

Rathenau Instituut

Funding excellence: a deliberately created Matthew effect?

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Context

- Stimulating scientific excellence is a policy goal
- Funding plays an important role in policy instruments stimulating scientific excellence
- Indications for and protest against the Matthew effect in research funding is rising (e.g. Bol et al. 2018)
- Data on concentration of grants relative to the population are scarce

Research questions

Are policies stimulating excellence deliberately creating a Matthew effect?

- What is the relation between policies stimulating excellence and the Matthew effect?
- Is the amount of funding available for programs stimulating excellence growing?
- Is the concentration of funding from excellence programs in individual researchers, institutions or domains increasing?
- Are excellence programs used as indicator for individual and systemic excellence?

Methodology

- Analysis of policy documents and records of political debates.
- Selection of excellence oriented funding programs:
 - Excellence as dominant/sole selection criterion.
 - Publicly funded.
 - Available to all disciplines.
- Created a database of every grant/prize from these excellence programs from 1995-2016.
 - Harmonization of data, coupling multiple grants/prizes to unique ID's

The Matthew effect

- Merton (1986, 1988): principle of cumulative advantage

“the Matthew effect is the accruing of large increments of peer recognition to scientists of great repute for particular contributions in contrast to the minimizing or withholding of such recognition for scientists who have not yet made their mark.”

-> concentration of recognition in persons that already received a lot of recognition
(-> unfair or undeserved)



Policies promoting scientific excellence: a shift in policy logic

- Investing in the very best researchers will be a more effective way to fund research than to stimulate the groups, organizations or fields that perform below average.
- Necessary to keep up with top science in other countries, mostly in the US or UK.
- Investing in excellent research creates spillover effects.
- Policy goal: vertical differentiation through selection and concentration of funding.
- Not just in The Netherlands.

Concentration of funding and the Matthew effect

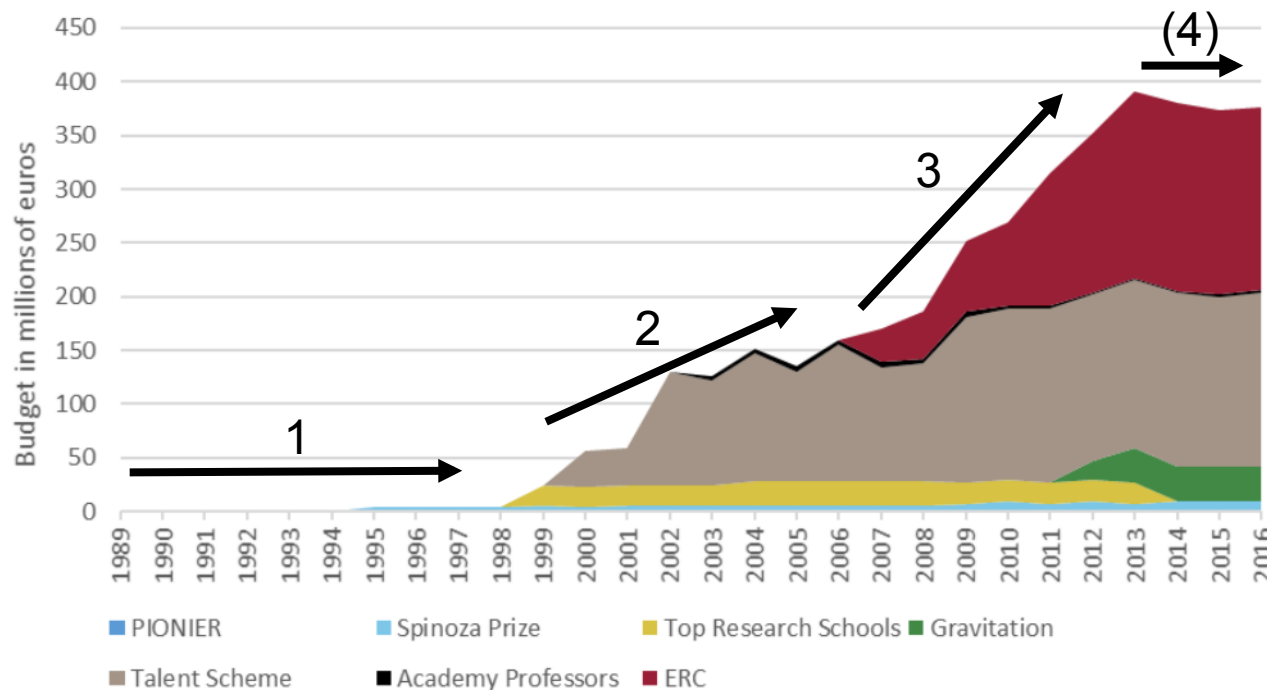
Concentration of funding:

- Main alleged mechanism: concentration → systemic excellence.
- The best (researchers, ideas, groups) get more funding than others.
- Success is vertical differentiation through financial differentiation.

