The National Science Board: Activities Related to PCAST

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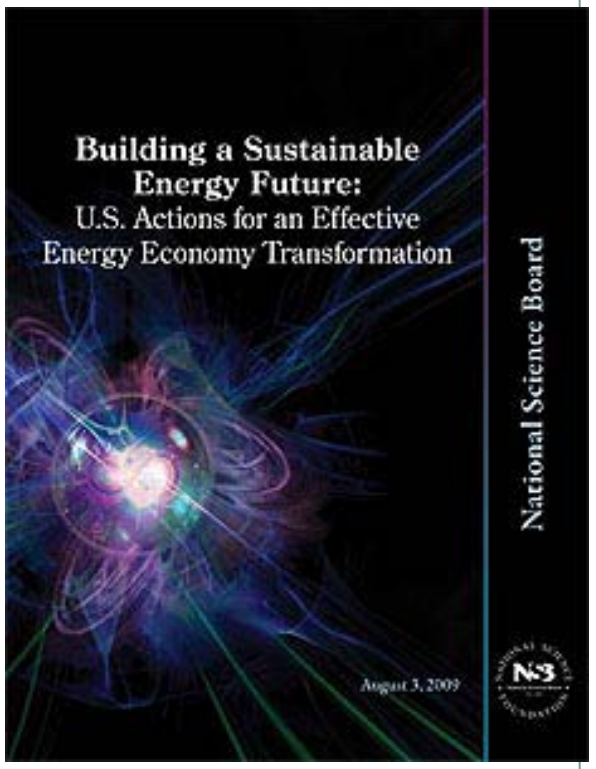
National Science Board

- NSF is headed by the National Science Board (NSB) and the NSF Director (a member of the NSB)
- 25 Presidentially-appointed, Senate-confirmed members
- Staggered Terms of 6 Years (2 current vacancies; 8 more in May 2010)

- Major Responsibilities:
  - Set the policies of NSF
  - Approve NSF major facilities and awards
  - Deliver S&E policy reports to the President and Congress as the need is determined by the President, Congress or the NSB itself
    - Science and Engineering Indicators (biennial statutory report)
    - STEM Action Plan (requested by Congress)
    - Recent: Sustainable Energy, International S&E and Cost Sharing
    - Upcoming: STEM Innovators, NSF Merit Review, NSF Data Policies

