*"Kennismakers Spreken" - 14 oktober 2010*

# Troubling Trends

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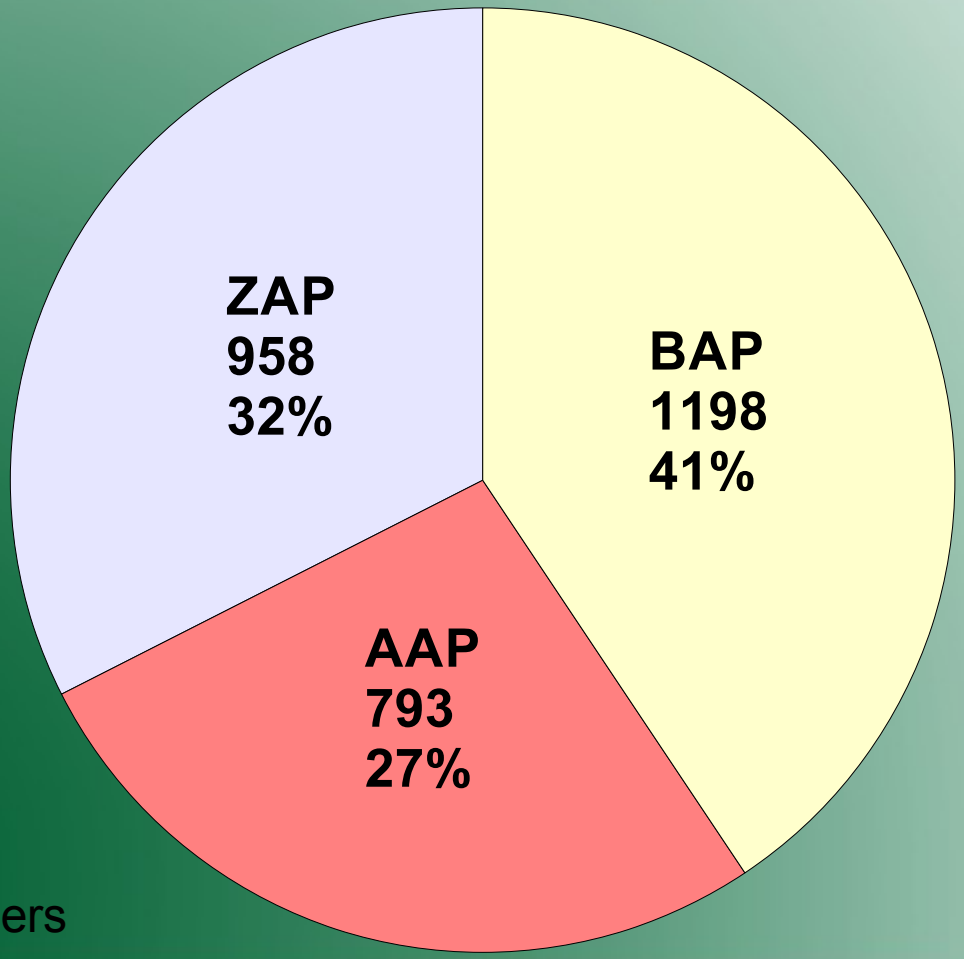
# *Four troubling trends*

1. Staff **proportions** are changing
2. Research **funding** is changing
3. Quality is **measured** quantitatively
4. Gender **inequality** remains an issue