• Matthew effect:

- Concentration of funding in those who are considered the best/have the best reputation
- Having received excellence funding is an indicator of excellence (ERC) and brings reputation
- Success in excellence programmes is dependent on the past performance in funding acquisition

Development of excellence policies in The Netherlands I



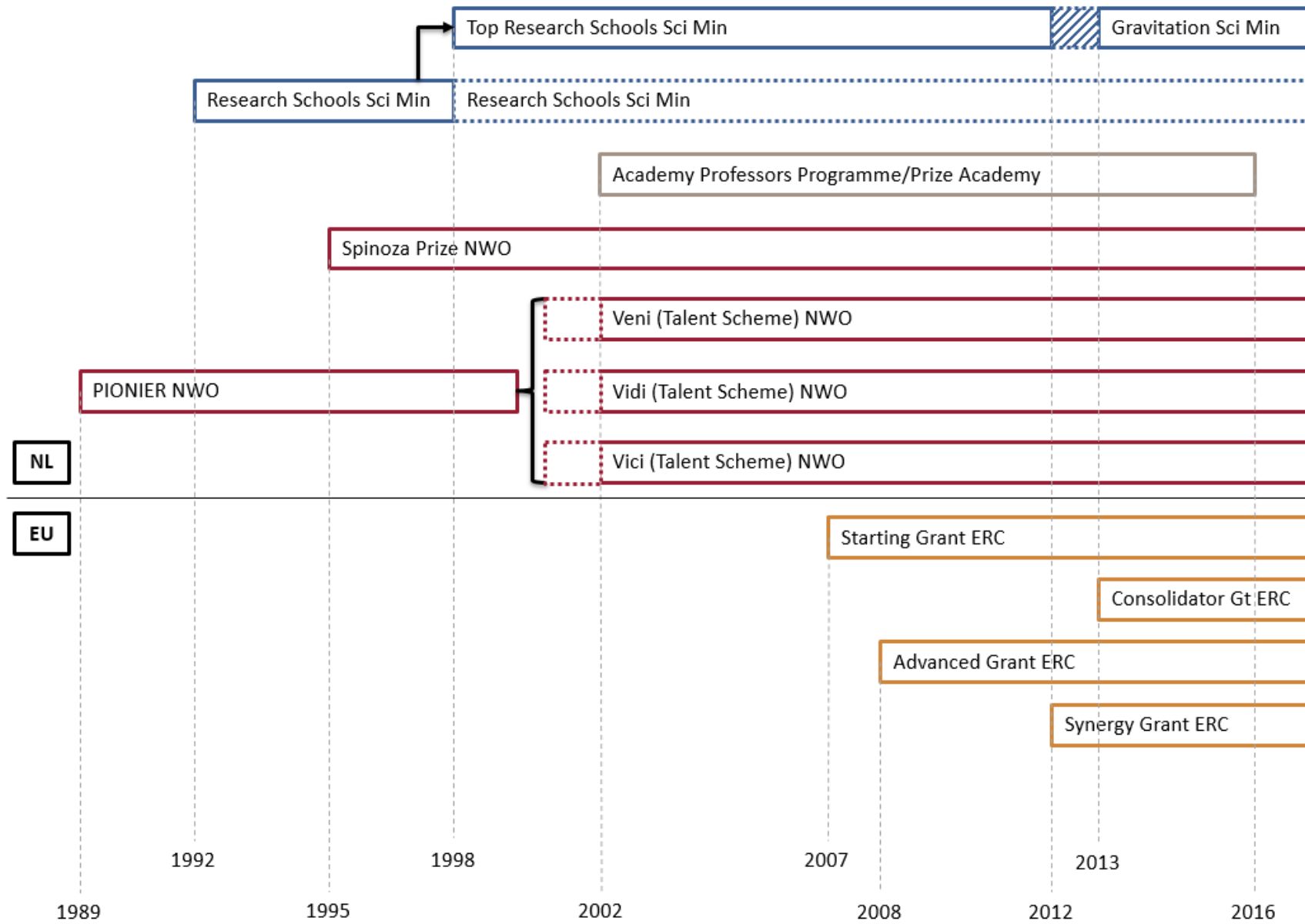
Four stages of policy development:

1. Political debate and policy talk
2. Implementation of larger programs
3. Steep rise (ERC)
4. (Stabilization/increase European budget?)

Explanation: The total amounts calculated for the individual grants and prizes are based on the year of the award. The larger amounts for consortia are divided over the award period (ten years for Gravitation, six years for the ERC Synergy Grant) to avoid major fluctuations.

Sources: OCW, NWO, ERC and Academy. Adapted by the Rathenau Instituut.

