

International comparisons of S&T indicators according to OECD methodology: Focus on SA's performance

HSRC RESEARCH OUTPUT

3830



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- SOUTH AFRICAN SCIENCE & TECHNOLOGY
- OECD AND SCIENCE AND TECHNOLOGY INDICATORS
- MSTI COMPILATION
- S&T STATISTICS/DATA (OECD MEMBER & NON-MEMBER COUNTRIES)
- CONCLUSION

SOUTH AFRICAN SCIENCE & TECHNOLOGY

1996 White Paper on Science and Technology

1997 National Research And Technology Audit

1998 National Research & Technology Audit

2000 National Research And Technology Foresight

2002 The Development Of A Research And

Development Strategy For South Africa

The National R&D Strategy, DST 2002

Key weaknesses highlighted in the strategy:

- ↳ Inappropriate funding of the NSI
- ↳ Under-developed Human Resources in SET
- ↳ Declining R&D in the Private sector
- ↳ Fragmented Science And Technology System

The Objective of the Strategy

- ↳ Economic Growth and Wealth creation
- ↳ SET workforce
- ↳ Effective S&T systems that will ensure delivery

KEY ISSUES

Which methods, concepts, sources and tools are needed to measure the performance, inadequacies, strengths and weaknesses of the S&T/NSI system?

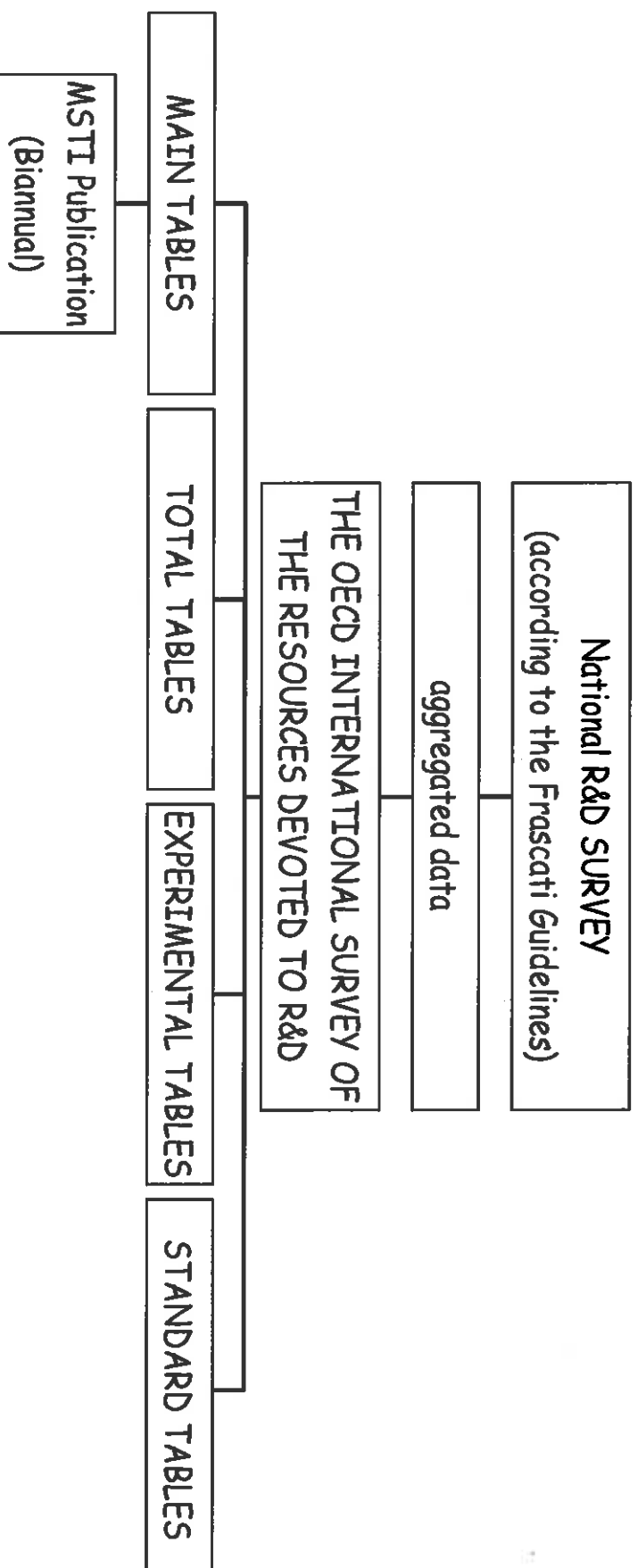
"Indicators have been shown to be the one of the best tools to measure change in the NSI"...(R&D strategy, 2002)

THE OECD AND S&T INDICATORS

Started in the 1970's indicators aimed at producing a systematic overview of the S&T system

Frascati Manual	Inputs	R&D : Expenditures, Personnel, Equipment and Facilities
Oslo Manual	Output	Innovation: Processes and products
Canberra Manual	Output	S&T personnel
Patent Manual	Output	Patents
TBP Manual	Output	Technology Balance of Payments