# *1. Staff proportions are changing*

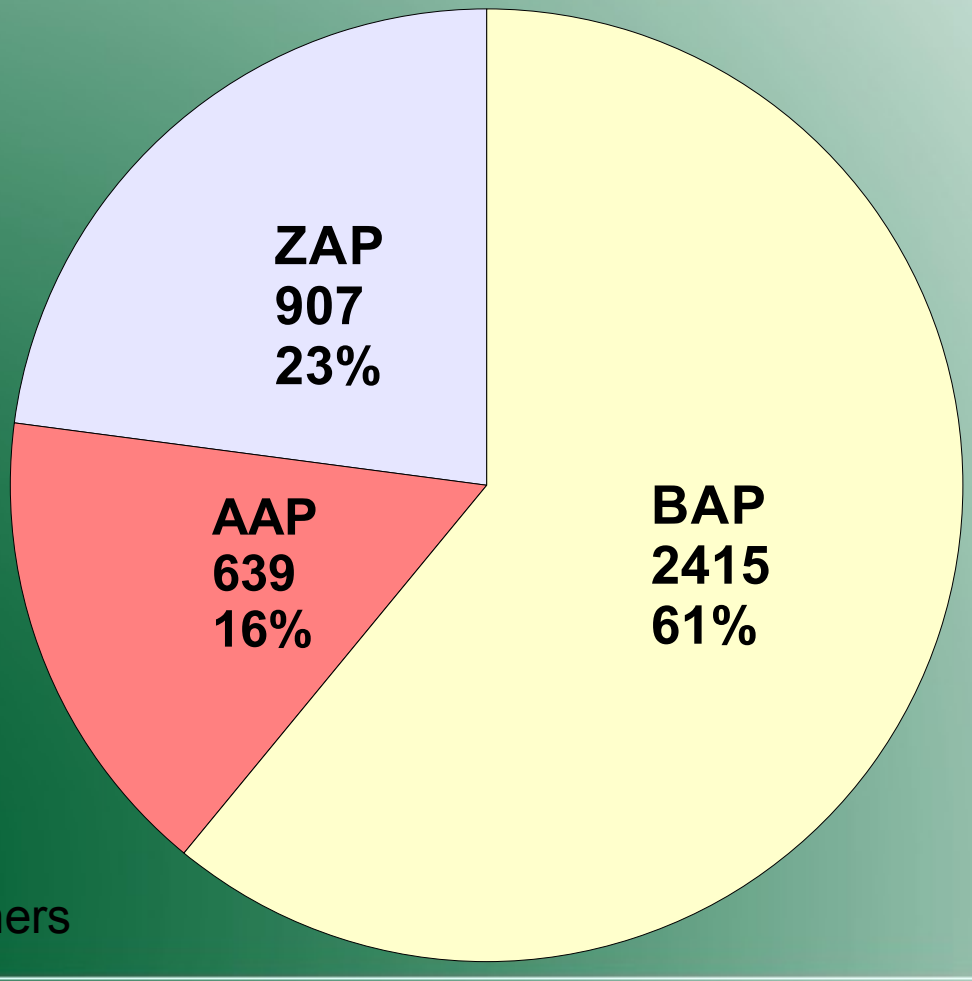
1992

Staff numbers are expressed in full-time equivalents (numbers are from K.U.Leuven year reports)