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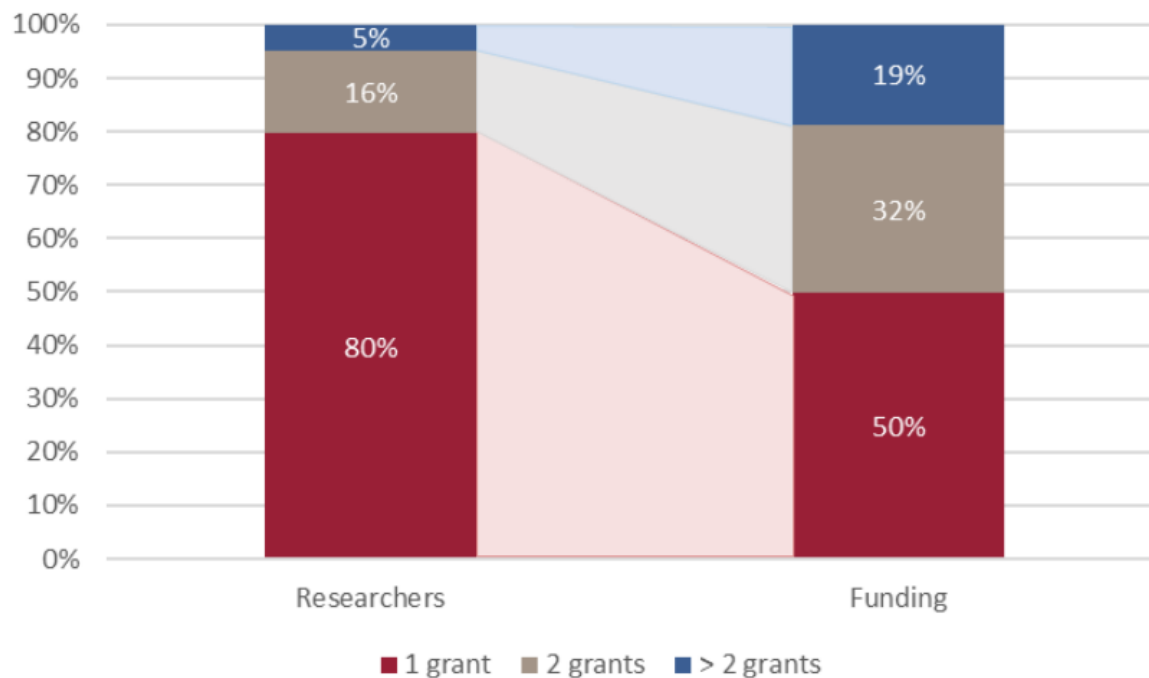
Concentration of research funding: two levels

Individual researchers

Universities

Concentration of research funding: individual researchers

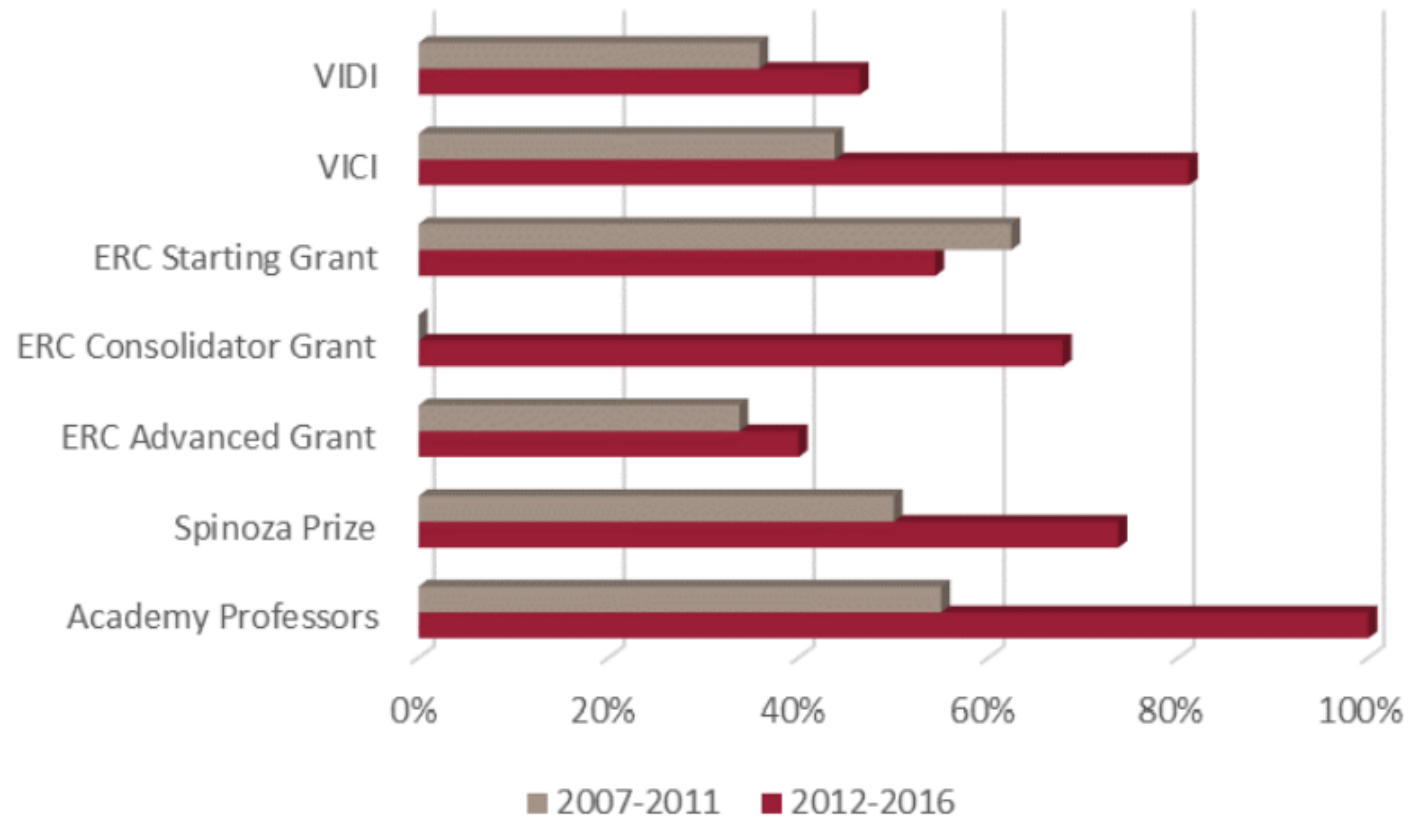
- At one point in time, about 5% of researchers at Dutch universities are performing research with an excellence grant they received.