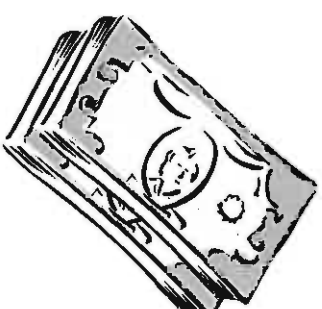
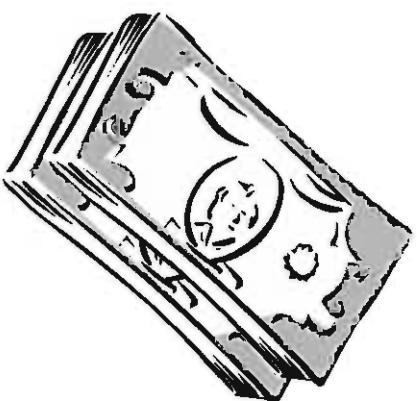
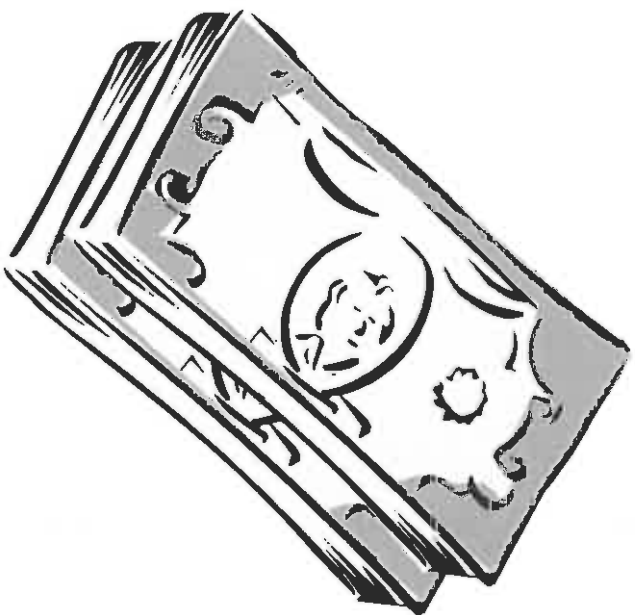
Methodology



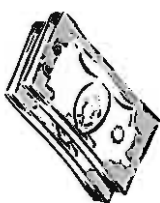
General Overview: problems of international comparisons associated with the official R&D data

- ✎ **Sampling methodologies / Covering ratios may differ
 - Small firms/organisations sometimes excluded**
- ✎ **"Borderline" research institutions treated differently**
- ✎ **Over- and Underestimation of R&D**
- ✎ **Surveys not conducted every year thus leading to poor time coverage**
- ✎ **Data not being available for various reasons, mainly confidentiality issues**