Building a Sustainable Energy Future

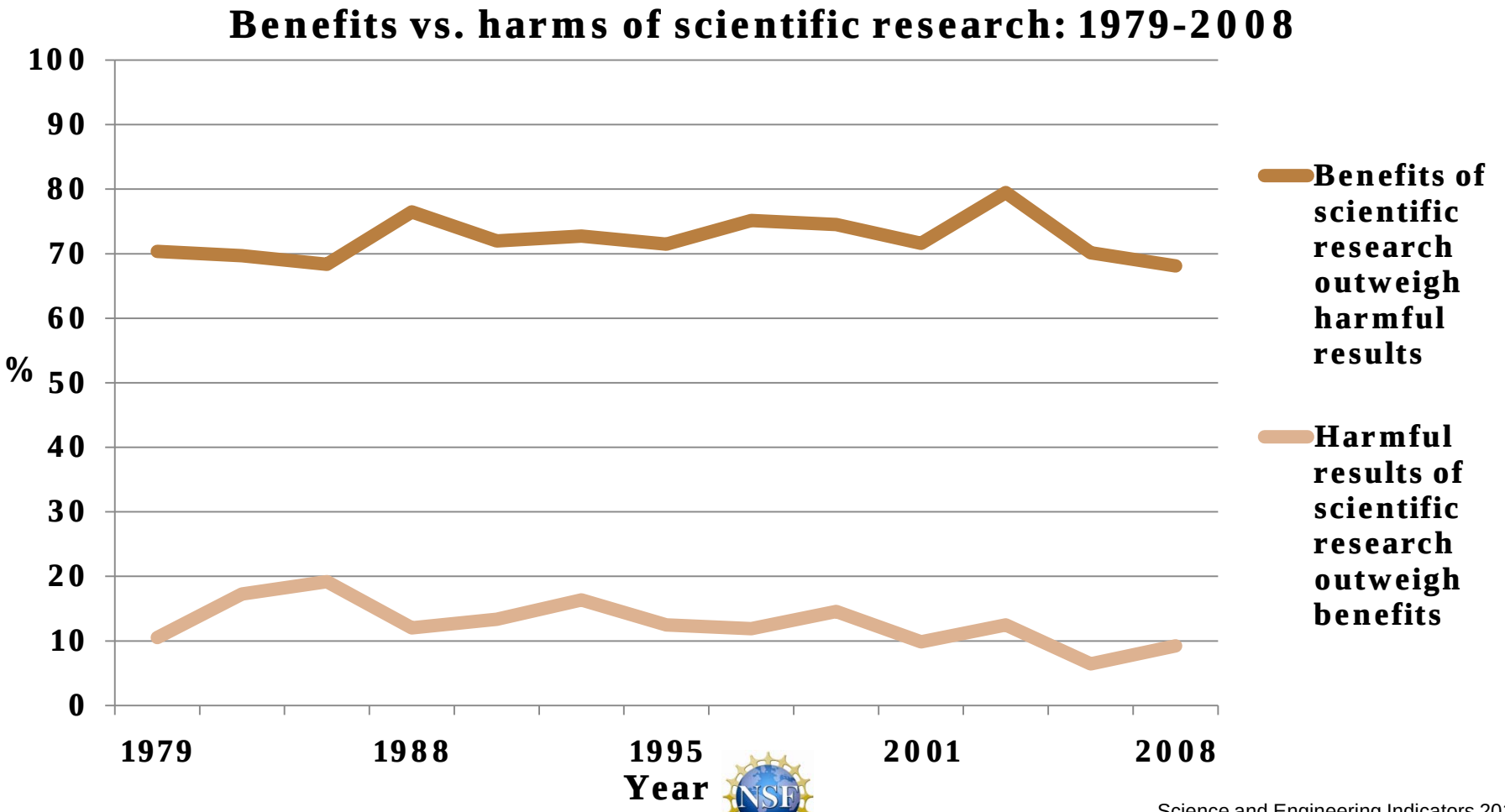


NSB Recommendations from the August 2009 Report:

- The U.S. Government should:
  - Lead a coordinated RD3E* strategy in sustainable energy
  - Boost R&D investment
  - Construct essential policies
  - Support education and workforce development
  - Lead globally
  - Promote public awareness and action
- The National Science Foundation should:
  - Continue to increase emphasis on innovation in sustainable energy technologies and education as a top priority.
  - Coordinate sustainable energy activities
  - Strengthen systems approaches in research programs