ZAP = professors
AAP = assistants
BAP = PhD students
post-doc researchers

# *1. Staff proportions are changing*

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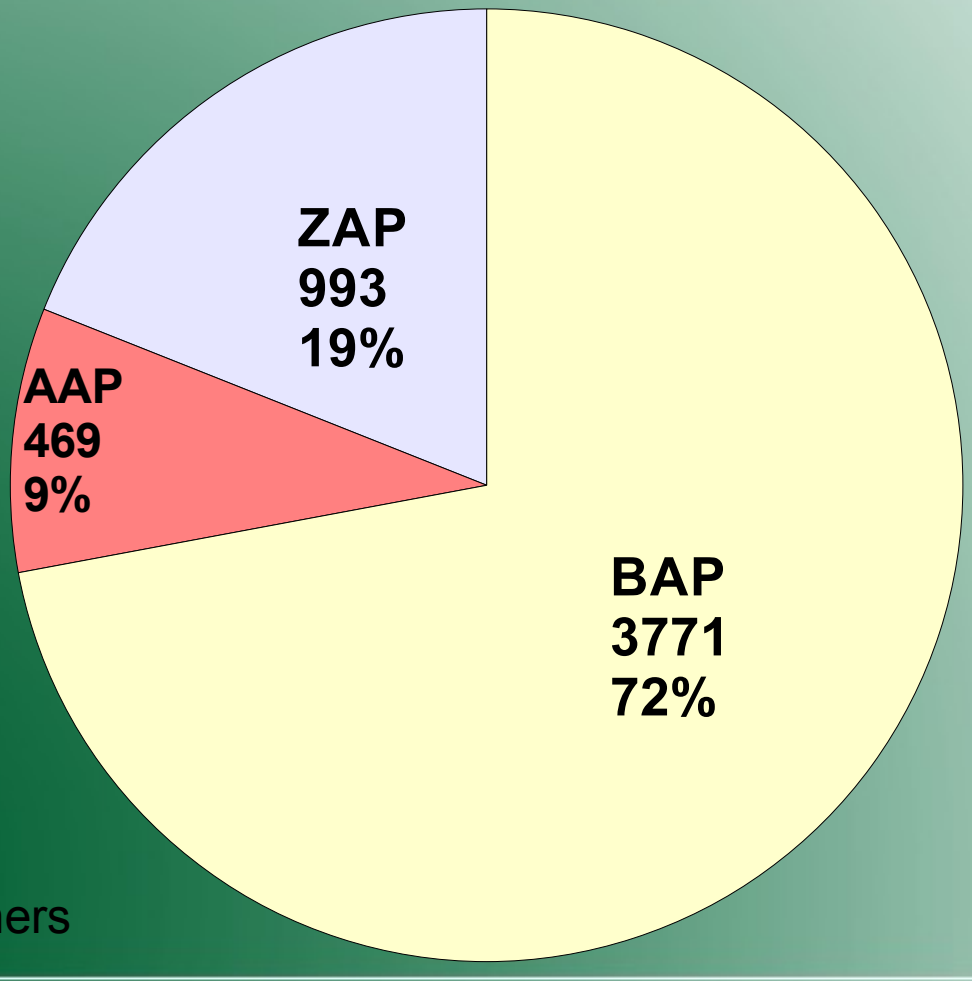
# *1. Staff proportions are changing*

2008

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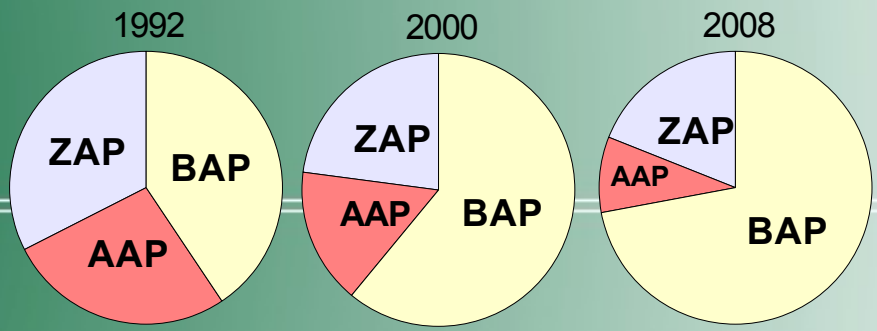
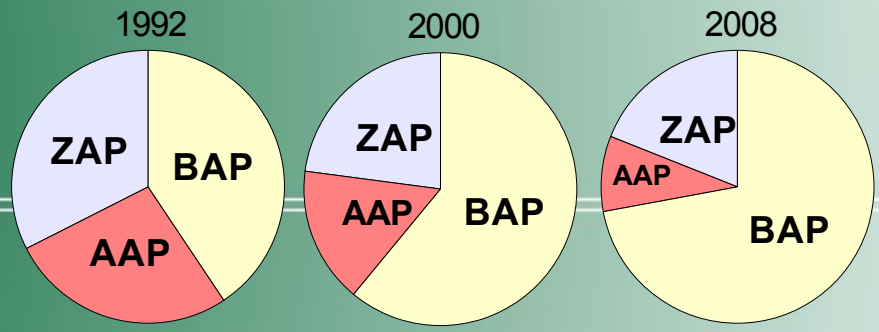
# *Changing proportions: consequence 1*