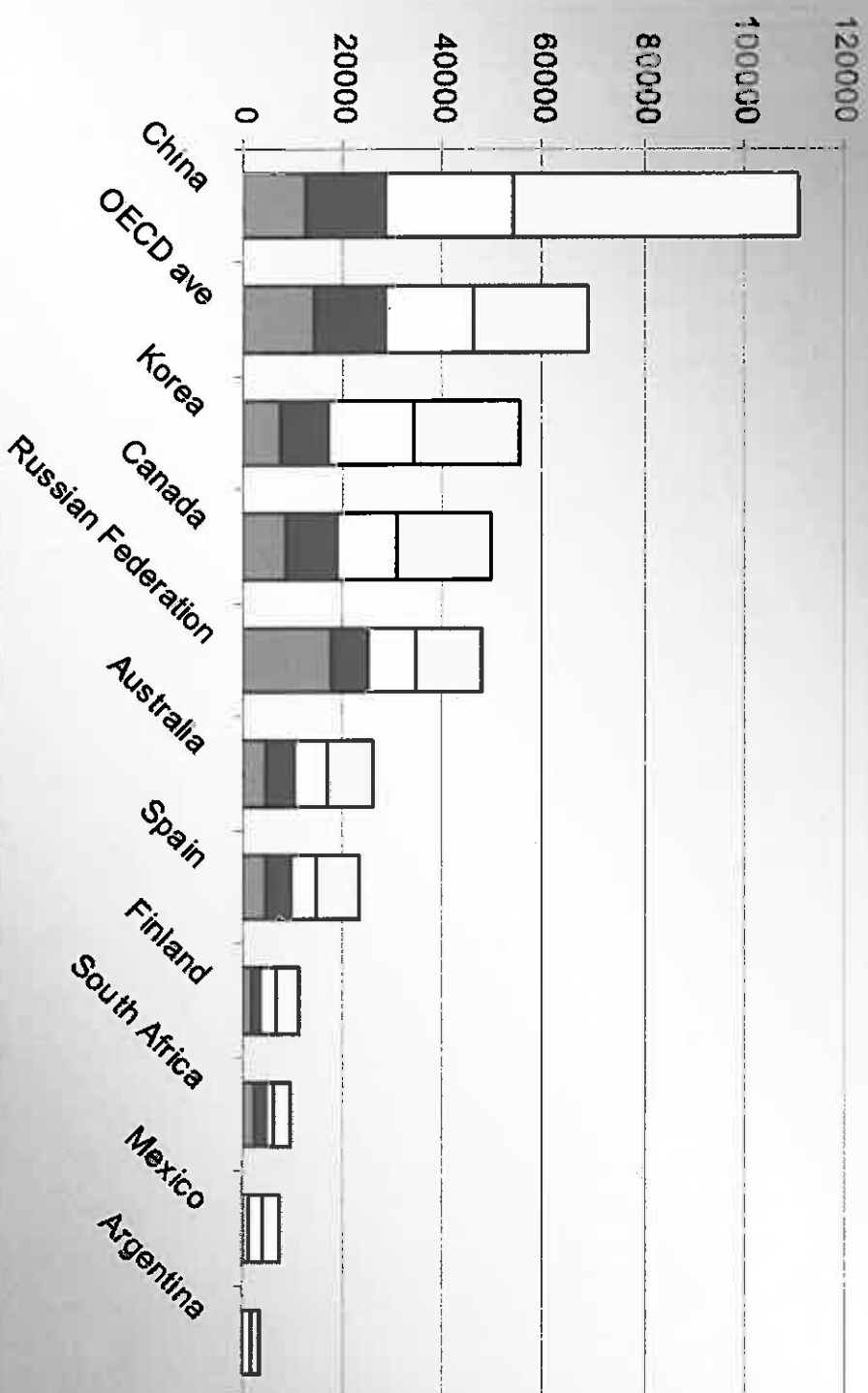
FINANCES



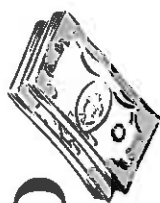
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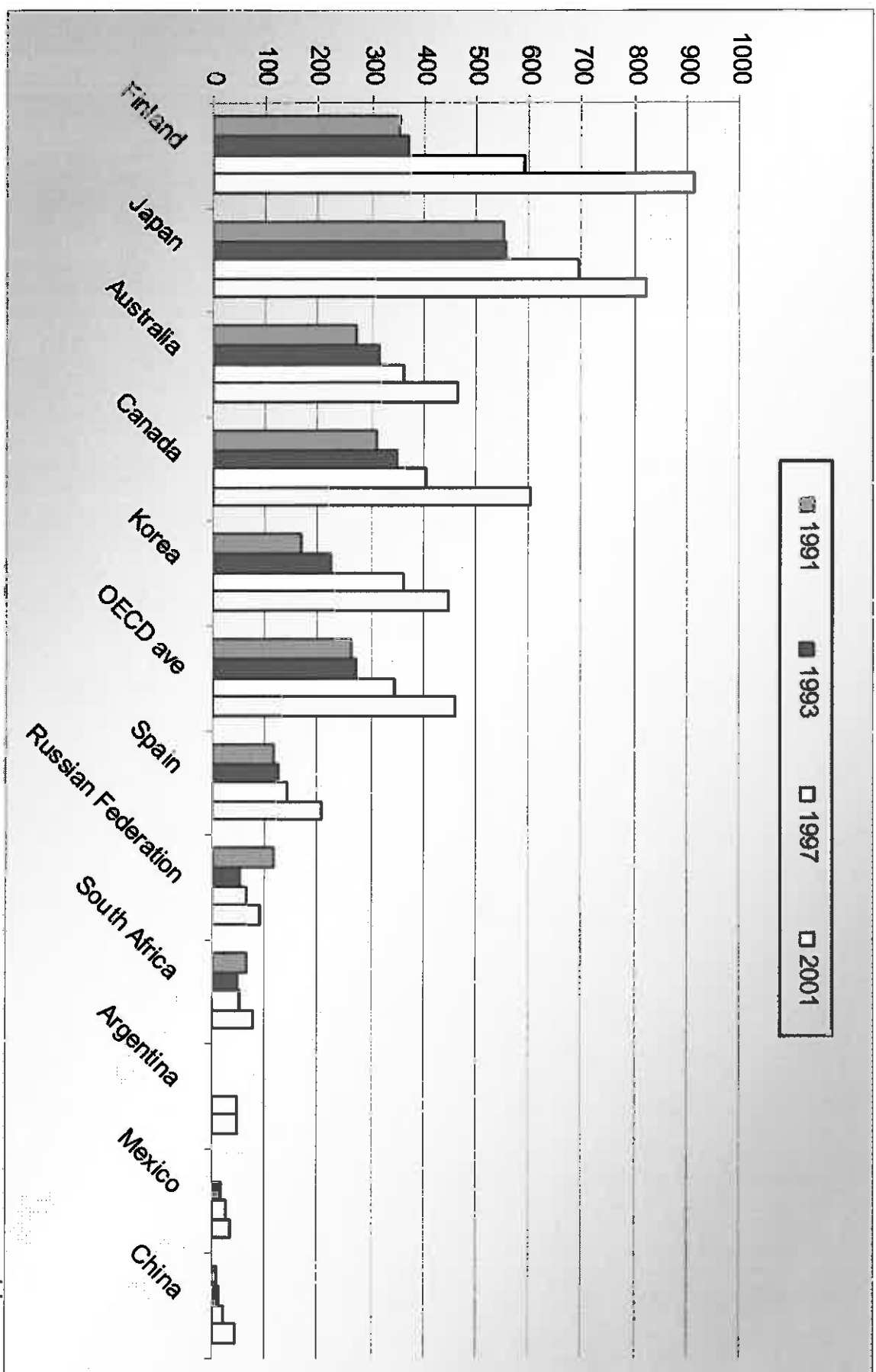
Gross Domestic Expenditure on R&D -- GERD (million current PPP \$)



Source : OECD, Main Science and Technology Indicators, May 2005.



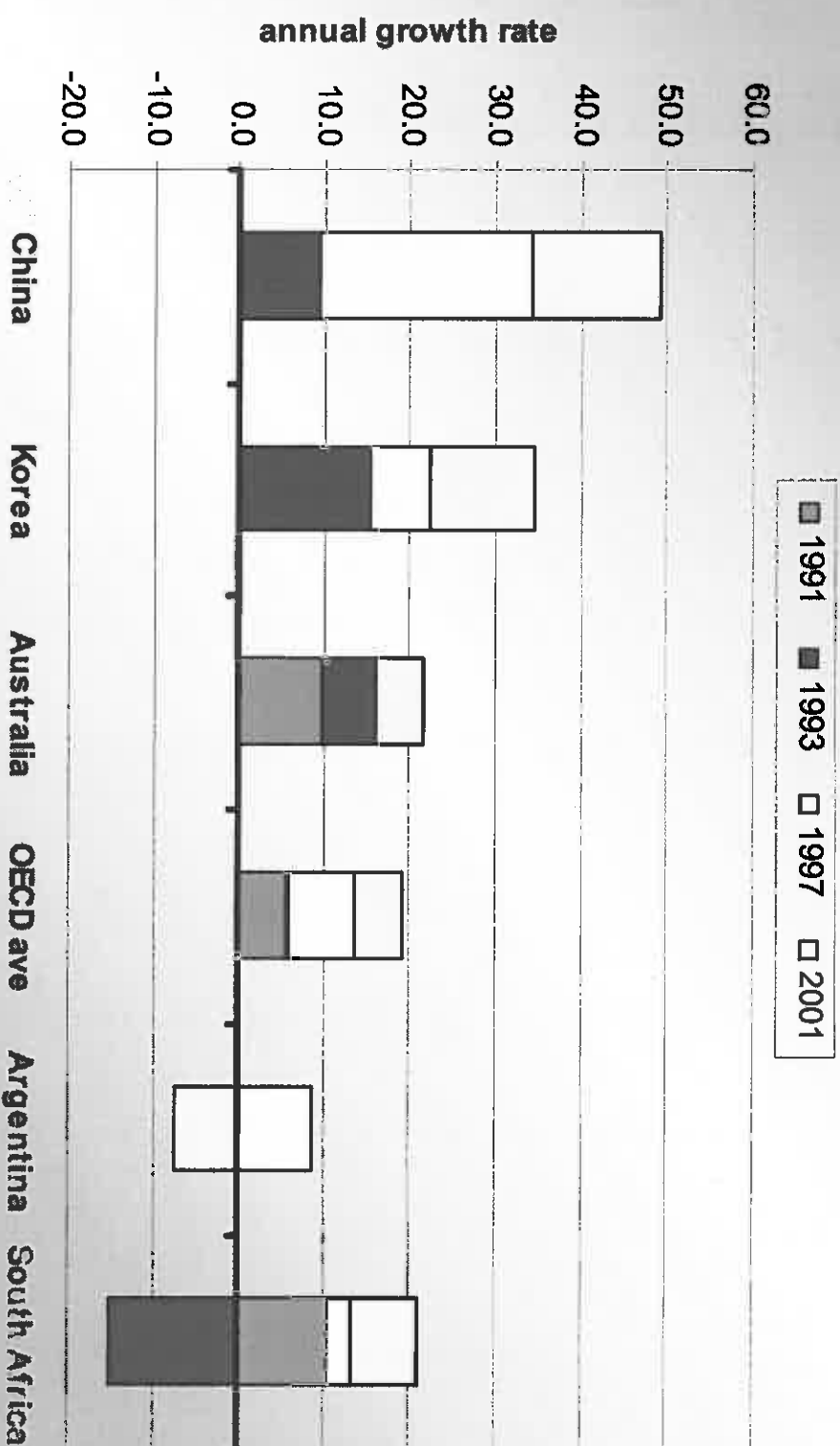
GERD per capita population (current PPP \$)