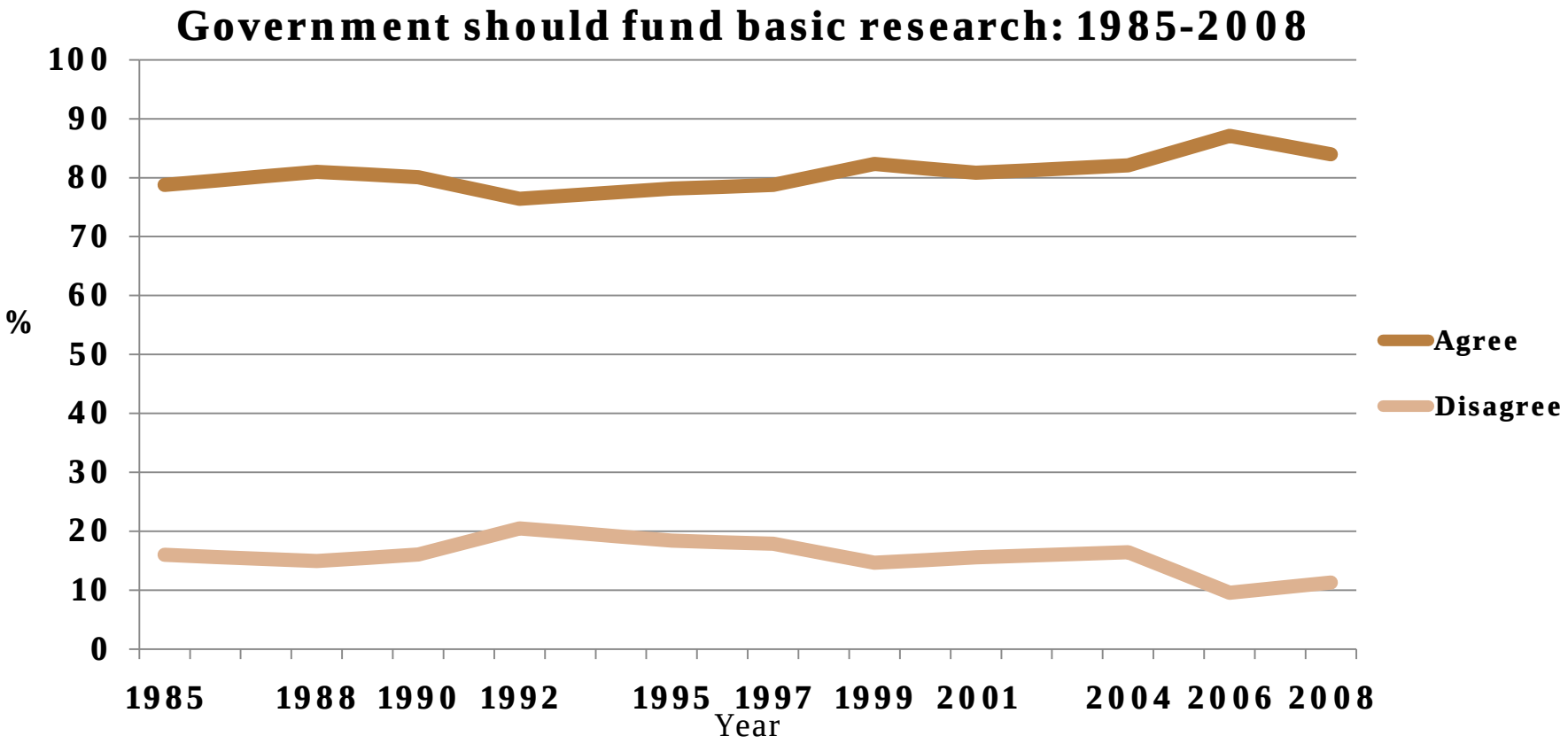
*RD3E = research, development, demonstration, deployment and education