- Average number of PhD students per fte professor:
  - 1992: 1 ½
  - 1998: 2
  - 2000: 2 ½
  - 2008: 3
- Inevitable consequence:
  **PhD supervisors have less time for PhD students.**



# *Changing proportions: consequence 2*

- Much more PhD student positions, more post-docs positions, but same number of professor positions
- Chances to get tenure become slimmer and slimmer
- Inevitable consequence:
  **Researchers have increasingly uncertain academic career perspectives.**
- This has an impact on research priorities/quality



# *2. Research funding is changing*

- Main reason for changing staff proportions
- Government funding
  - Structural funding is eroding (not sufficiently adjusted for inflation)
  - Temporary (project) funding increases
- Private funding becomes more important
- Independent research requires funding without "strings attached"

# *Research funding: government model*

- University = paper factory? (seems to be government view)
- Government aim: **reduce budget while increasing productivity, by stimulating competition between institutes**
- Vandenbroucke's algorithm: (slightly simplified for clarity)
  - Let F = some initial amount of funding
  - Every year:
    - Let $O_{tot}$ = total output of Flanders (publications, graduations)
    - For each institution i:
      - Let $O_i$ = total output of institution i
      - Give institution i funding $(O_i / O_{tot}) \times F$
    - Set F = (underestimated inflation index) x F

# *Rationalization (cf. Soete report)*

- What is “rational” w.r.t education is not necessarily “rational” w.r.t. research
- Courses/programs with few students...
  - are “irrational” according to Soete
  - are often important for research:
    - “big” courses are usually about “old” research
    - “small” courses are usually about “new” research

# *3. Quality is measured quantitatively*

- What are the core tasks of an academic researcher?
  - **Read** papers
  - Perform **research**
  - **Discuss** with peers
  - **Write** papers
  - Peer **review**
  - **Teach** next generation of researchers
  - Explain results to a **broad audience**
  - Contribute to **society**

# *3. Quality is measured quantitatively*

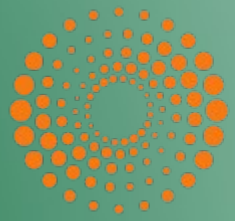
- How are researchers evaluated? What is measured?
  - ~~**Read** papers~~
  - ~~Perform **research**~~
  - ~~**Discuss** with peers~~
  - **Write** papers
  - ~~Peer **review**~~
  - ~~**Teach** next generation of researchers~~
  - ~~Explain results to a **broad audience**~~
  - ~~Contribute to **society**~~
  - **Attract funding**

# *3. Quality is measured quantitatively*

- Policy makers think they can measure the **quality** of papers **quantitatively** (e.g. using impact factors)
- Government funding world-wide is increasingly based on “magic numbers” computed by companies like Thomson Reuters

  (a for-profit multinational giant,

  2009 profits were $1.5 billion)



