Comment on Output Analyses

Context of Japanese Publications' Trend

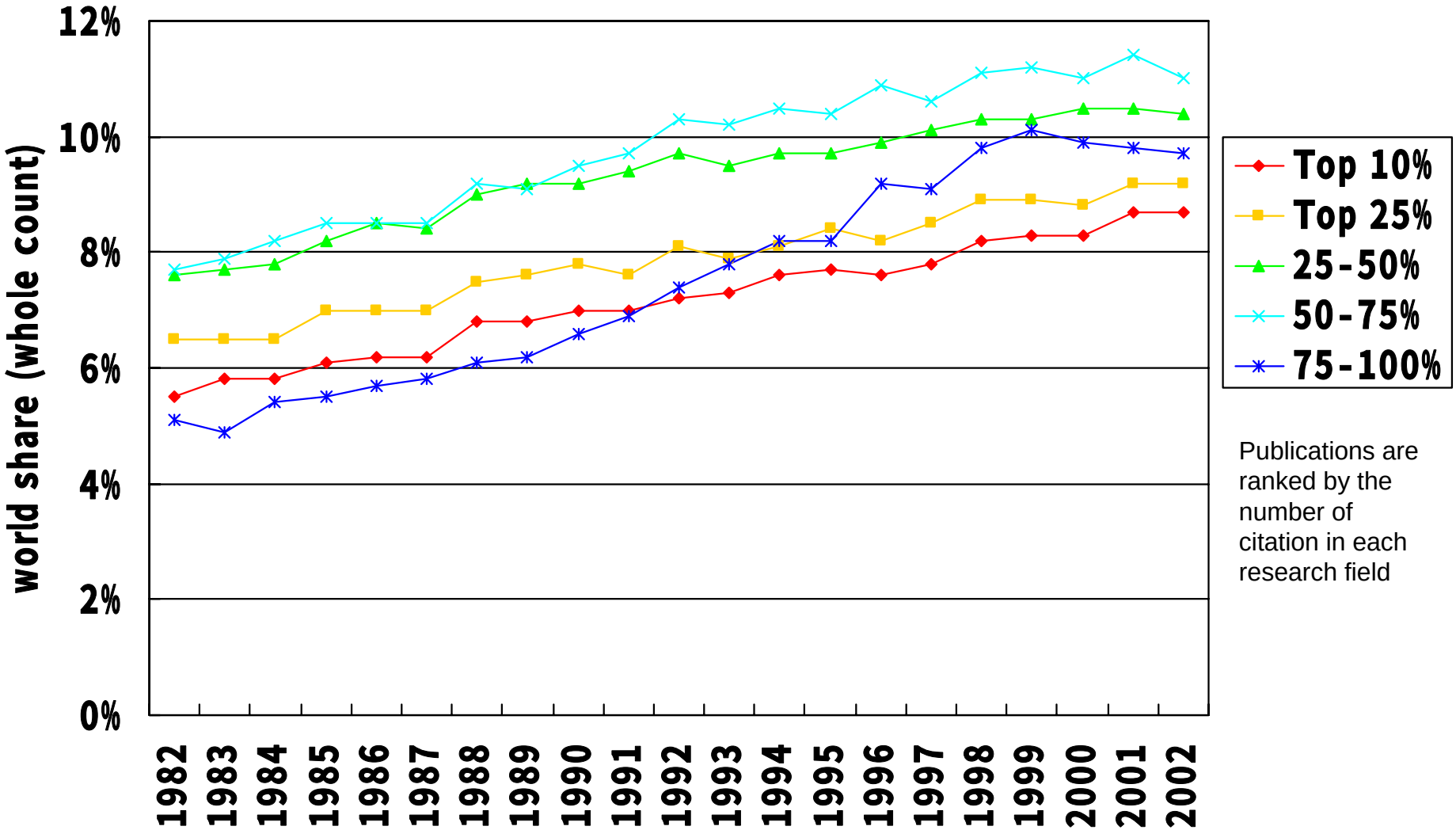
Takayuki Hayashi

National Institution for Academic Degrees and University Evaluation （NIAD－UE）

Contents

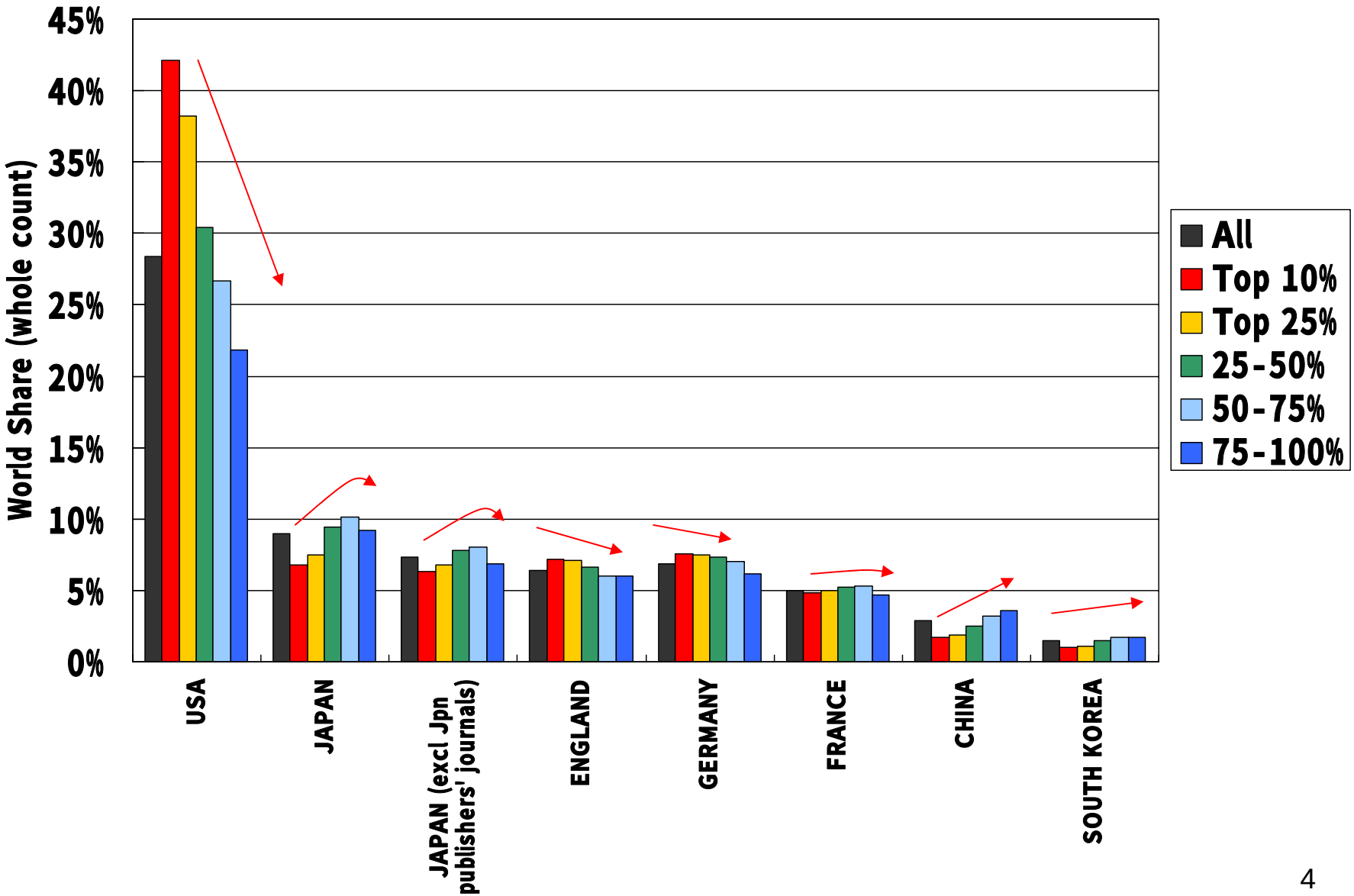
- International comparison
  - Is Japanese publications' trend special or typical?
- What affected the Japanese publications' trend?
  - S&T Policy and HE policy before S&T Basic Plan
  - University sector's characteristics