Public Attitudes Toward Scientific Research



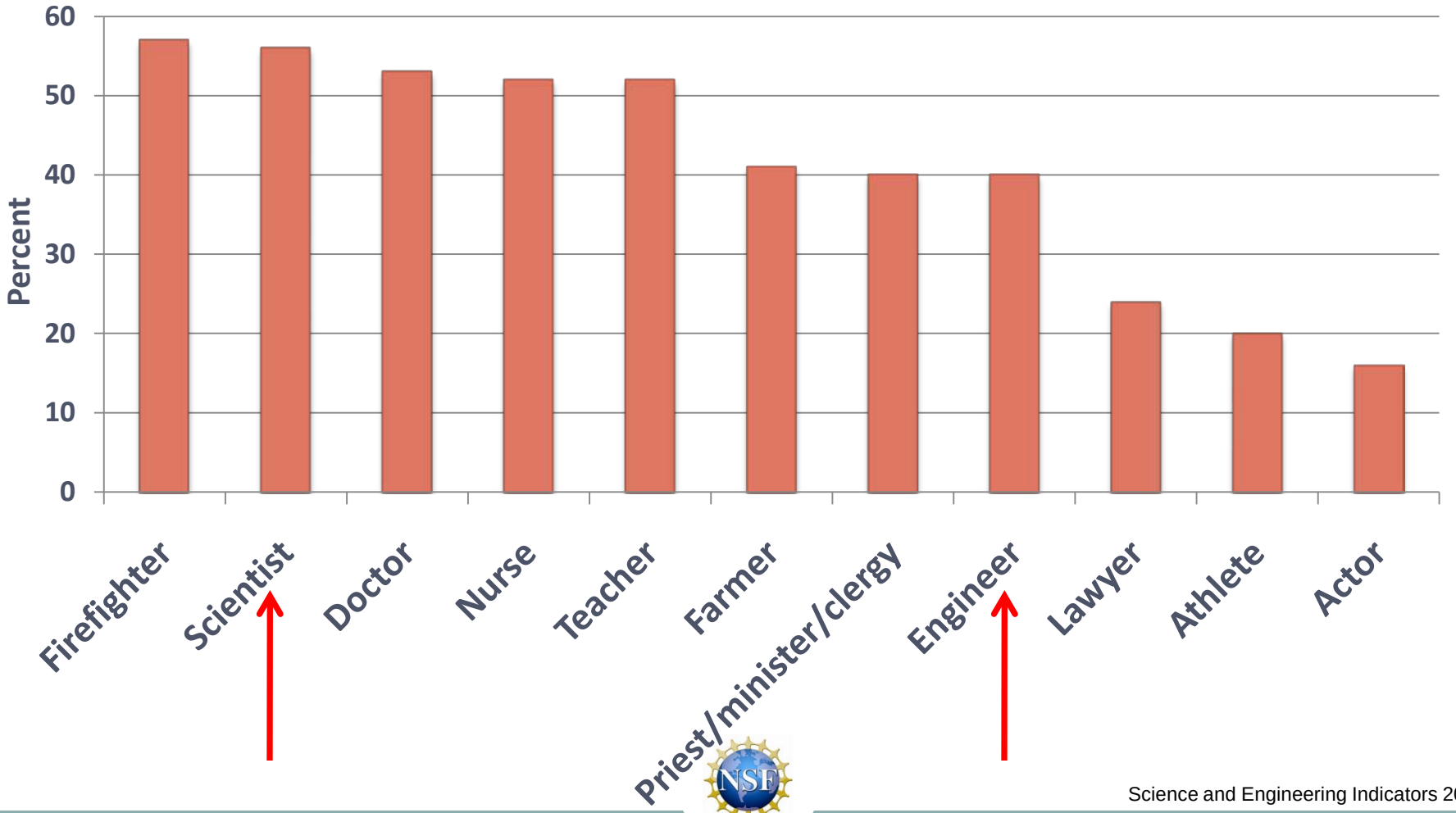
Science and Engineering Indicators 2010

Public Attitudes Toward Government-Funded Basic Research



National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (years through 2001); University of Michigan, Survey of Consumer Attitudes (2004 in top panel); and University of Chicago, National Opinion Research Center, General Social Survey (2006, 2008 in top panel, 2002–08 in bottom panel)