THOMSON REUTERS

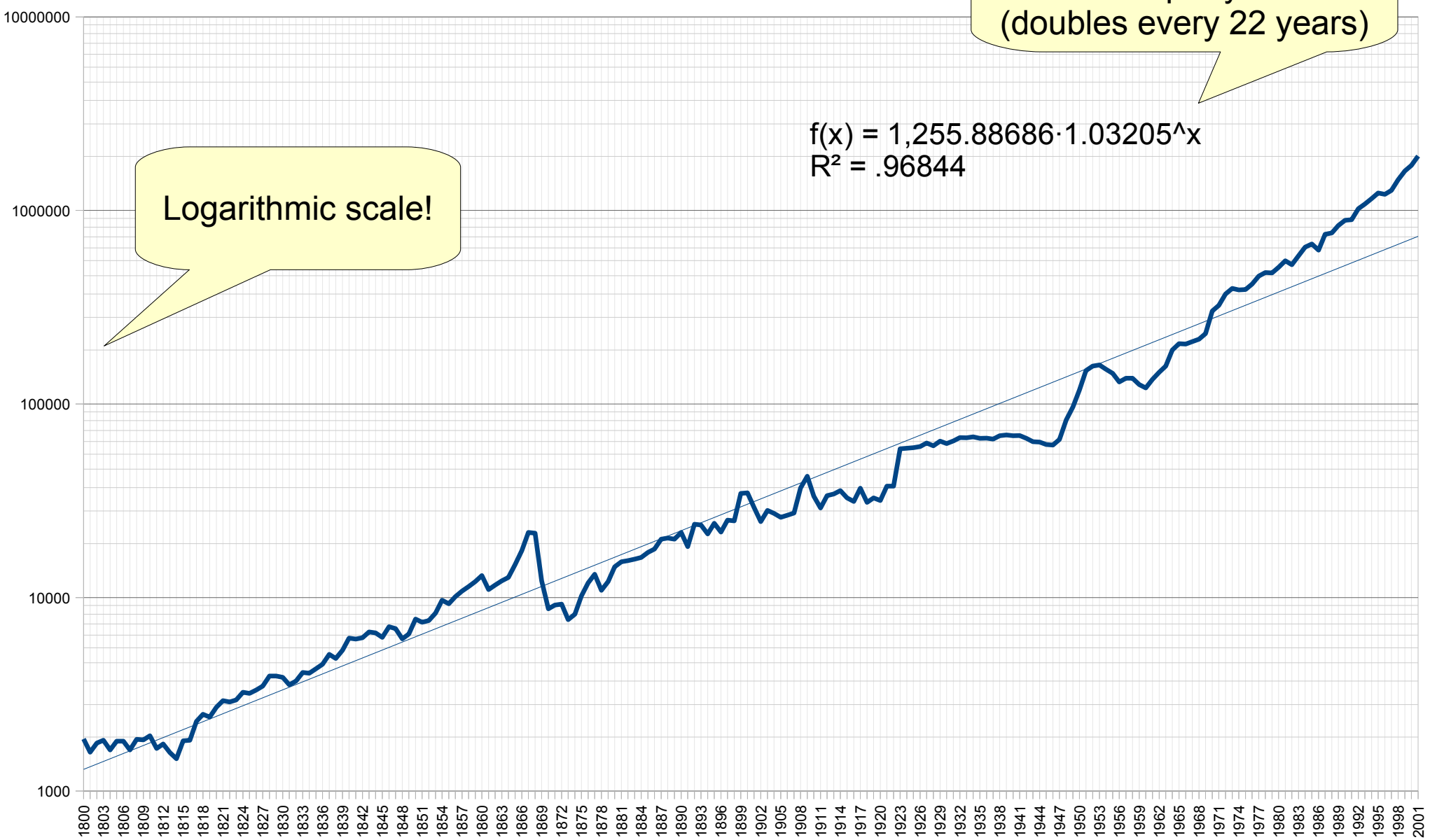
- Do these numbers actually represent quality?

# *Quantitative quality: consequence 1*

- "Publish or perish"
- Number of publications increases exponentially
  - Over 1,000 publications per year since ~1800
  - Over 10,000 publications per year since ~1880
  - Over 100,000 publications per year since ~1950
  - Over 1,000,000 publications per year since ~1990
- Inevitable consequence:
  **following the literature gets harder**, nobody has time to check if ideas are actually novel so redundant, **duplicated research is done**
  (and gets published as if it was novel)