Japanese Publications' share

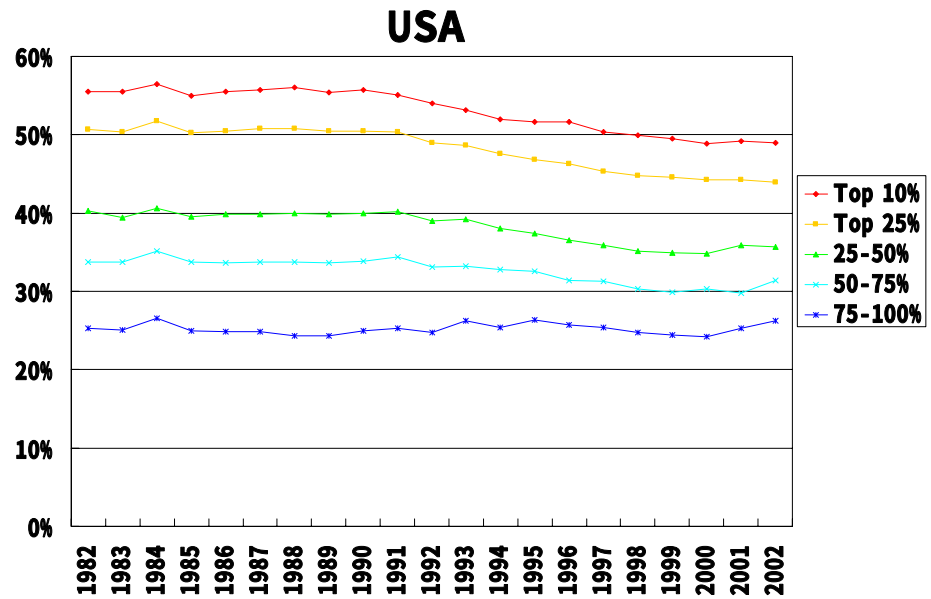


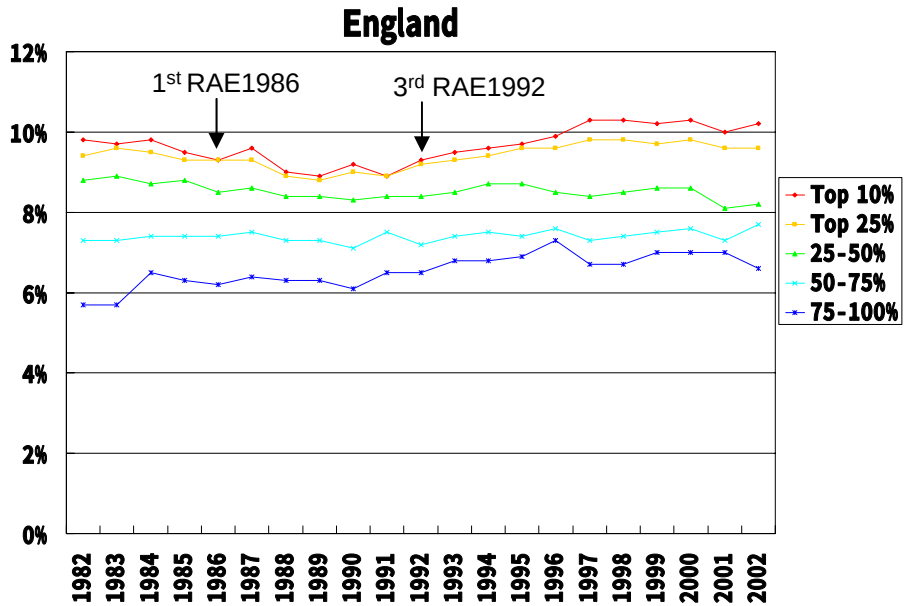
Publications are ranked by the number of citation in each research field

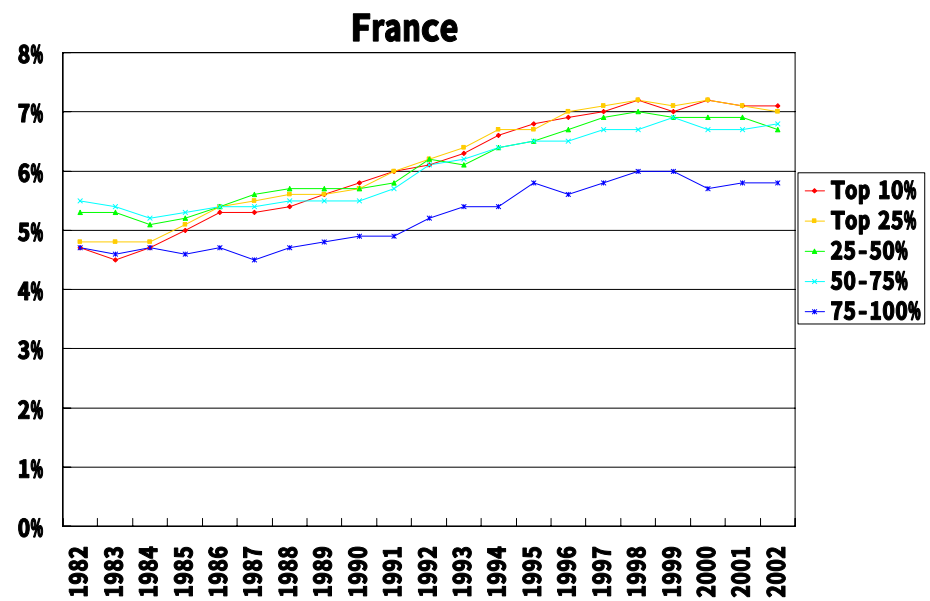
Share of other countries (2000)