Source : OECD, Main Science and Technology Indicators, May 2005.

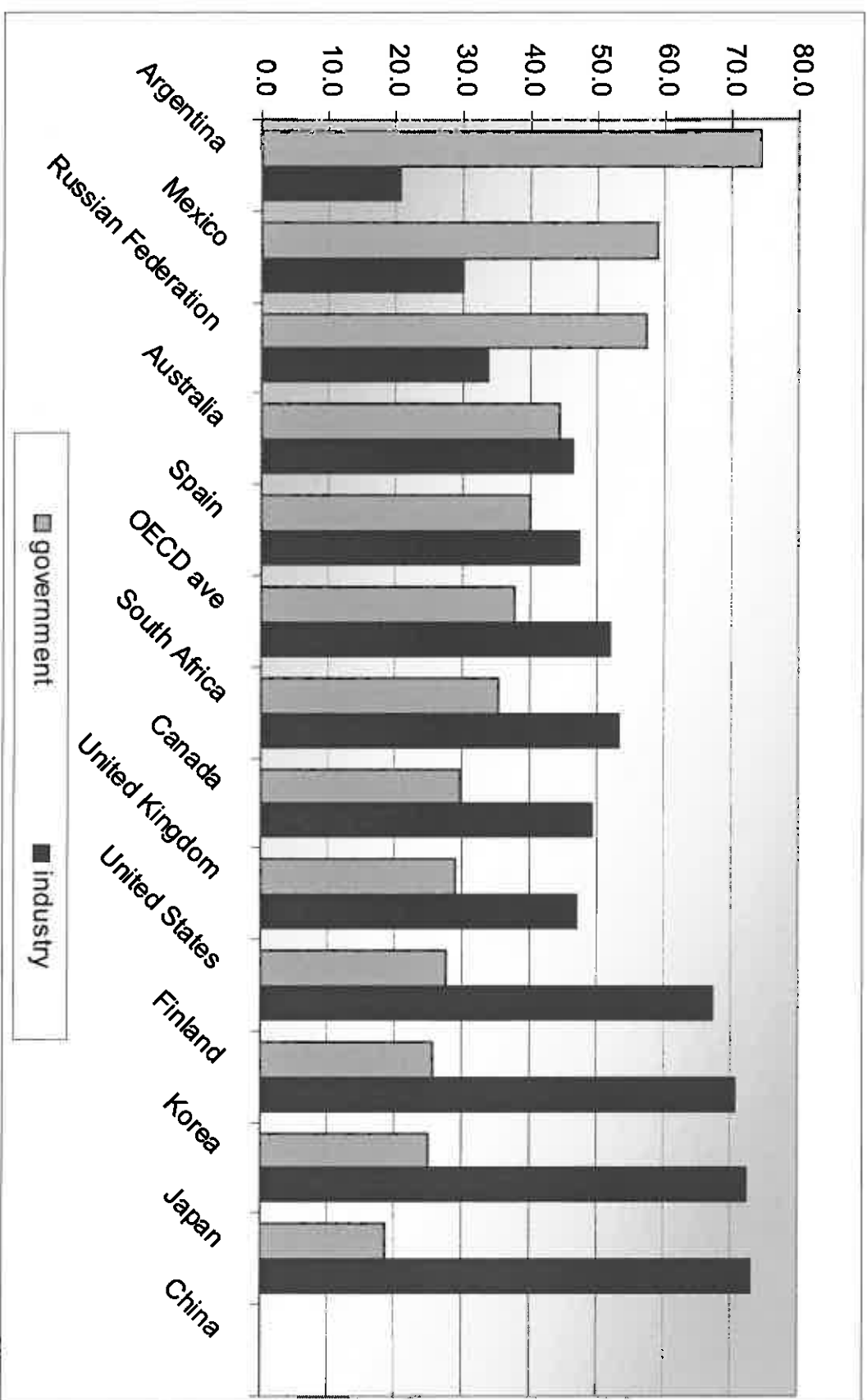


GFRD -- Compound annual growth rate (constant prices)