# *Number of publications per year*

*(as reported by Google Scholar)*



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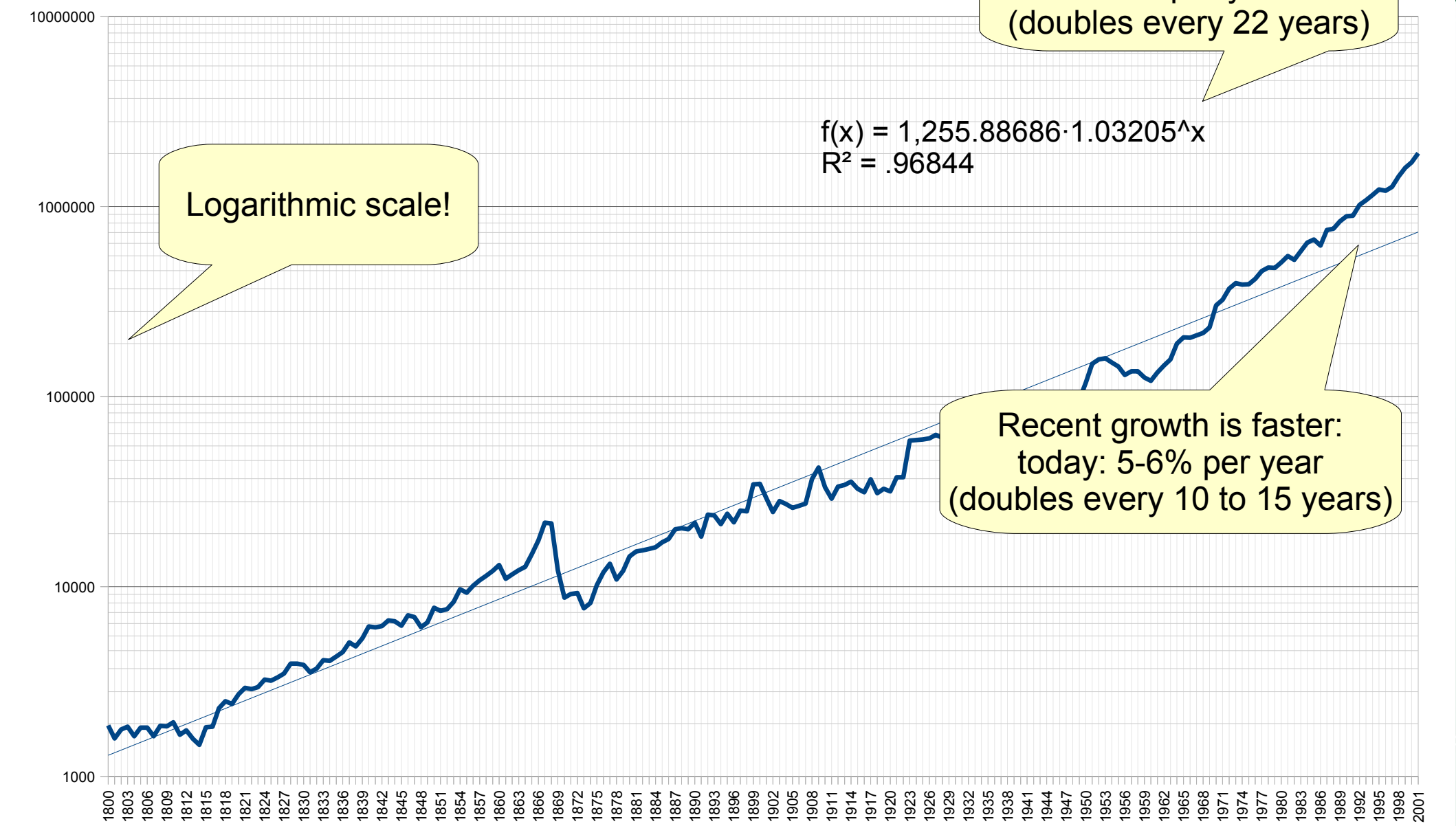
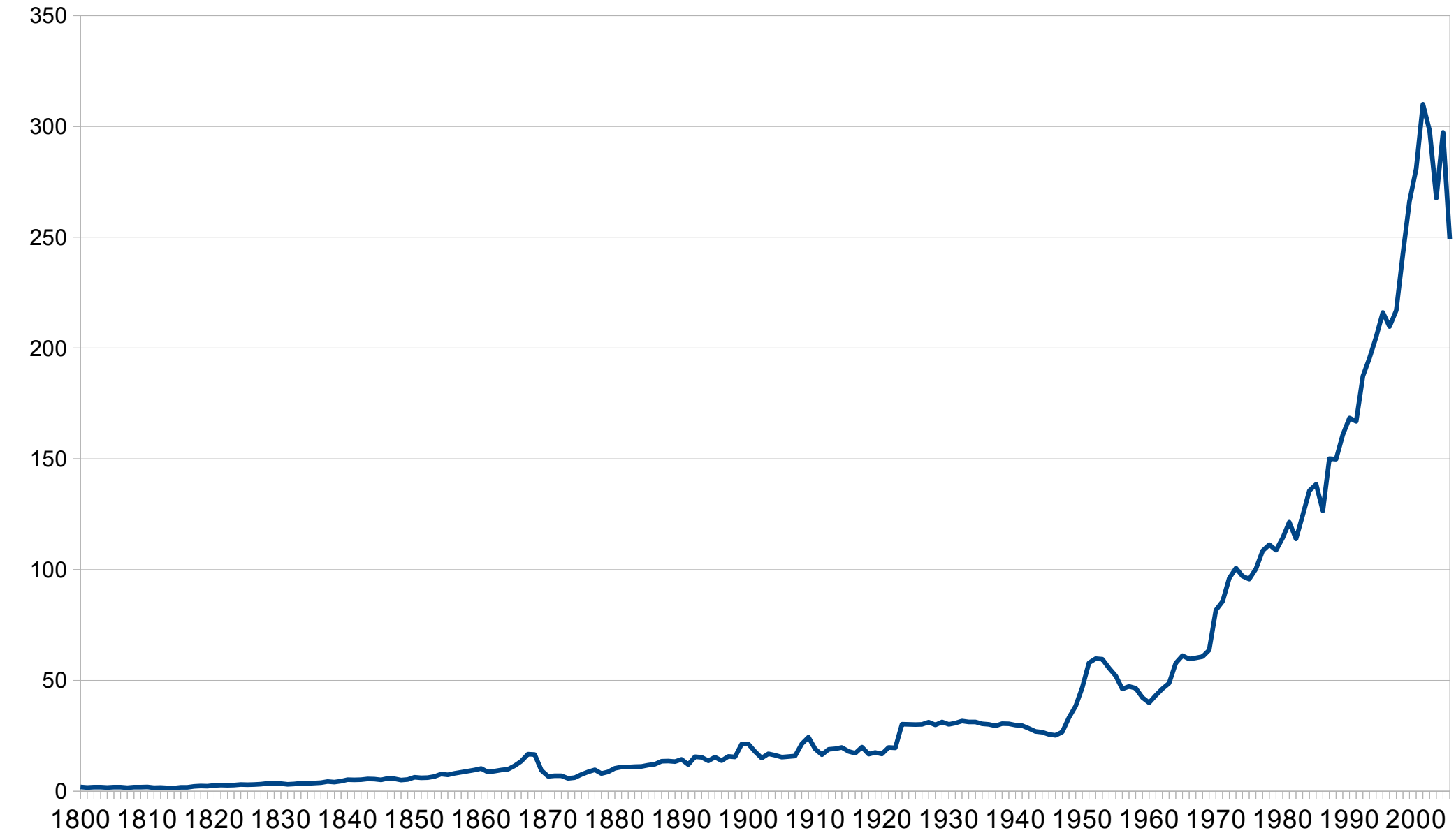