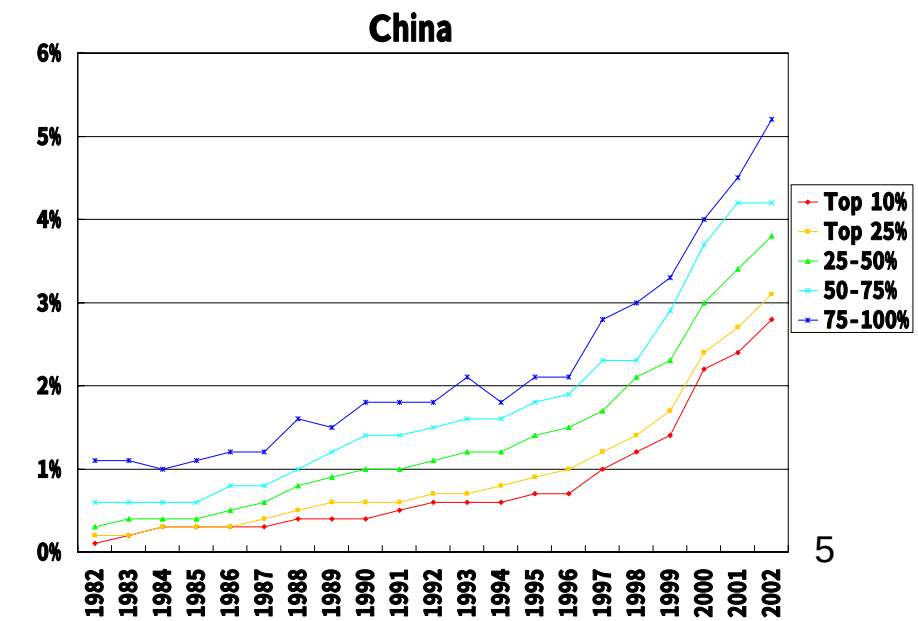


Trend of other countries



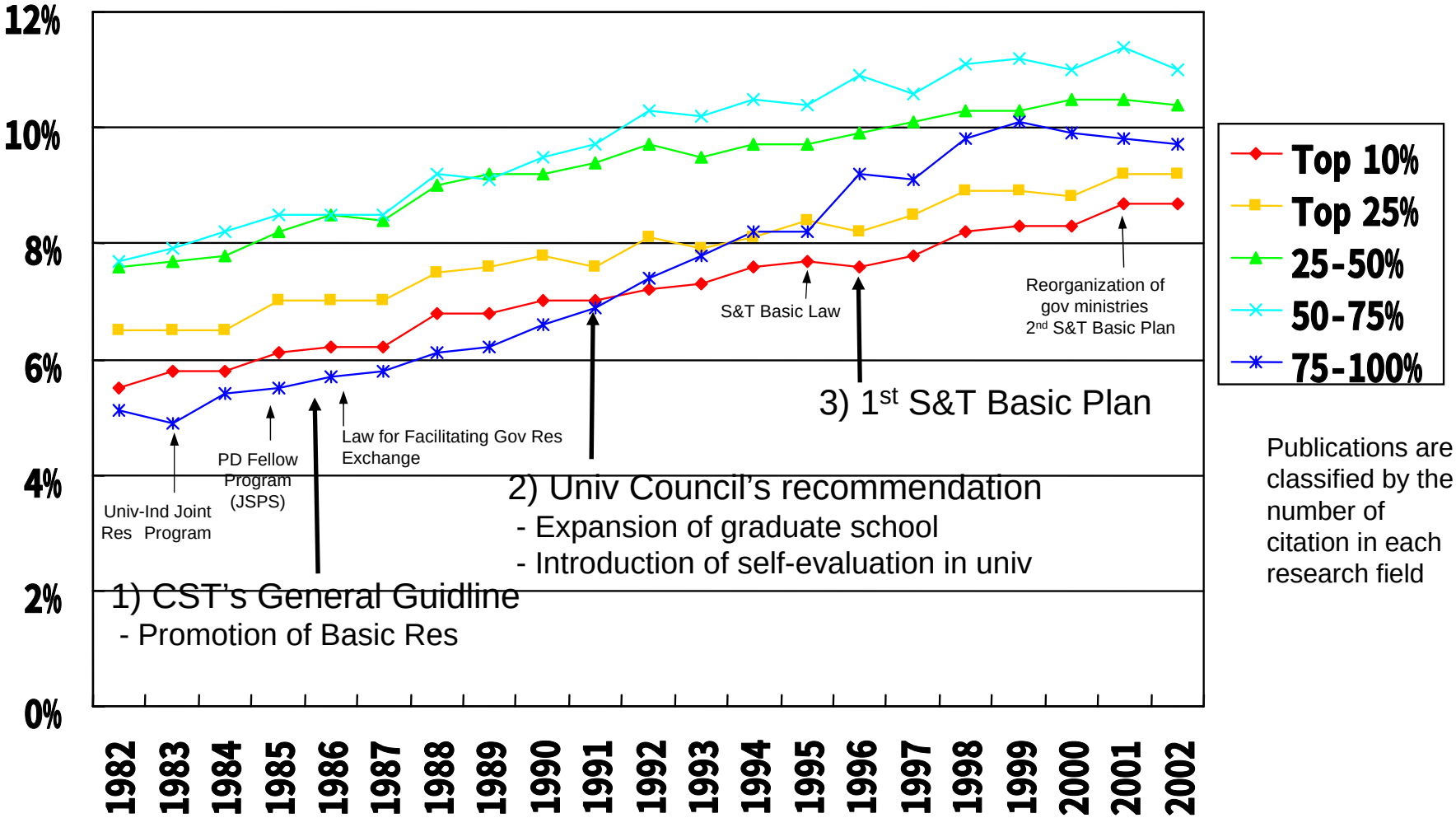






- Japan
  - Second largest producer of publications
  - Increasing highly-cited papers
  - But still holding the characteristics of “catching-up countries”
  - What affected this trend (continuous expansion of quantity rather than quality) ?