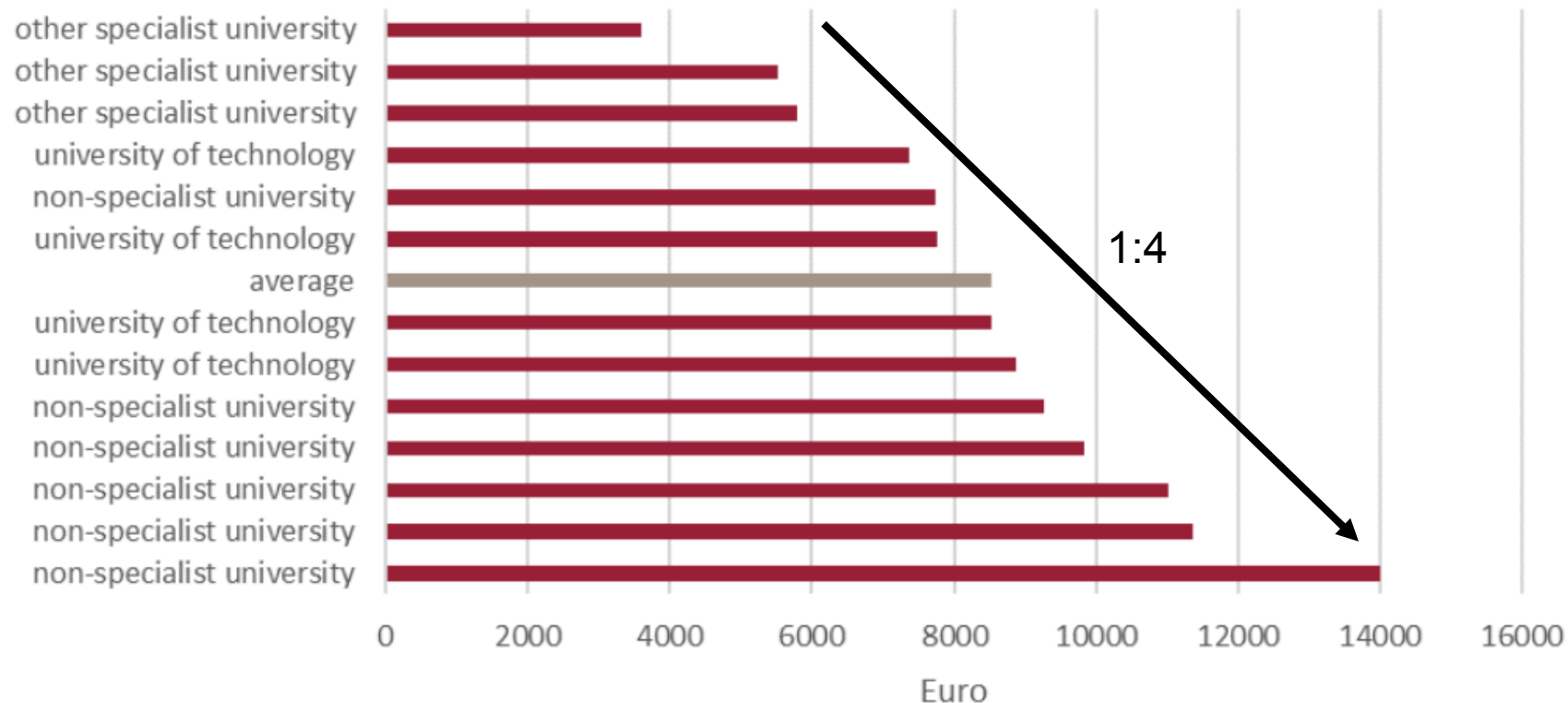
From the group of funded researchers, 20% received more than one excellence grant. The same 20% of multiple grant winners received 50% of the total amount of excellence funding.

Concentration of research funding: individual researchers II

Individual accumulation of excellence funding: how often does it occur that grant winners already won another grant earlier in their career?