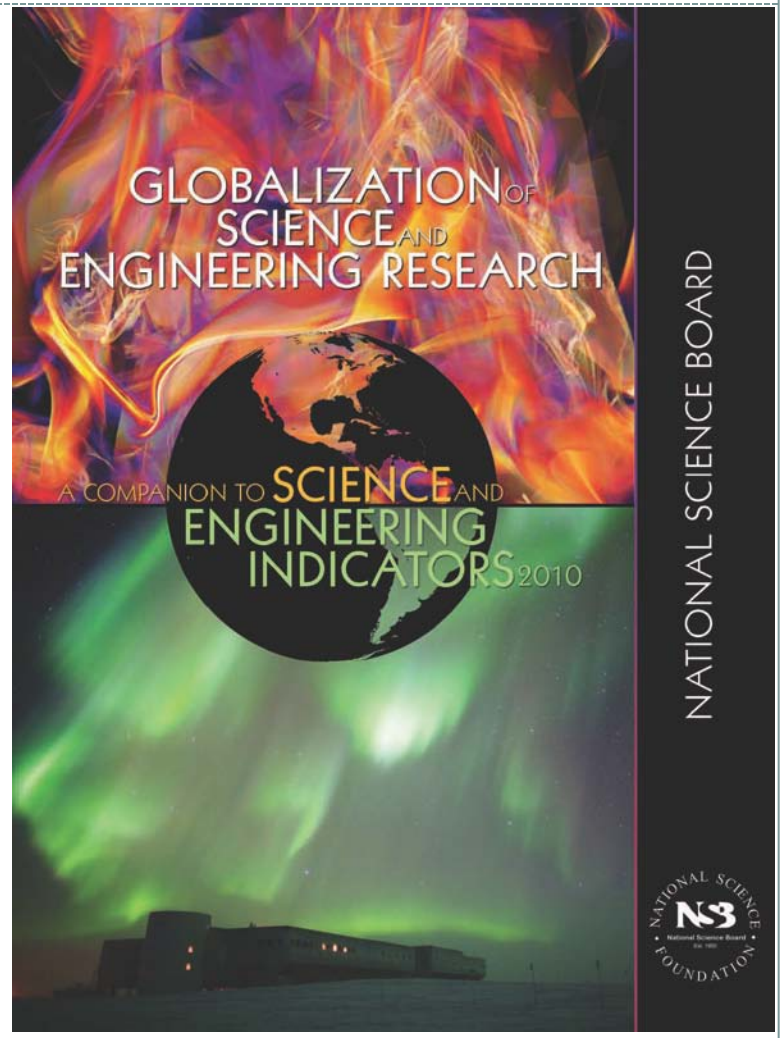
Prestige of Scientists and Engineers



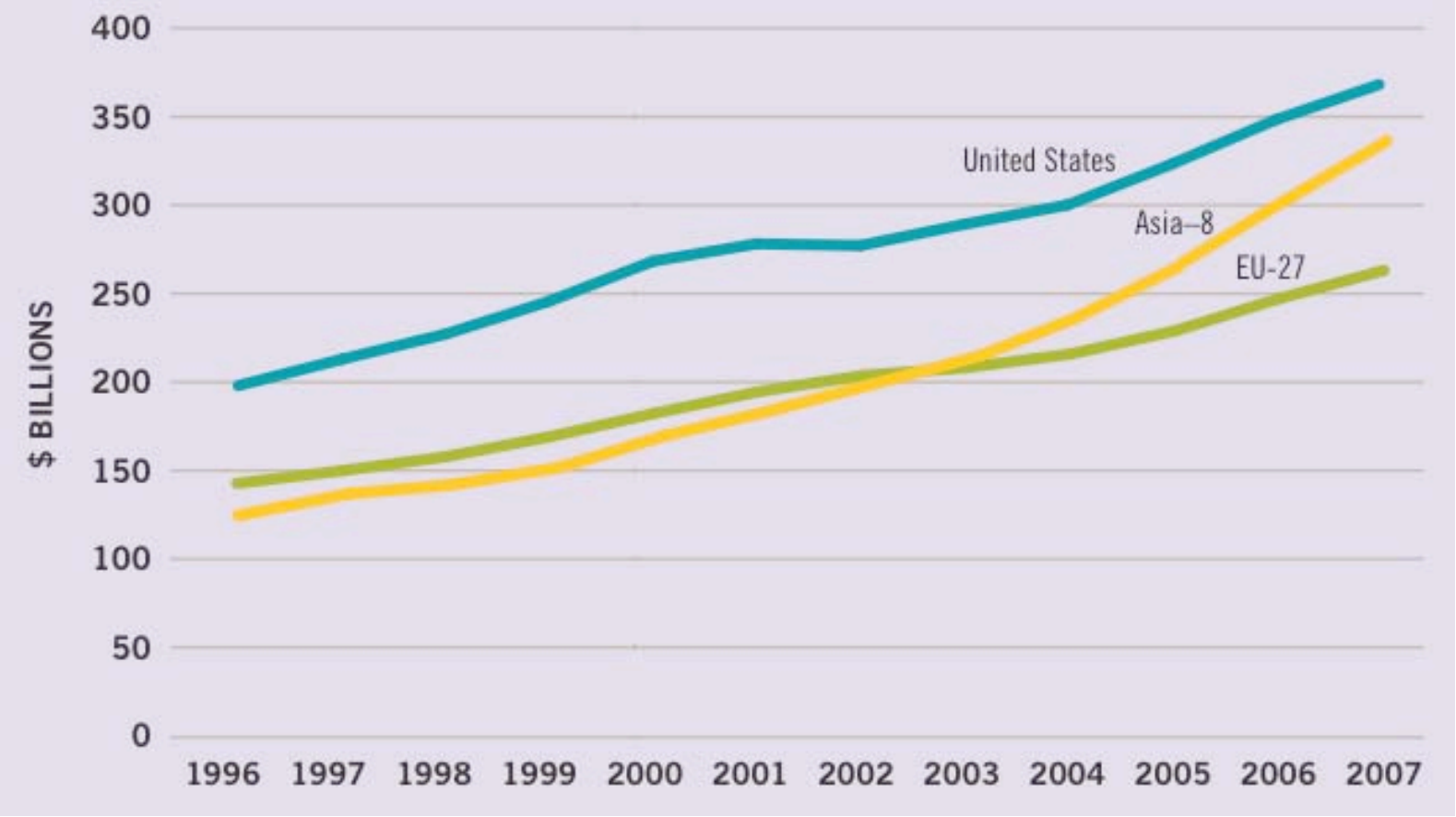
Science and Engineering Indicators 2010

Globalization Trends in S&E

- ***Location of R&D Expenditures***
- ***Number of Researchers***
- ***High Tech Manufacturing:***
  - ***Exports***
  - ***Trade Balance***
  - ***Value-Added Share***
  - ***R&D Employment***

