAREZVARELA, MMM
  6. SUAREZVALERA, MMM
  7. MORALES, M
  8. SUAREZ VARELA, M
  9. VARELA, MMS
  10. MORALESSUAREZVARELA, MM
  11. SUAREZVARELA, MM
  12. MORALES SUAREZ VARELA, MM
  13. MORALESSUAREZVARELA, M

Recerca científica i tecnològica al món

Context actual

S&E journal articles produced by selected regions/countries: 1988–2008

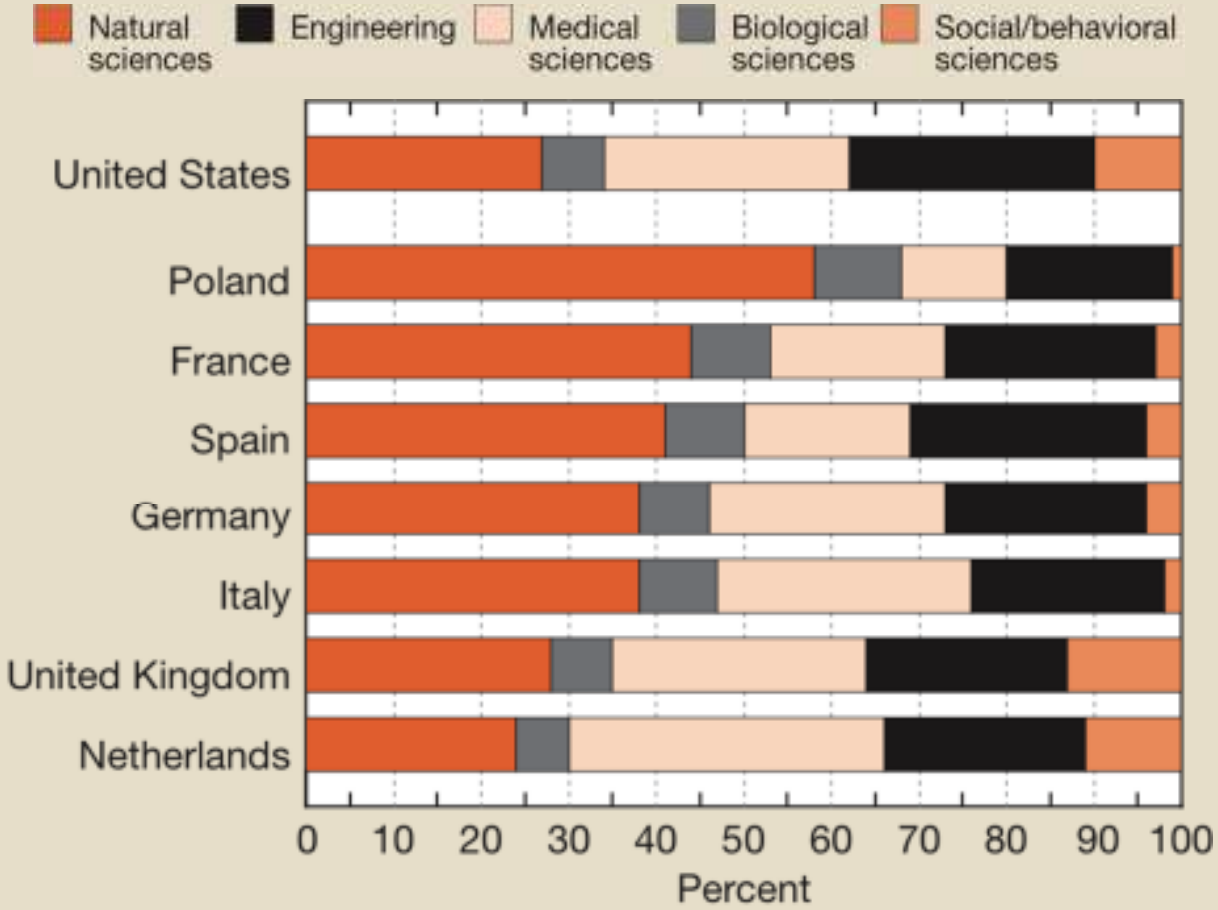


EU = European Union

NOTES: Asia-8 includes India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand. Asia-10 includes Asia-8 plus China and Japan. Internationally coauthored articles credited fractionally to authors' countries/locations. Counts for 2008 are incomplete.

SOURCE: National Science Board, *Science and Engineering Indicators 2010*

Field shares of research articles for selected European countries: 2007



NOTE: Natural sciences include astronomy, chemistry, physics, geosciences, mathematics, and computer sciences.

SOURCE: National Science Board, *Science and Engineering Indicators 2010*

International coauthorship of S&E articles, by region/country: 1988–2007

EU = European Union

NOTES: Asia-8 includes India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand. EU includes all 27 member states. For internationally coauthored articles, each author location receives one count.

SOURCE: National Science Board, *Science and Engineering Indicators 2010*

Moltes gràcies…

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