Concentration of funding: universities

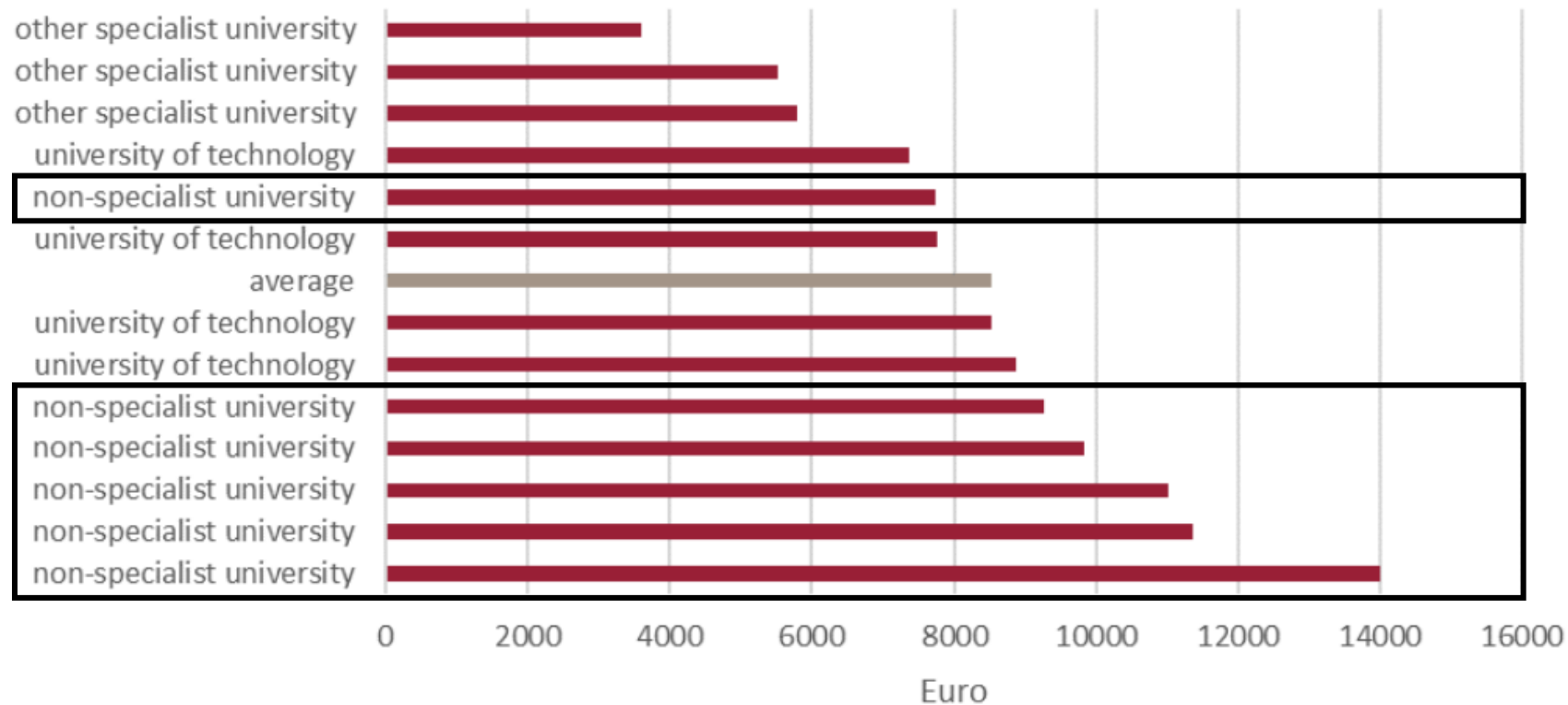


Yearly average excellence funding per researcher (2003-2016).

Sources: NWO, ERC, Academy and WOPI-Flex 2016. Adapted by the Rathenau Instituut.

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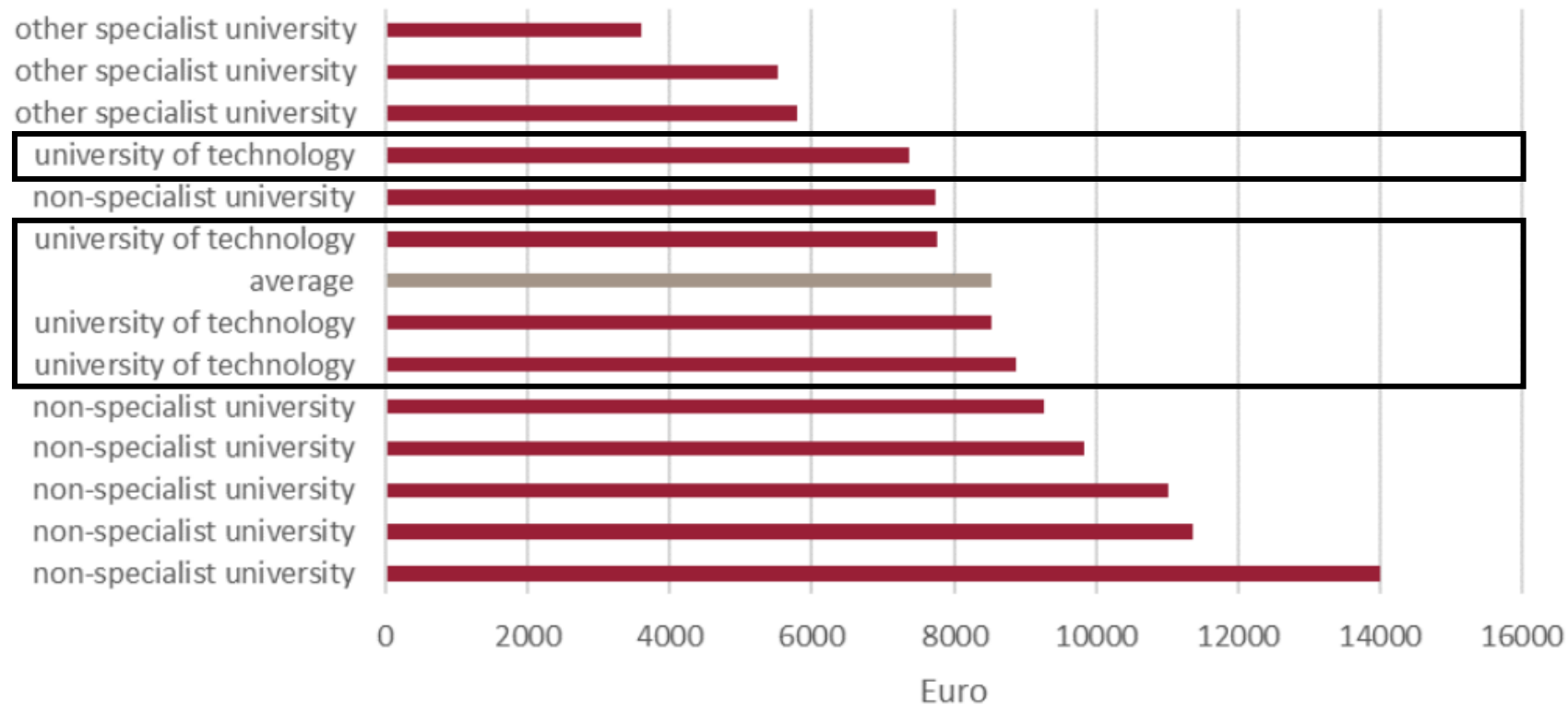
Concentration of funding: universities