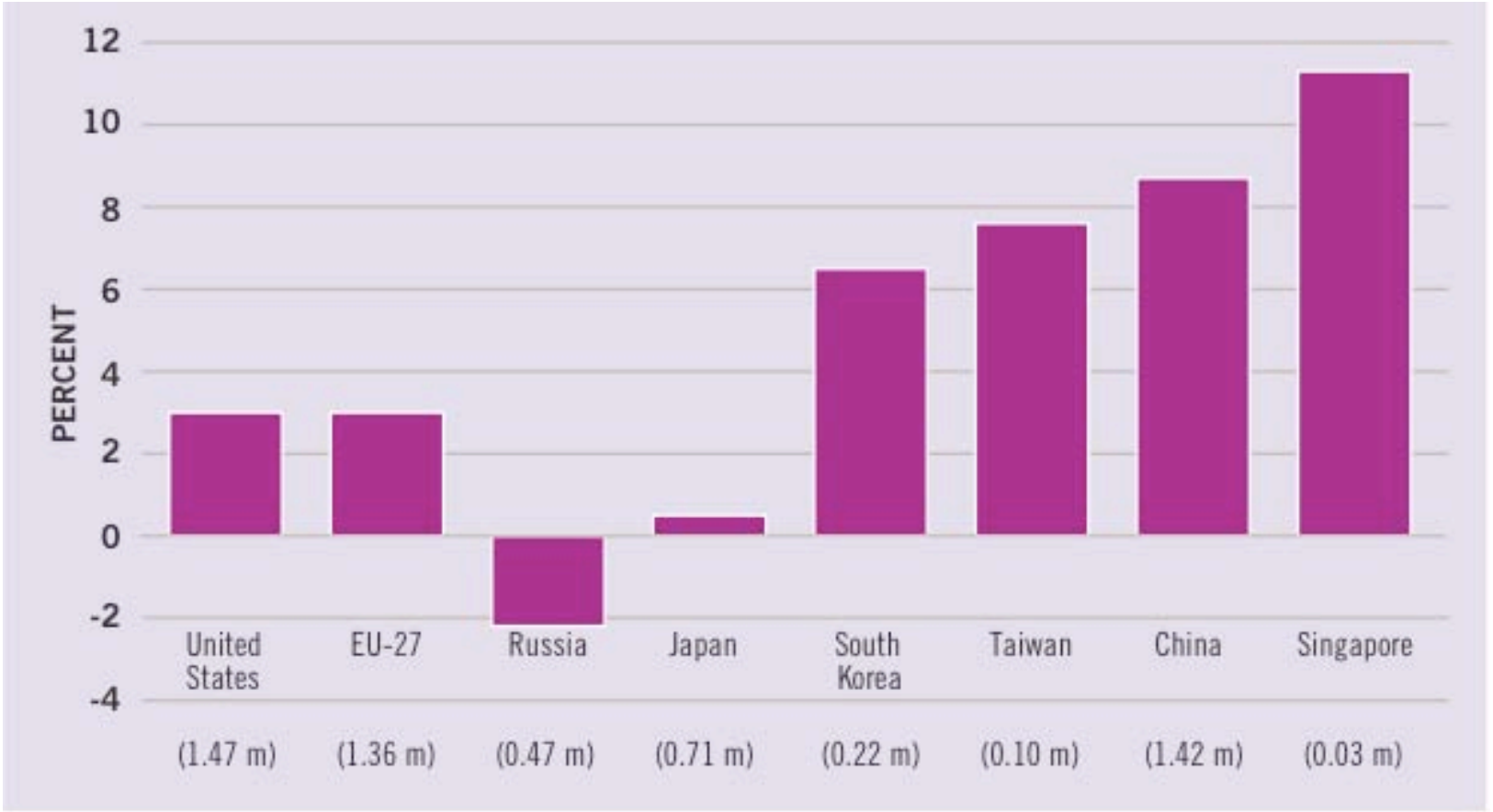


R&D Expenditures