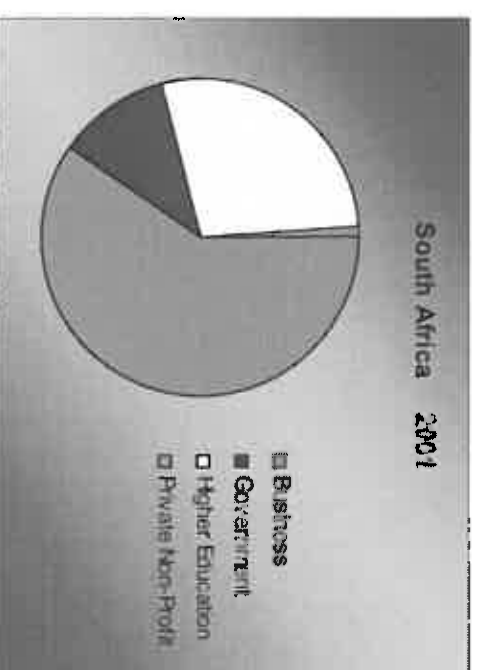
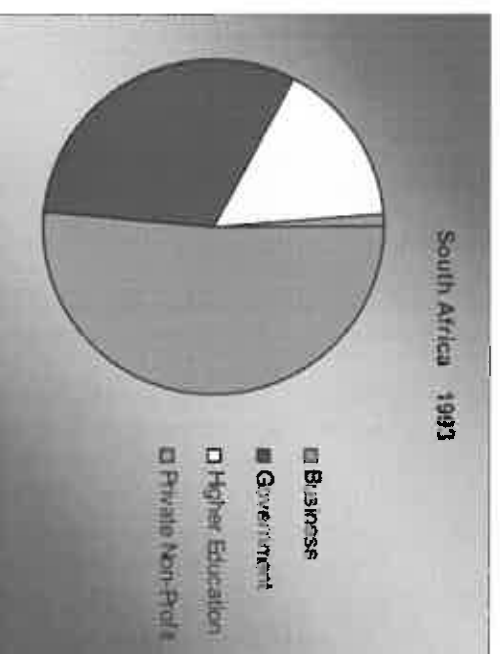
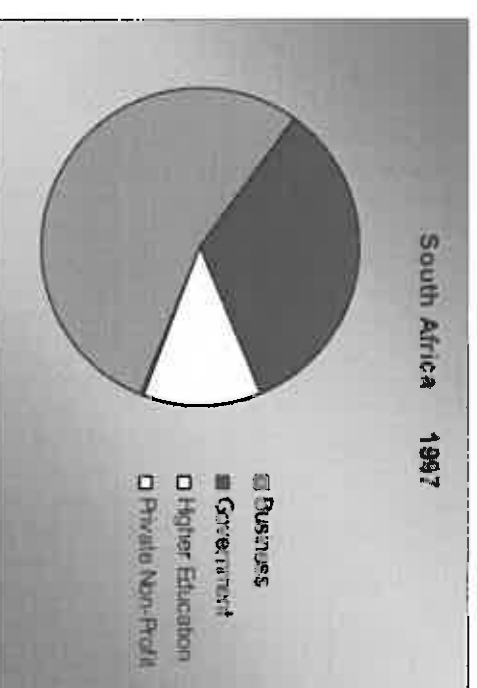
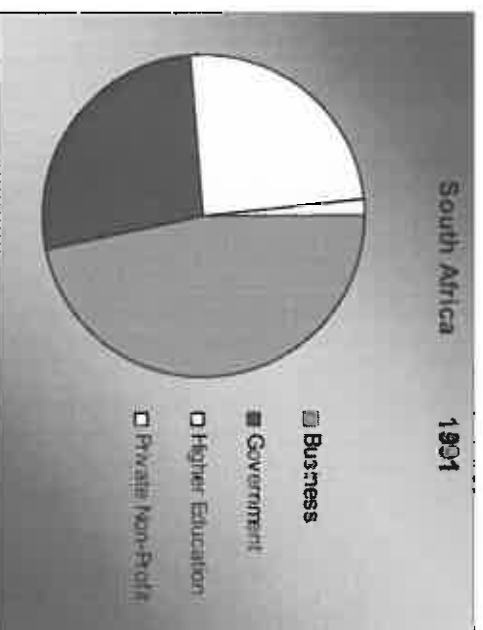