Sources: NWO, ERC, Academy and WOPI-Flex 2016. Adapted by the Rathenau Instituut.

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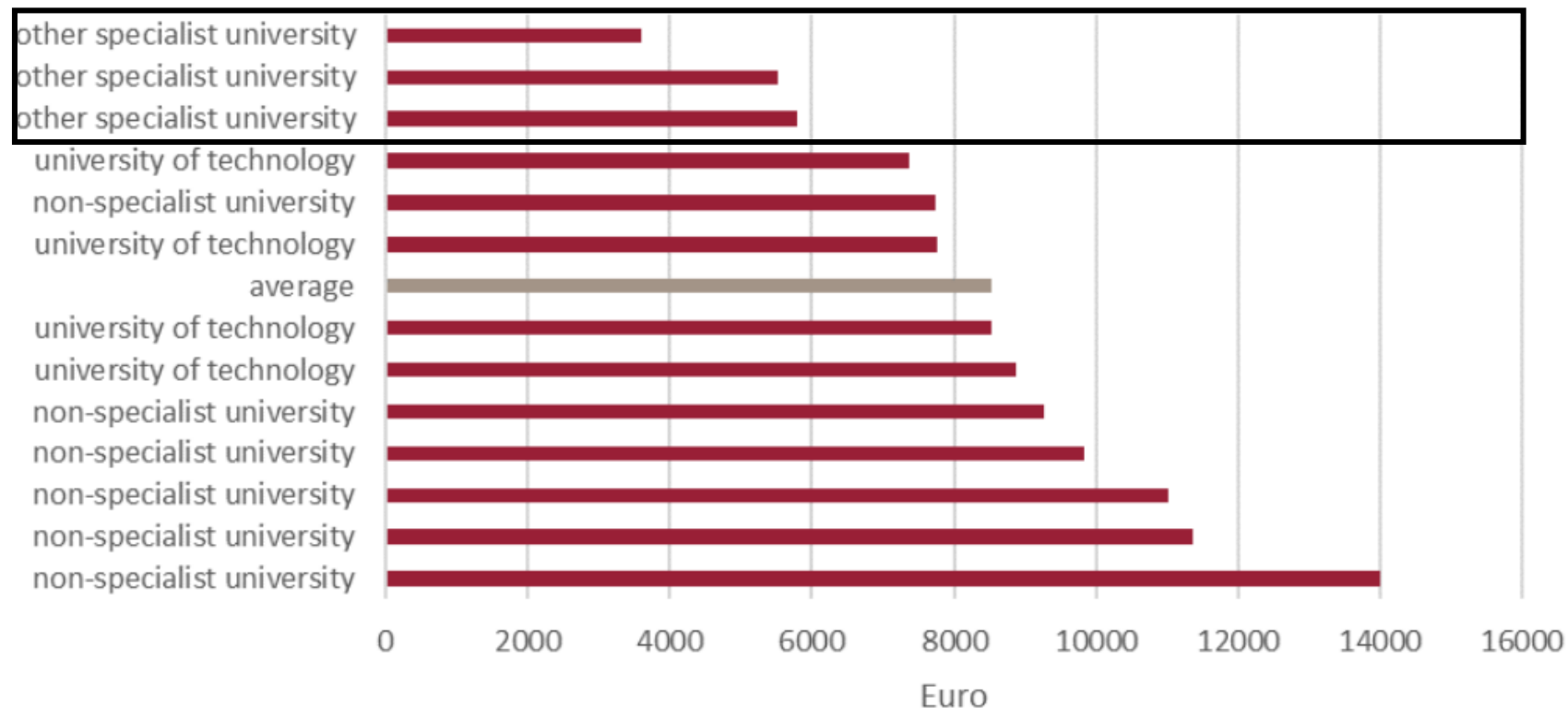
Concentration of funding: universities



Sources: NWO, ERC, Academy and WOPI-Flex 2016. Adapted by the Rathenau Instituut.