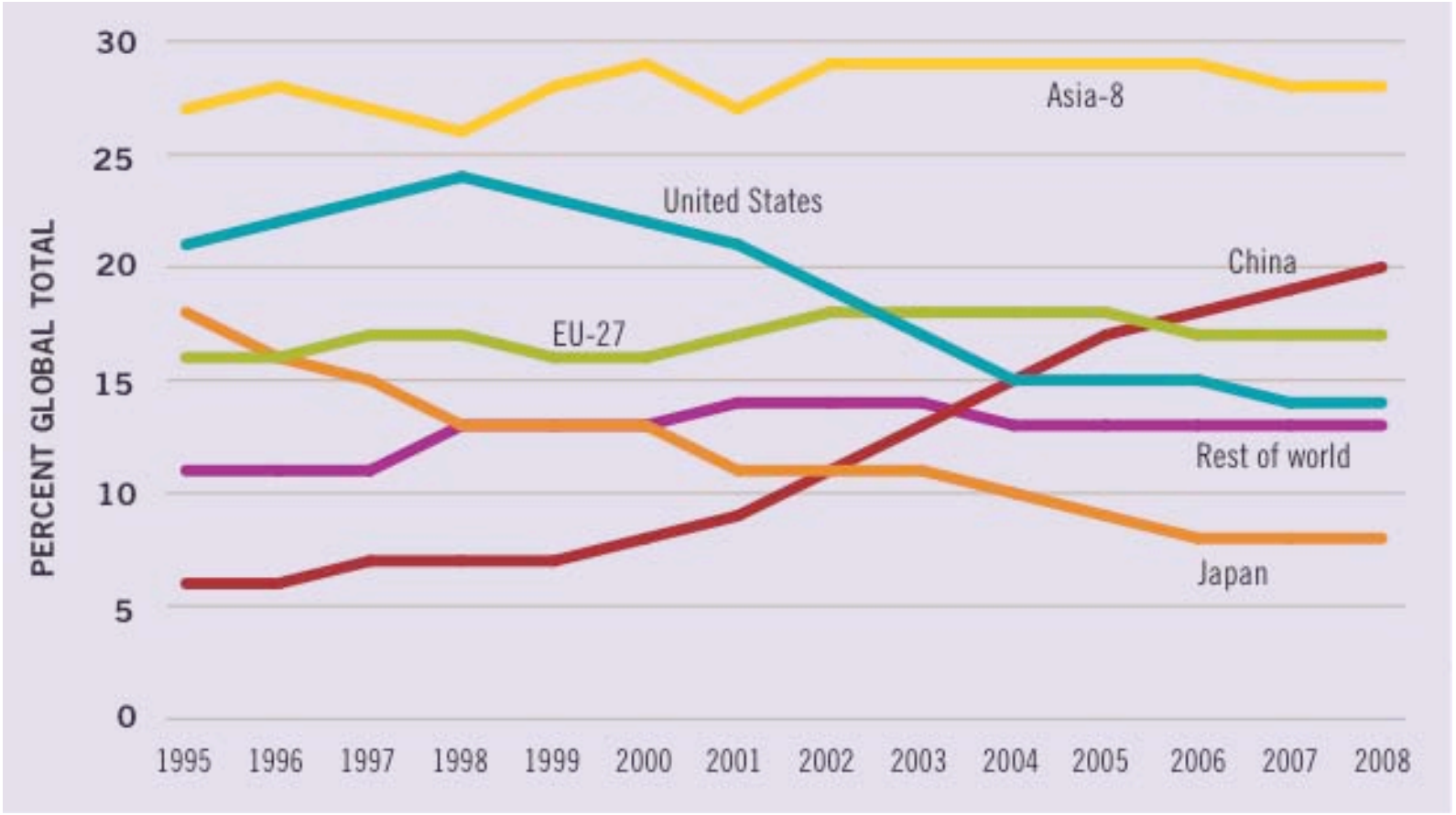
SEI 2010: Global Patterns of R&D Expenditures, Chapter 4