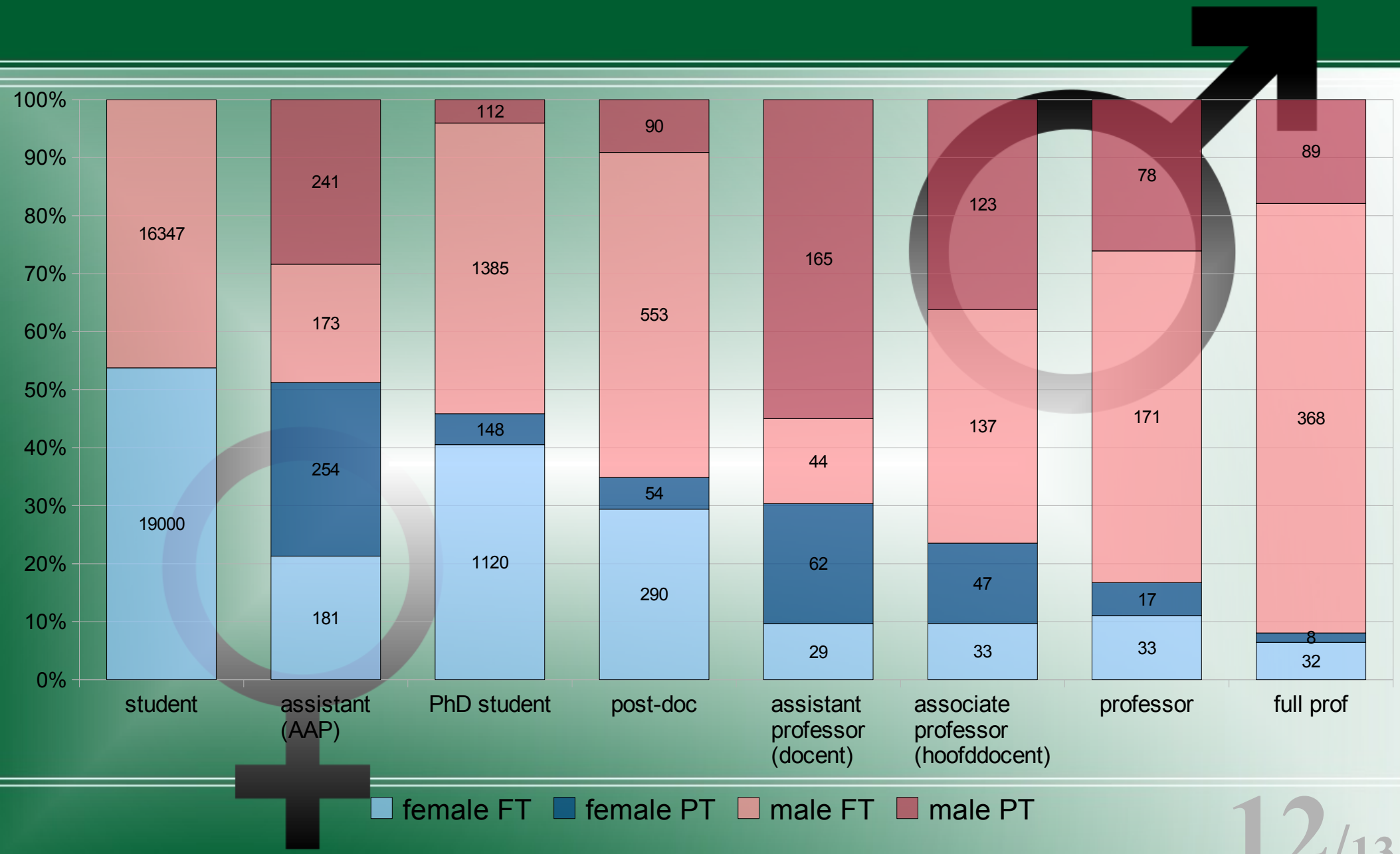
# *Publications per 1M world population*



# *Quantitative quality: consequence 2*

- Policy makers discourage serious peer review
  - Reviews are usually anonymous, unpublished, so they do not "count"
  - Rejecting a paper harms the career of its authors; you do not want to hurt your peers
  - Accepting a paper in your field improves the impact factor of journals in your field, which benefits you
- Inevitable consequence:
  **the quality of peer review is declining.**

# 4. Gender inequality remains an issue



# *Gender inequality: reasons, solutions*

- Historical reason: female students are “new”
- Highly competitive selection processes
  - “Academic freedom” = working weeks of >60 hours?
  - Hard to combine work and family
  - Children before tenure = bad career move
- Quota or government incentives cannot solve this
- Job security and “normal” working week are needed