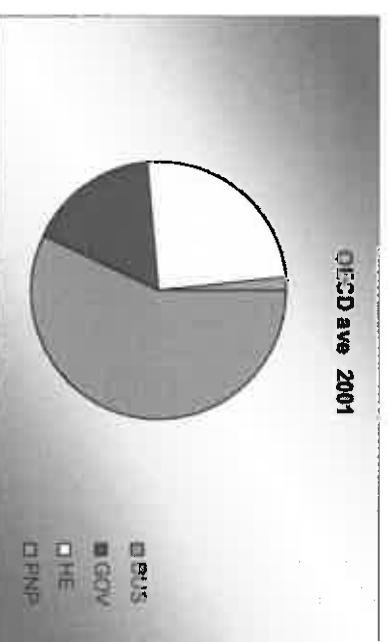
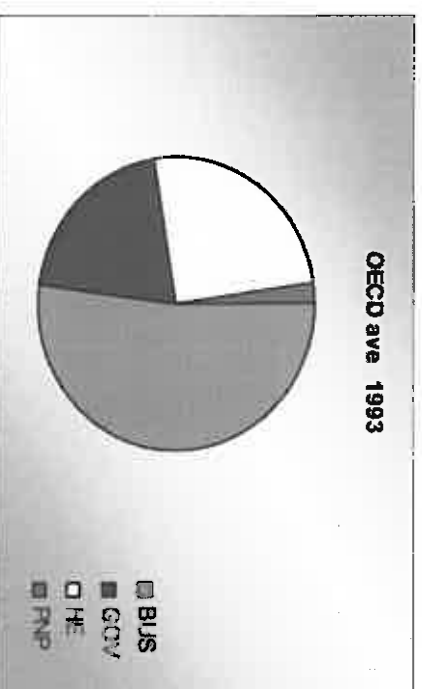
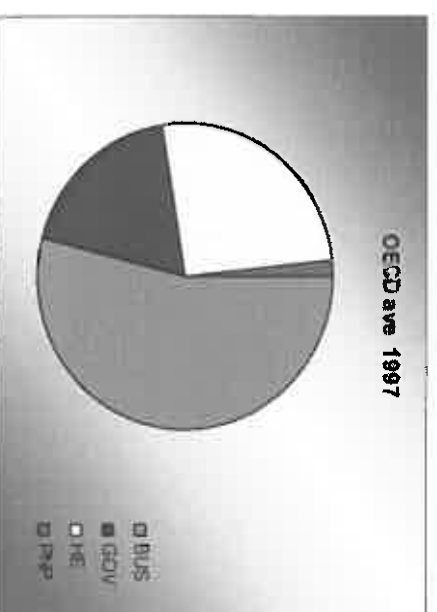
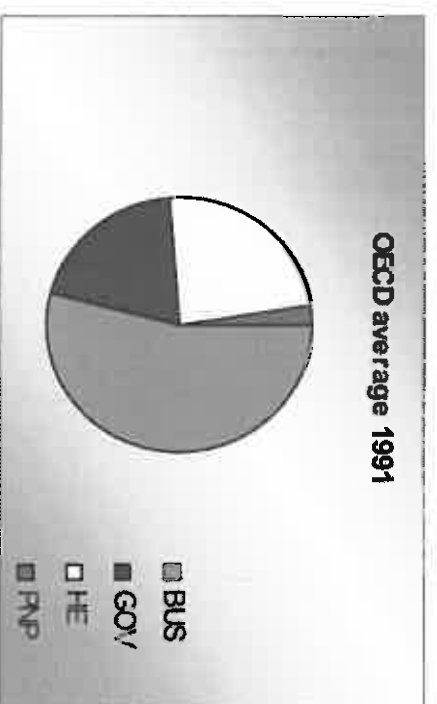
Percentage of GERD financed by Government & Industry, 2001



%GERD performed by Business Enterprise, Government, Higher Education & Private non profit sector



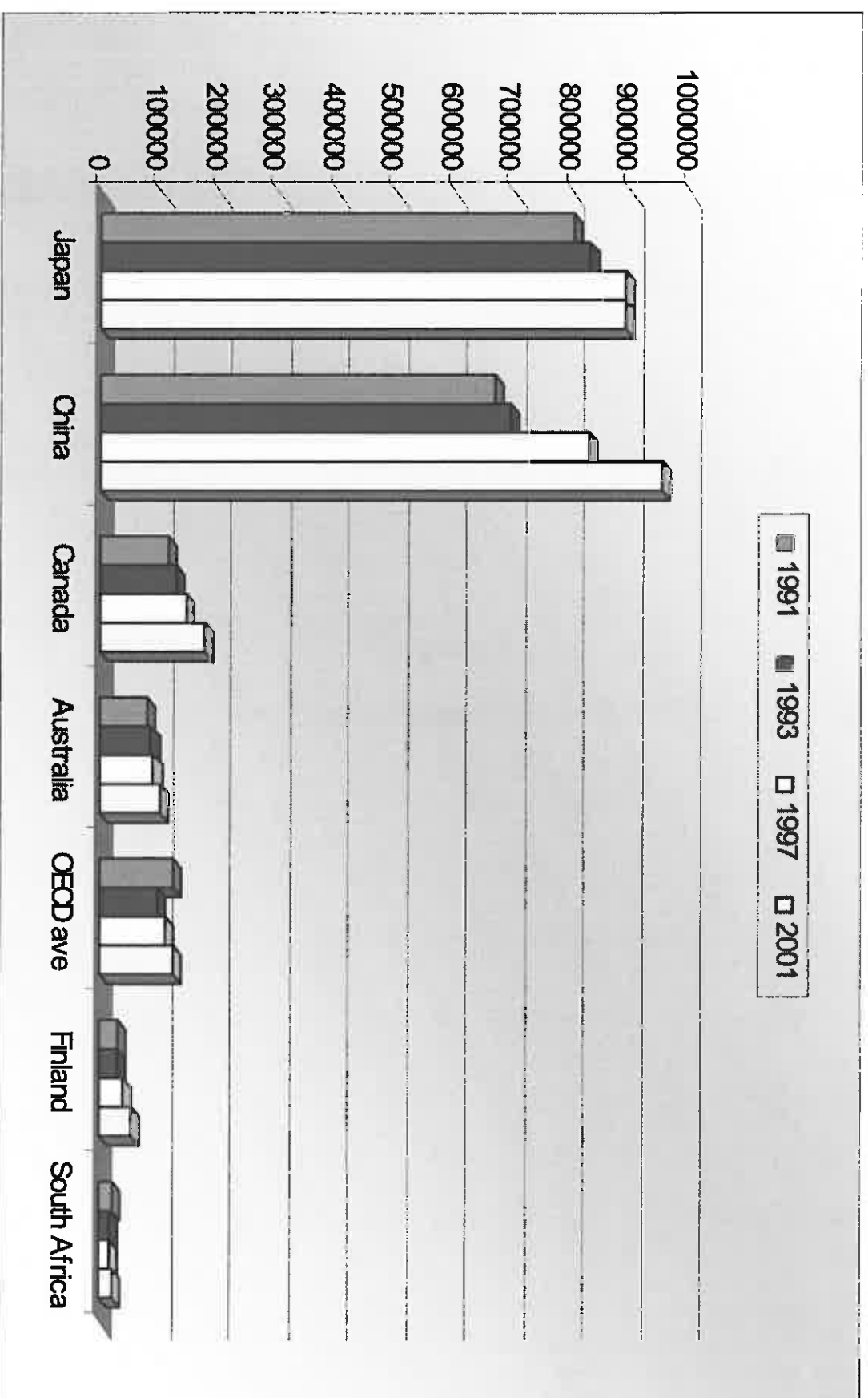
OECD average of % GERD performed by Business, Government, Higher Education & Private non profit sector