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Concentration of funding: universities



Note: differences (in terms of deviation from the mean) are stable between 2003-2016.

Sources: NWO, ERC, Academy and WOPI-Flex 2016. Adapted by the Rathenau Instituut.

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Conclusions: is funding excellence deliberately creating a Matthew effect?

- Is excellence funded?
 - Yes, or at least *excellence funding* clearly increased.
- Is concentration of funding created?
 - Yes, data show concentration of excellence funding at two levels: (1) individual researchers; (2) universities
 - For individual researchers there also was a clear **increase over time**
- Is it done deliberately?
 - Yes, concentration of funding is an explicit policy means to create vertical differentiation, translated into excellence programs.
 - No, excellence programs claim to fund only the most excellent researchers, but in practice grants are used as excellence indicator (both in selection committees (see Bol et al. 2018) and policy context).

Thank you for your attention.

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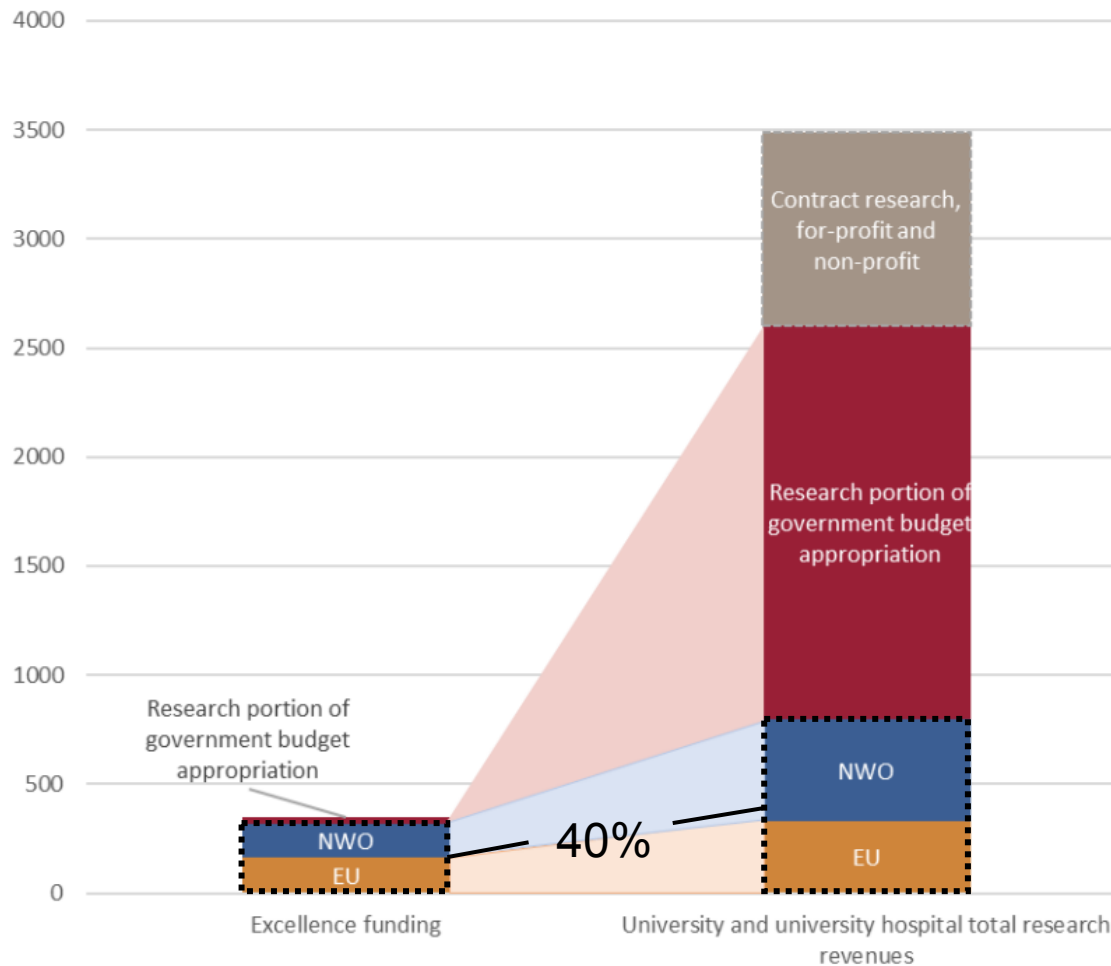
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Bol et al.

- Getting a grant has a significant effect on chances to get another grant
- Not-getting a grant reduces the chance to apply for another grant with...[a third?]
- Citation scores of people with a high rating in the selection process are higher than people with a low rating
- Getting the grant does not improve citation scores
- The Matthew effect does exist.