Context of S&T Policy



Publications are classified by the number of citation in each research field

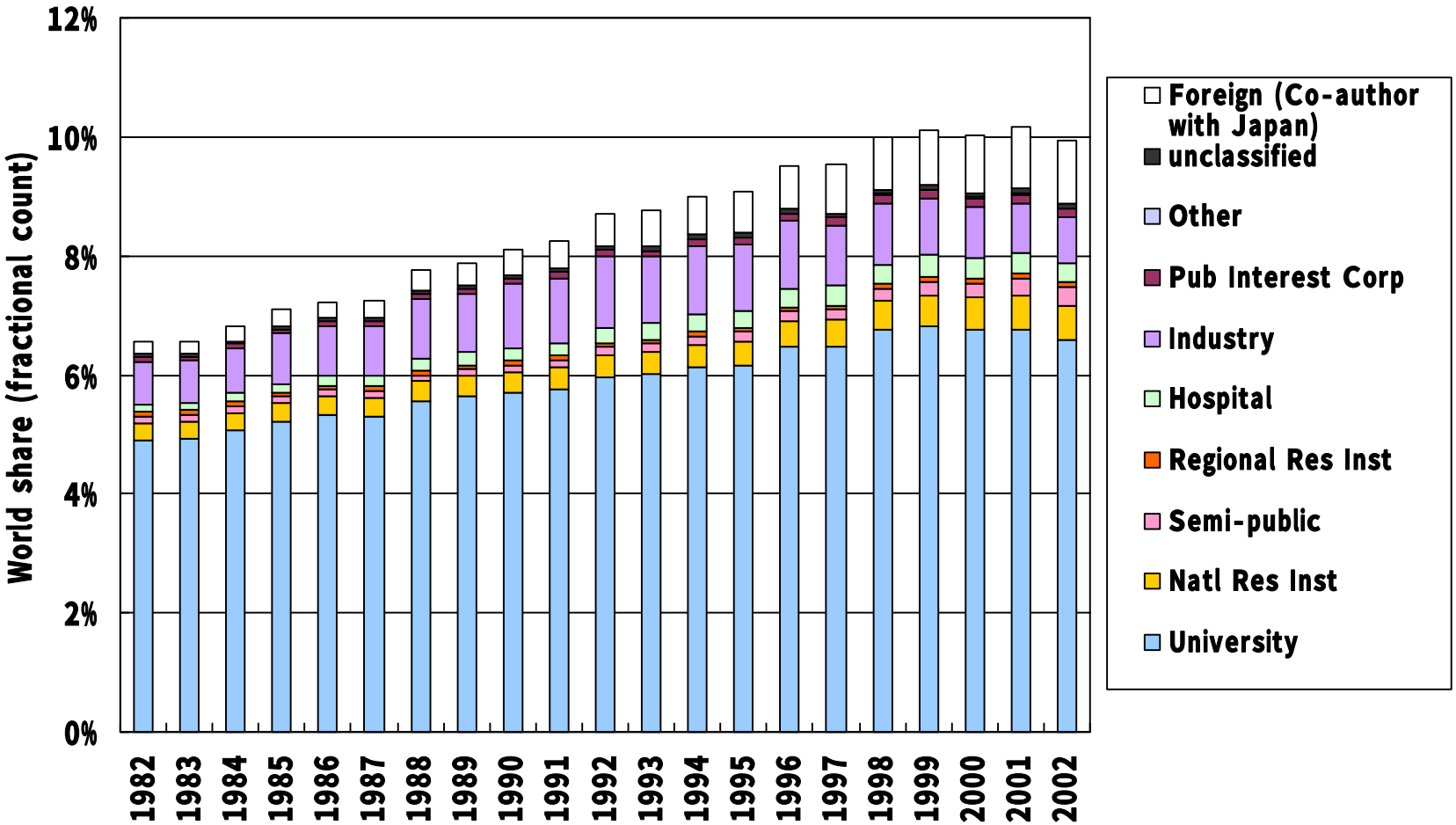
Major Policy Context

- 1986 “General Guideline for Science and Technology Policy”
  - Based on the Council for Science and Technology’s 11th (1984) and 12th (1985) recommendation
  - Emphasize on the promotion of “creative” science and technology (mainly basic research) as the first issue of S&T policy in Japan
  - Respond to the criticism of Japanese technology trade surplus and of “free-riding” on other nations’ basic research results

- 1991 University council recommendation
  - Expansion of Graduate School
  - Introduction of self-evaluation of university

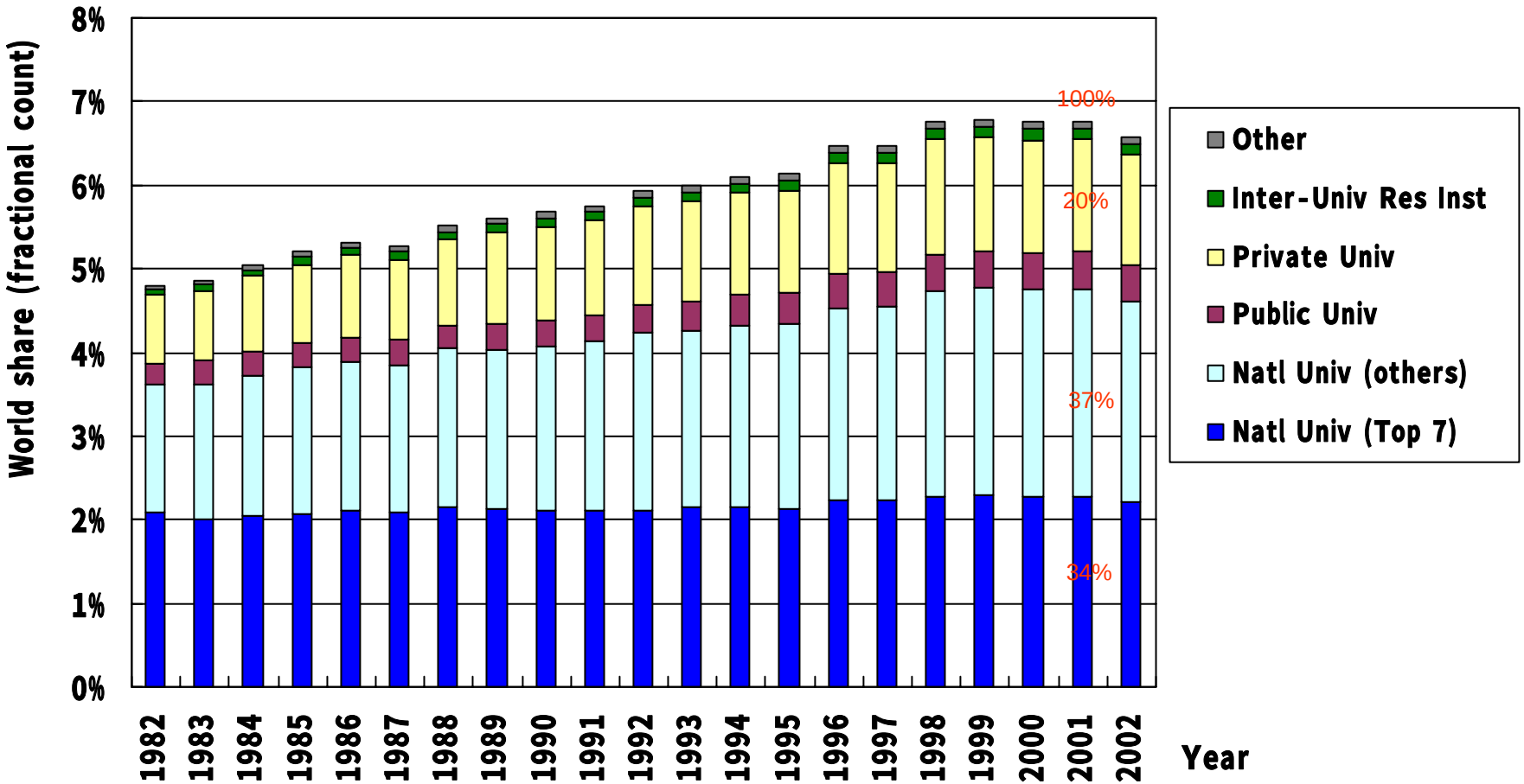
- 1996 Science and Technology Basic Plan
  - 17 trillion Yen for five years, New R&D program
  - Institutionalization of research evaluation (=> establishing guideline)
  - Post-doctoral fellow 10,000 support plan (1995-)
  - etc.