R&D and People

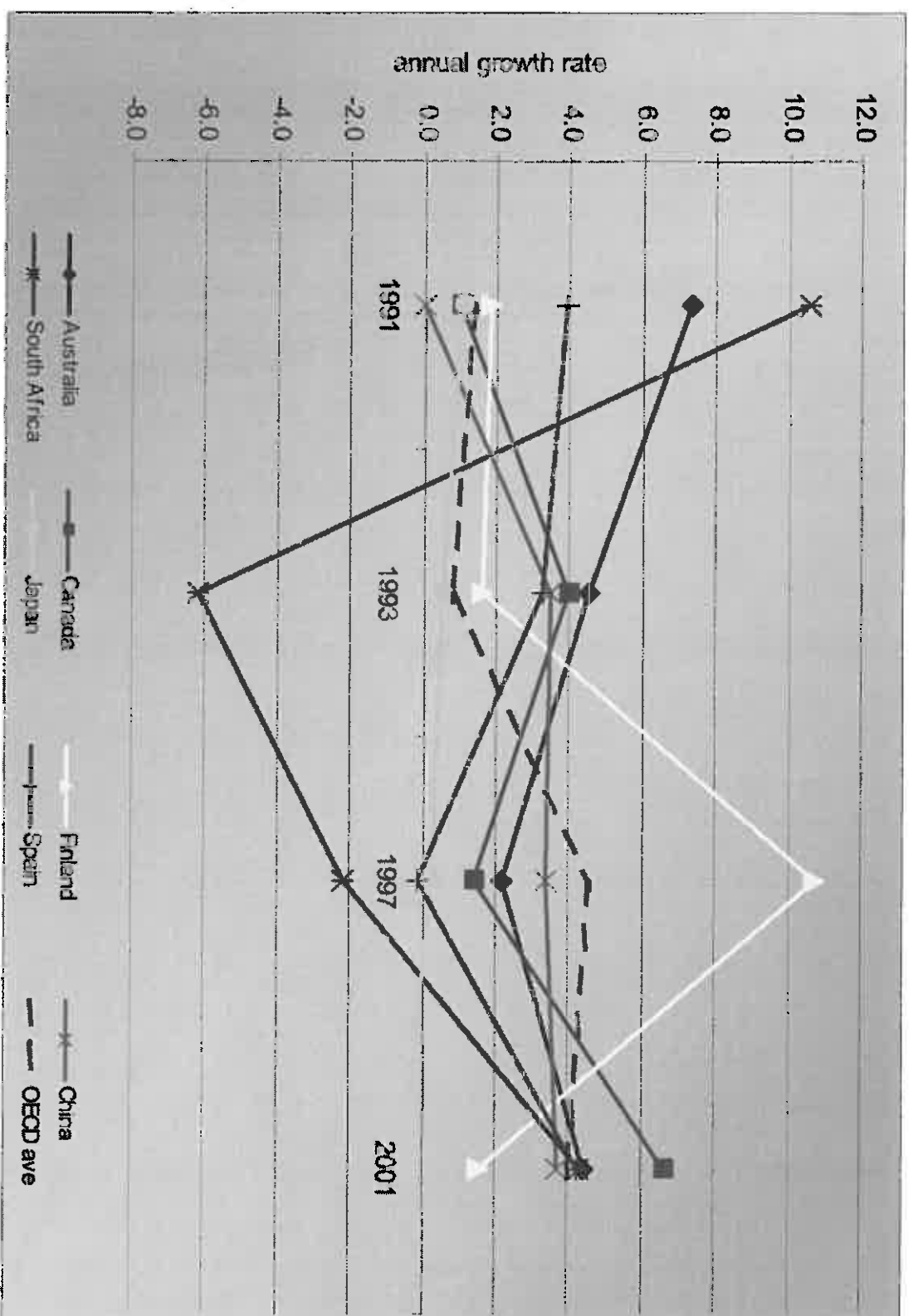


Total R&D personnel (FTE)