Excellence funding as share of total university research revenues

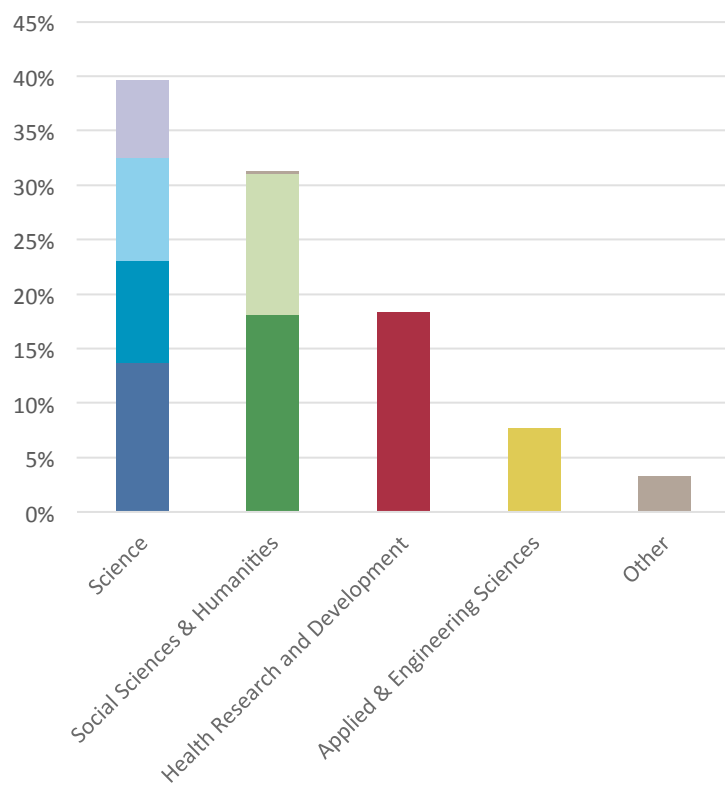


Two remarks:

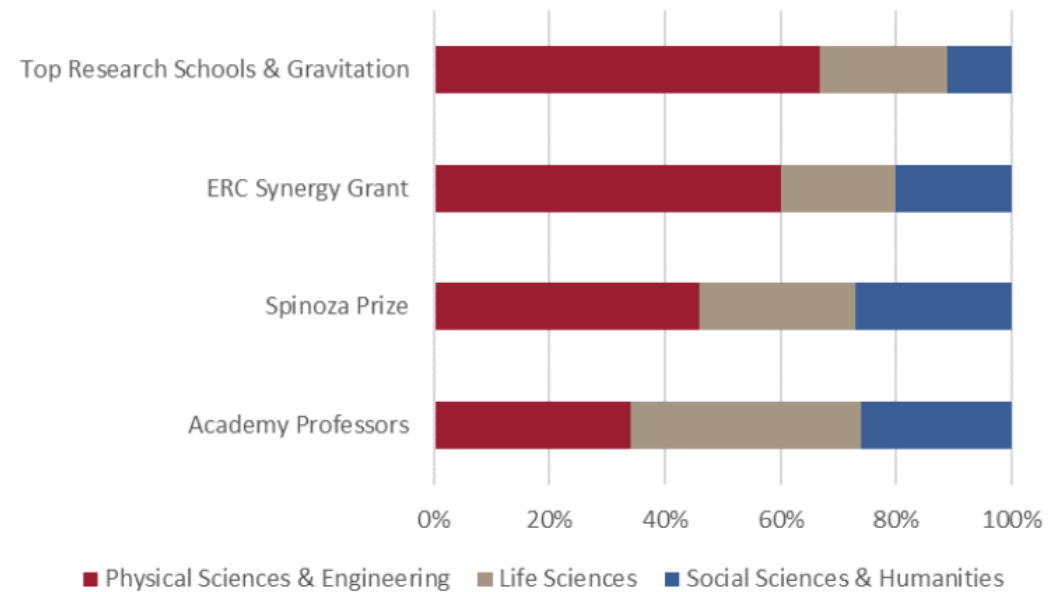
- Share seems modest, but impact is much bigger.
- The excellence funding as share of total university revenues is rising.

Concentration of research funding: research domains

Location of excellence funding per domain (IWO - Innovational Research Incentives Scheme)



Allocation of other excellence programs per domain



Note: size of research domains is unknown. Therefore it is difficult to draw conclusions on domain 'preferences' of excellence policies.

R Funding excellence: a deliberately created Matthew effect?

Funding excellence: what are we talking about?

National (and international) funding programs, strategies and policies for scientific research at academic research organizations.

Research subsidies (grants and prizes) mostly used for basic research at universities.

Important role for research councils (NWO, ERC).

- Consensus on excellence:
 - Worth investing in.
 - Used to indicate top quality.
 - A zero sum concept: not everyone can be excellent.
- Highly contested (e.g. Ferretti et al. 2018):
 - How to define excellence.
 - How to measure excellence.
 - How to recognize excellence.

Rise in funding initiatives across Europe that specifically promote research excellence in the last years and even decades (OECD 2014).