sectors' share

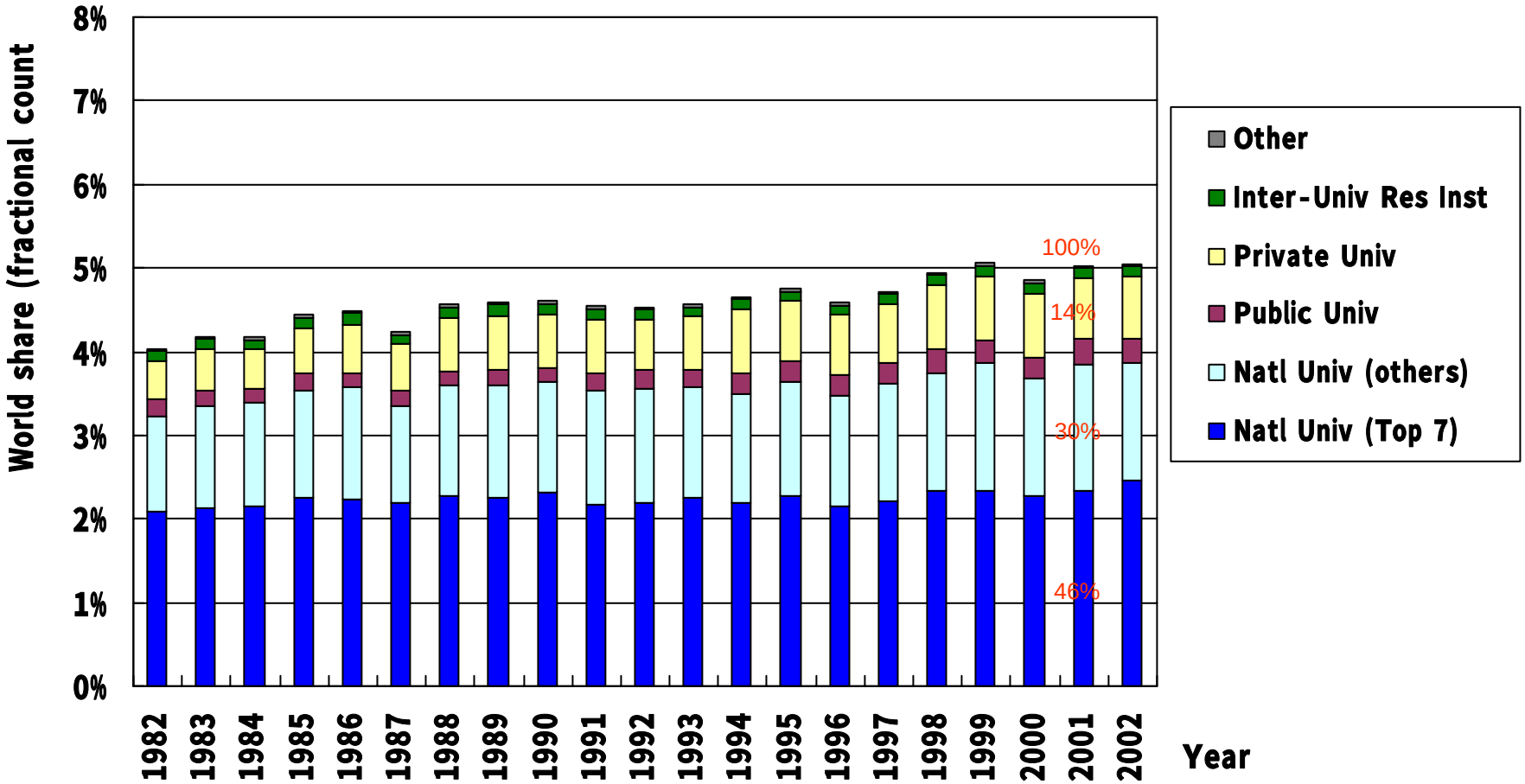


- University has been constantly main producer of publication (80%)
- 99 natl univ, 75 public univ, 512 private univ, 541 junior coll, 62 polytech, and 15 inter-univ res inst (2002)