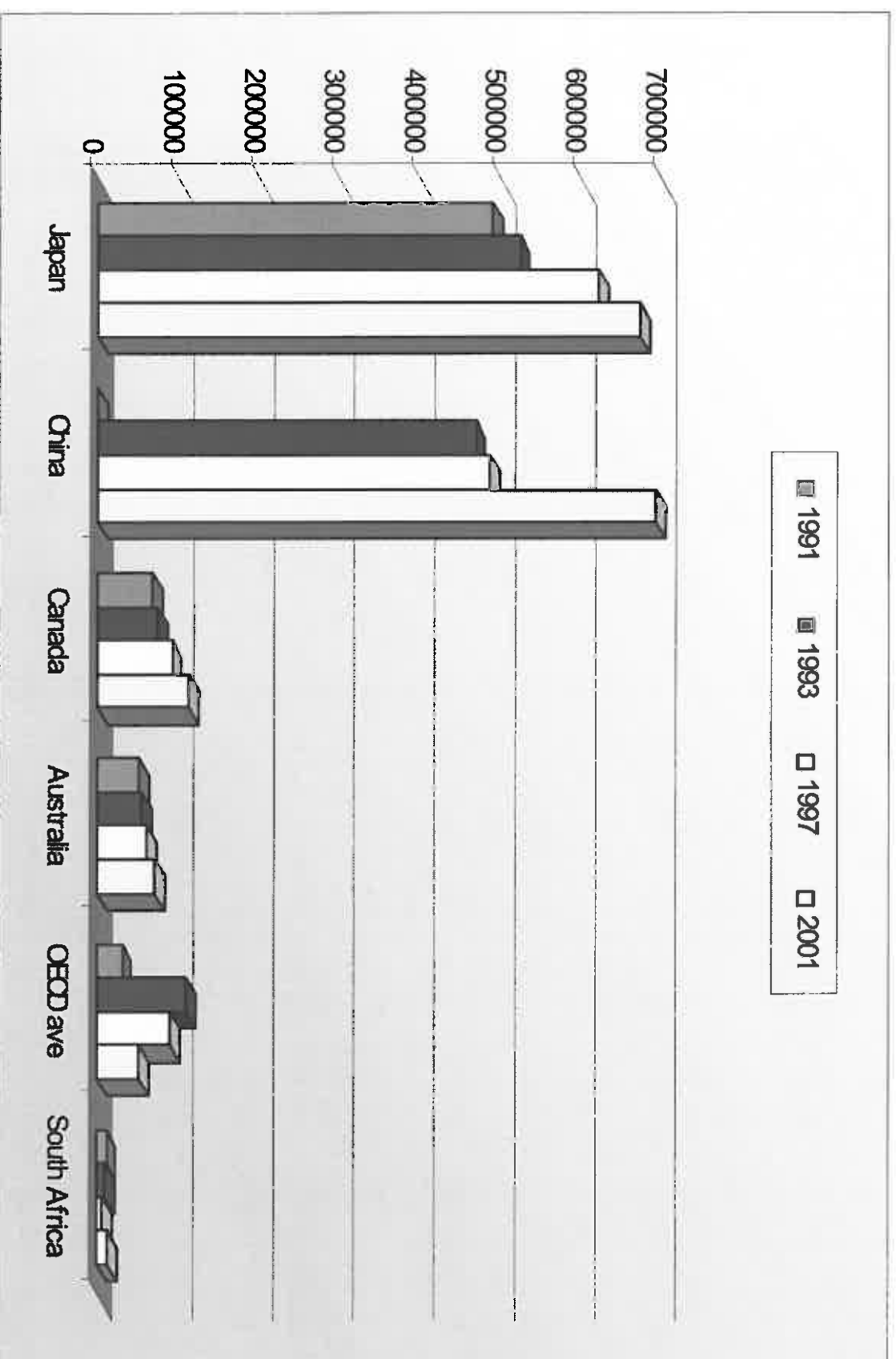


Source : OECD, Main Science and Technology Indicators, May 2005.

R&D personnel -- Compound annual growth rate

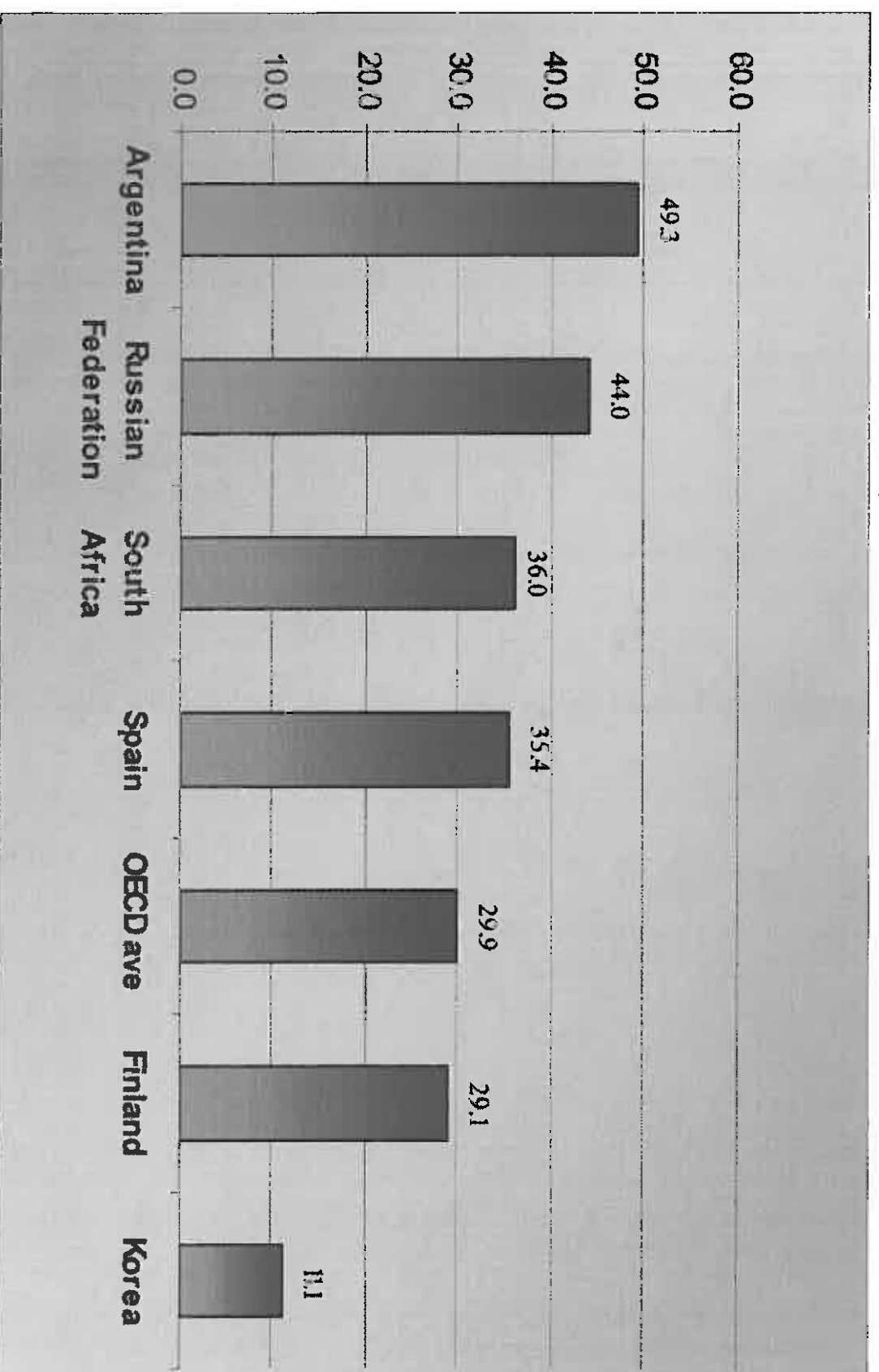


Total researchers (FTE)



Source : OECD, Main Science and Technology Indicators, May 2005.

Women researchers as a percentage of total researchers (headcount) 2001



Thank you