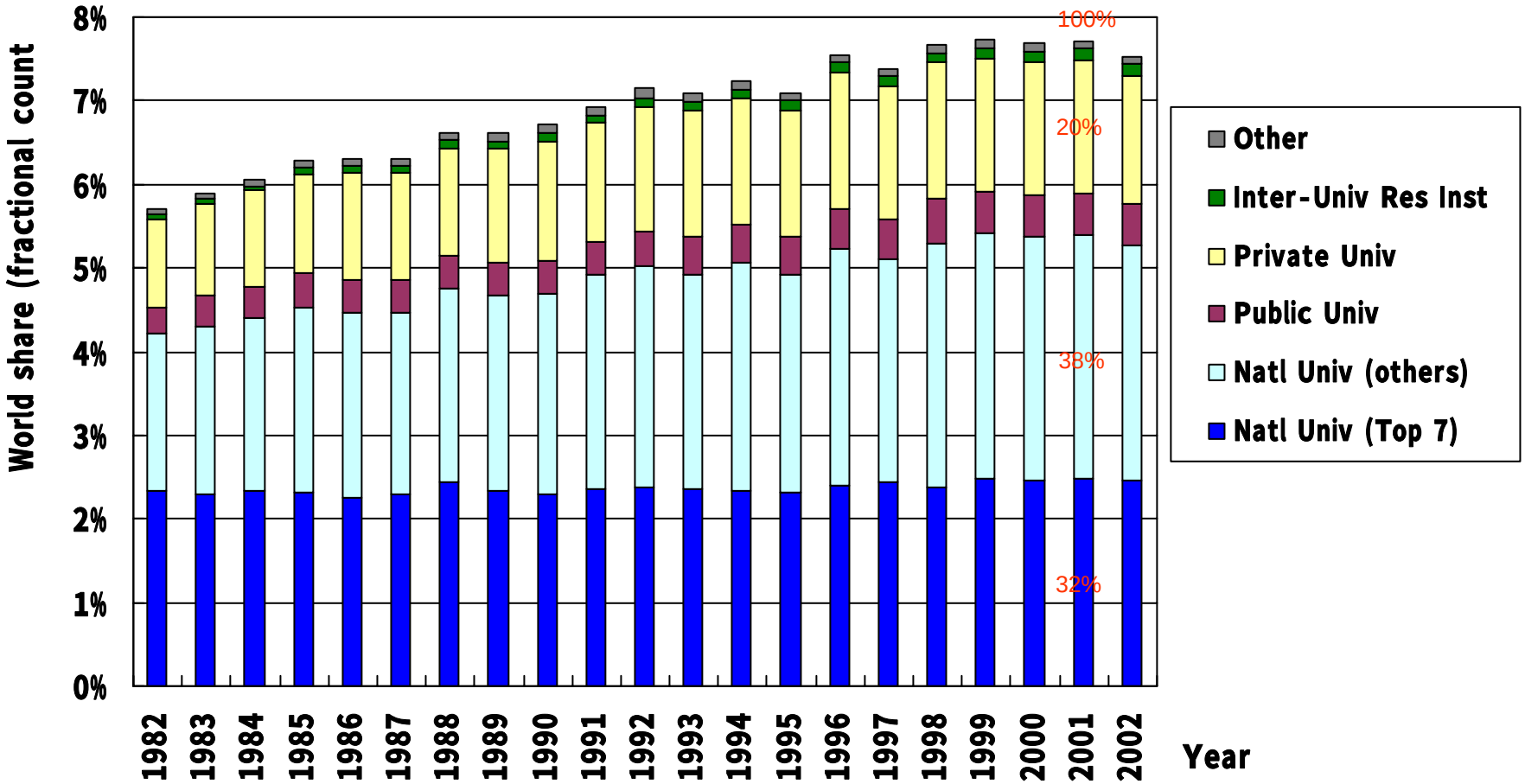
Universities' share in all publications



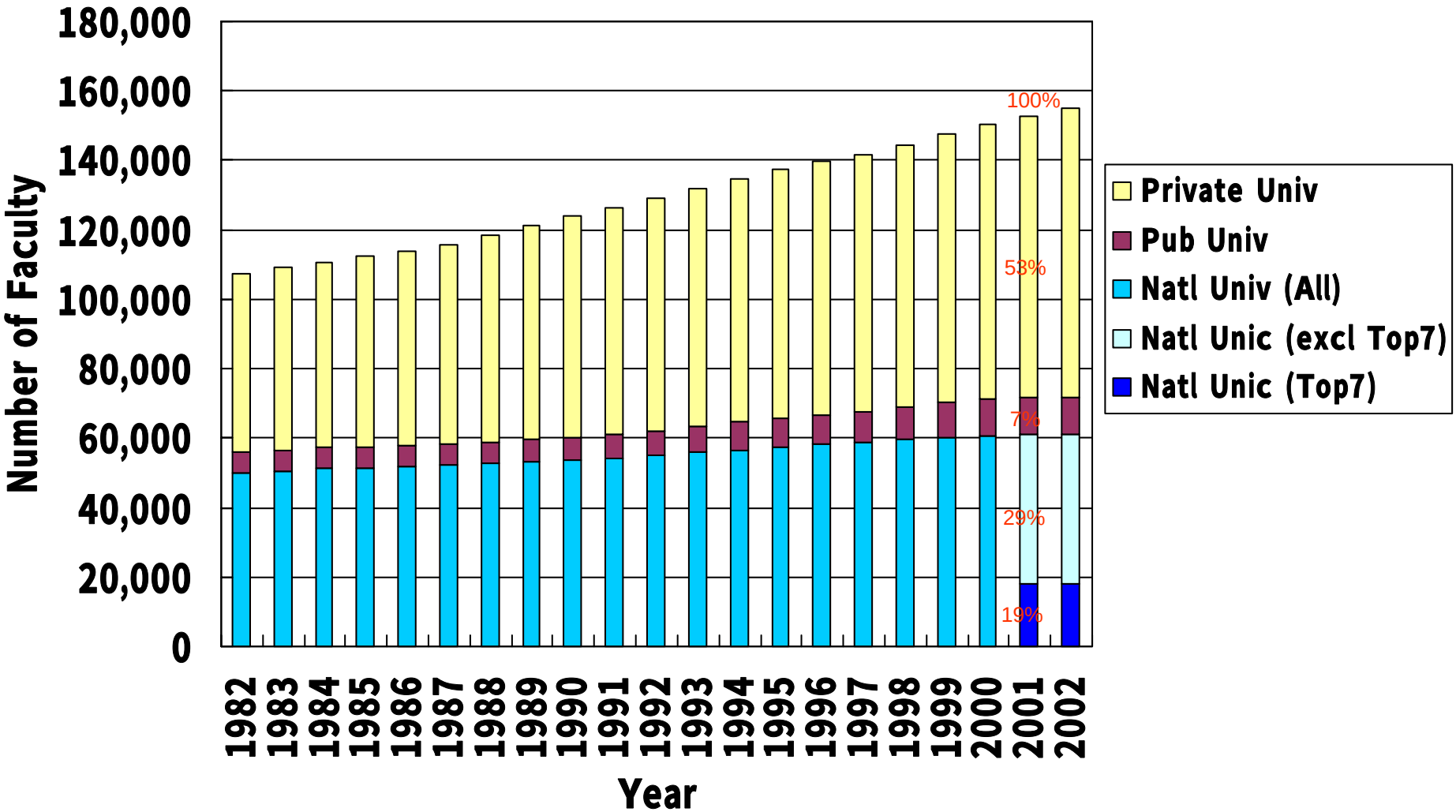
Universities' share in top10%



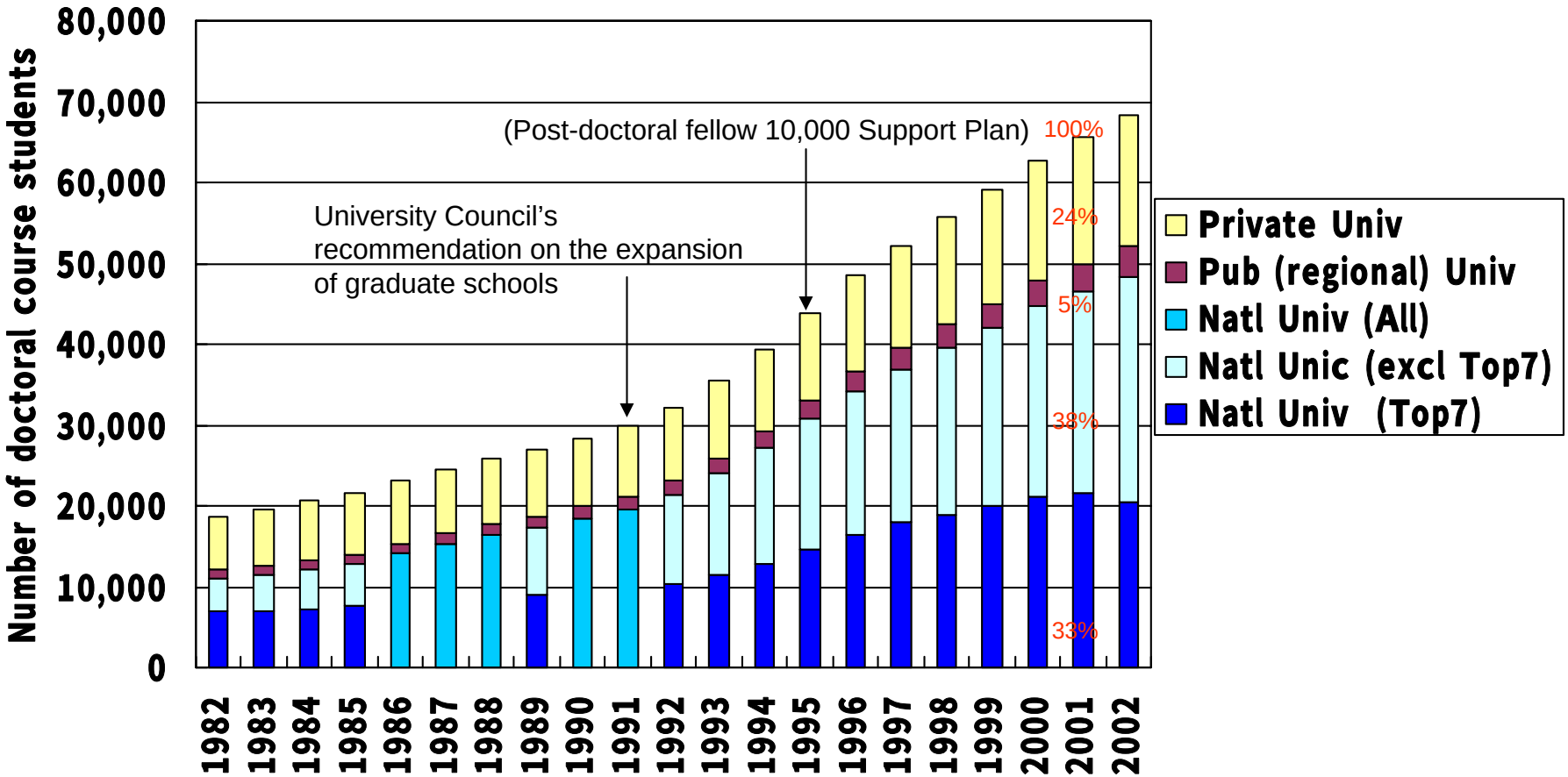
Universities' share in 50-75%



Number of Universities' Faculty

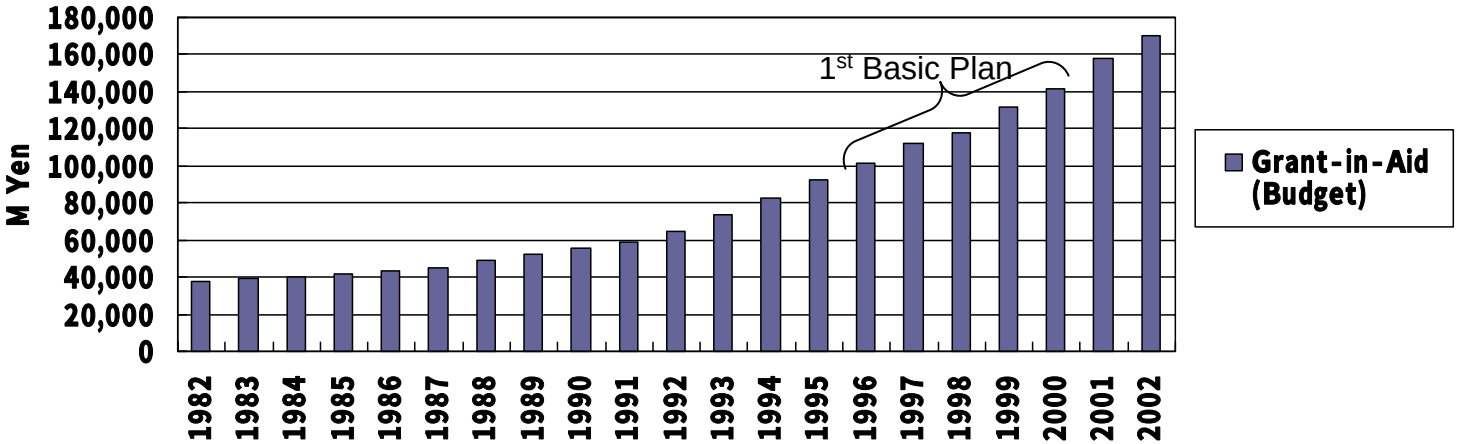


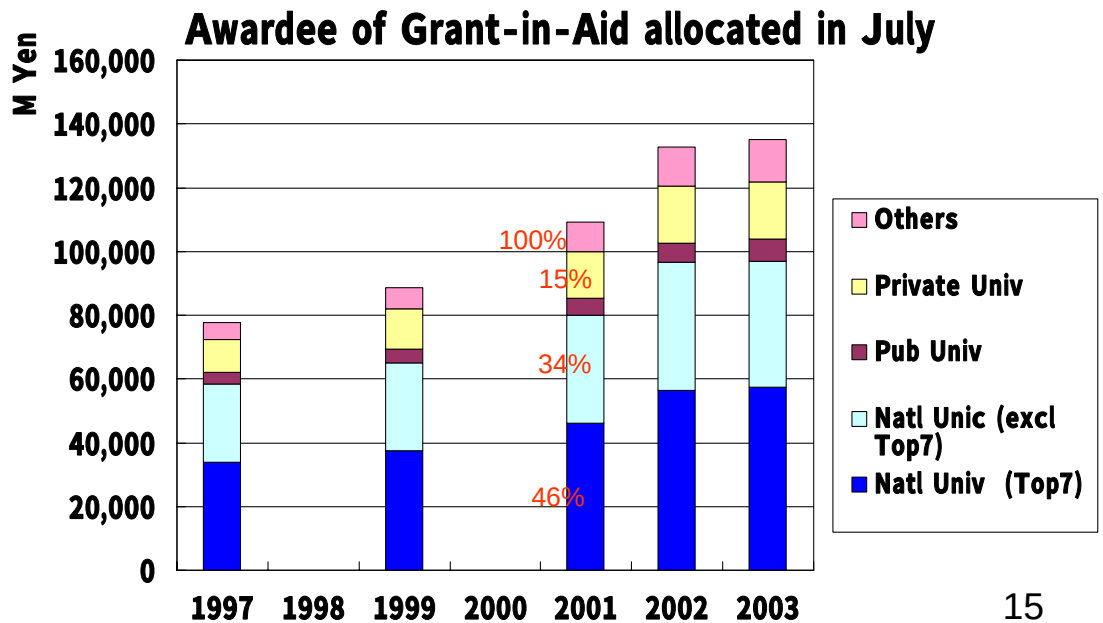
Number of Doctoral Course Students



Academic Research Grant

(“Grant-in-Aid for Scientific Research”)





Correlation between publication and other variables

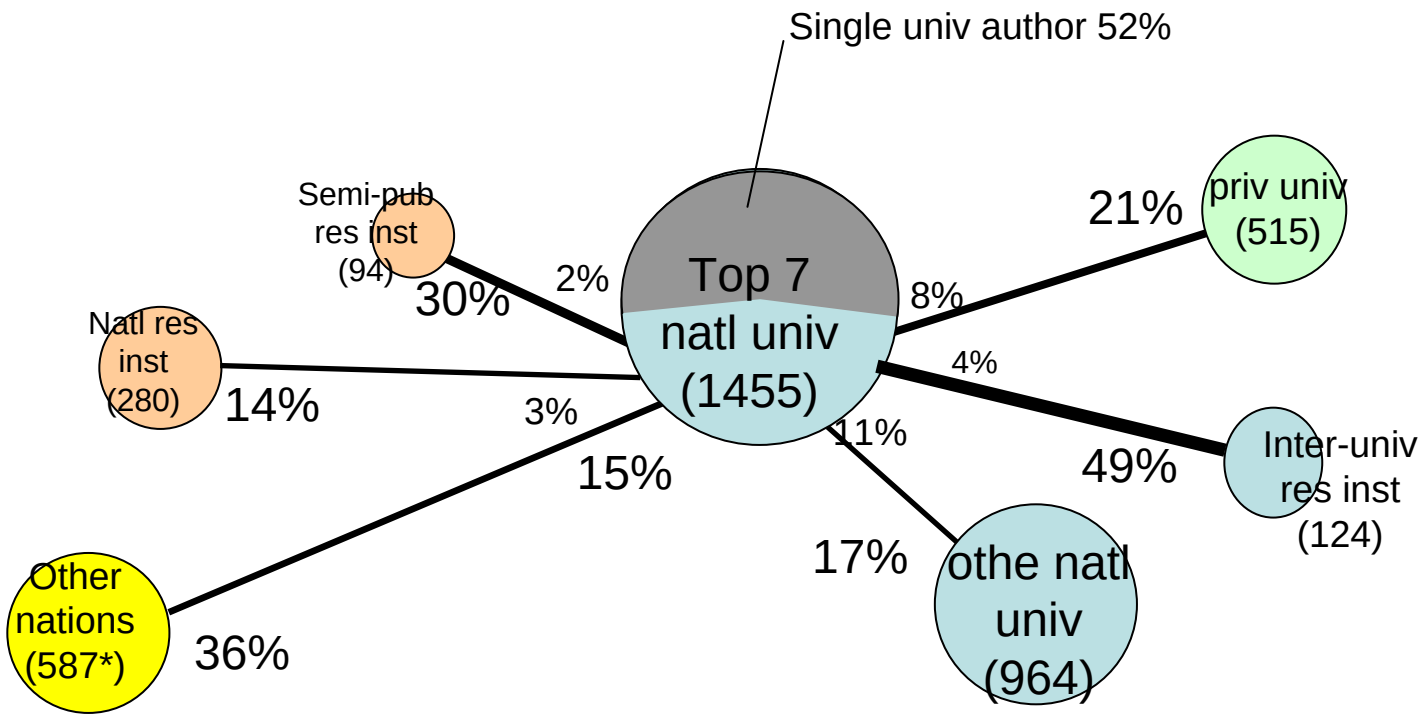
	DC students / Faculty	PD Fellow / Faculty	Acad res grant / Fac.	Industry grant / Fac.
All pub / Faculty	0.83**	0.75**	0.75**	0.78**
Top10% pub / Fac.	0.85**	0.85**	0.87**	0.79**
50-75%Pub / Fac.	0.81**	0.75**	0.72**	0.77**
75-100%Pub / Fac.	0.74**	0.62**	0.61**	0.71**

10%Pub / Faculty = 0.53 (β) × Acad Res Grant (normalized) + 0.43 (β) × DC students (normalized) – 0.02

(R^2=0.854)

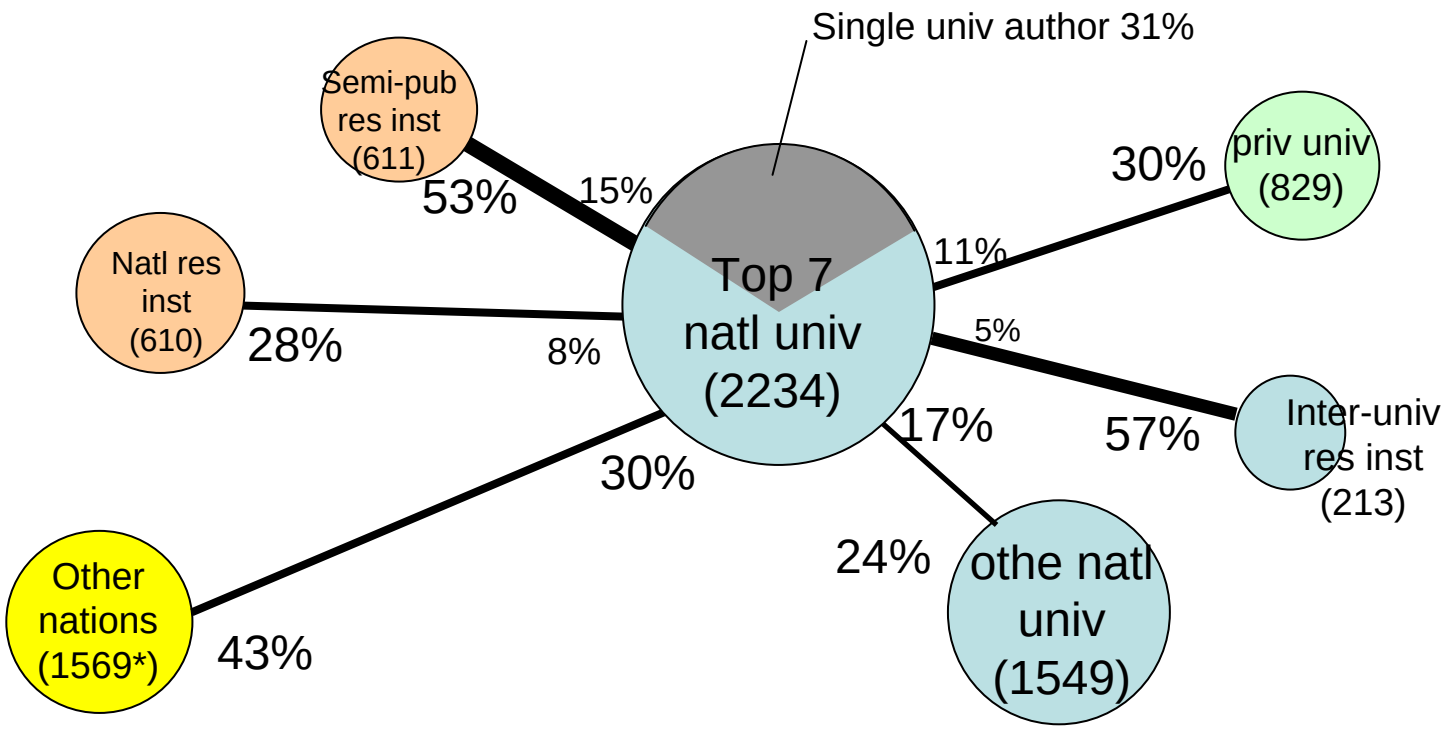
All variables are only for natural sciences (excl. soc sci and human)
Case:71National Universities with doctoral courses in natural sciences (FY2001)

Co-authorship of Top 10% publications (1991)



(whole count)

Co-authorship of Top 10% publications (2001)



(whole count)

Many highly-cited papers were produced by networks of various actors.

Conclusion

- Expansion of graduate school and res grant for 20 years
  - Concentration of recourses into small number of research universities (COE)
  - Research by networks with other universities and institutes (as hub)
- How to keep balance between concentration and decentralization for quality improvement?
  - Competition? / Expansion of infrastructural resources (e.g. block grant) for other universities?
  - Each university's strategic prioritization (specialization)?