Annual Growth in the Number of Researchers



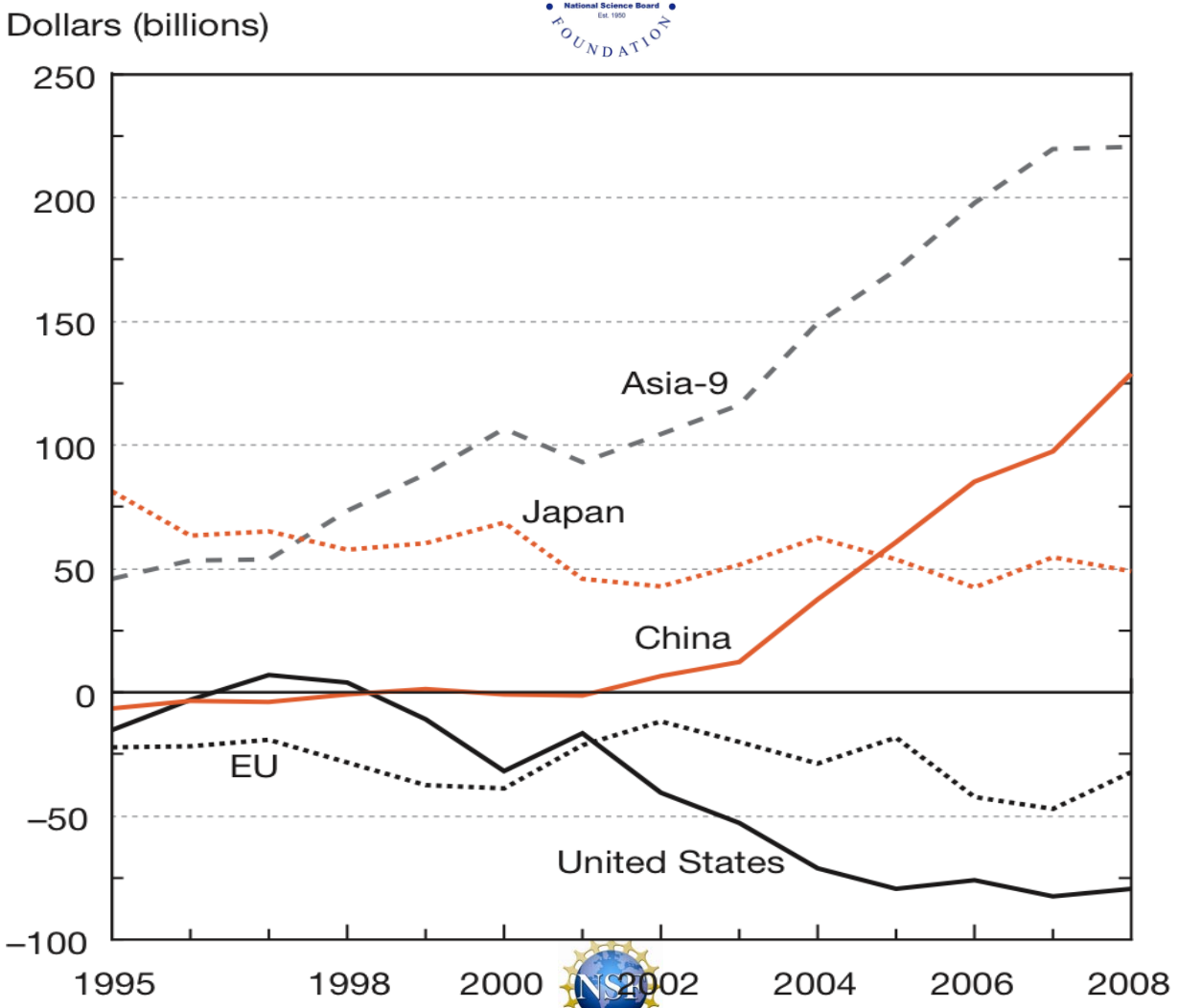
SEI 2010: Global S&E Labor Force, Chapter 3

Export of High-Tech Manufactured Goods

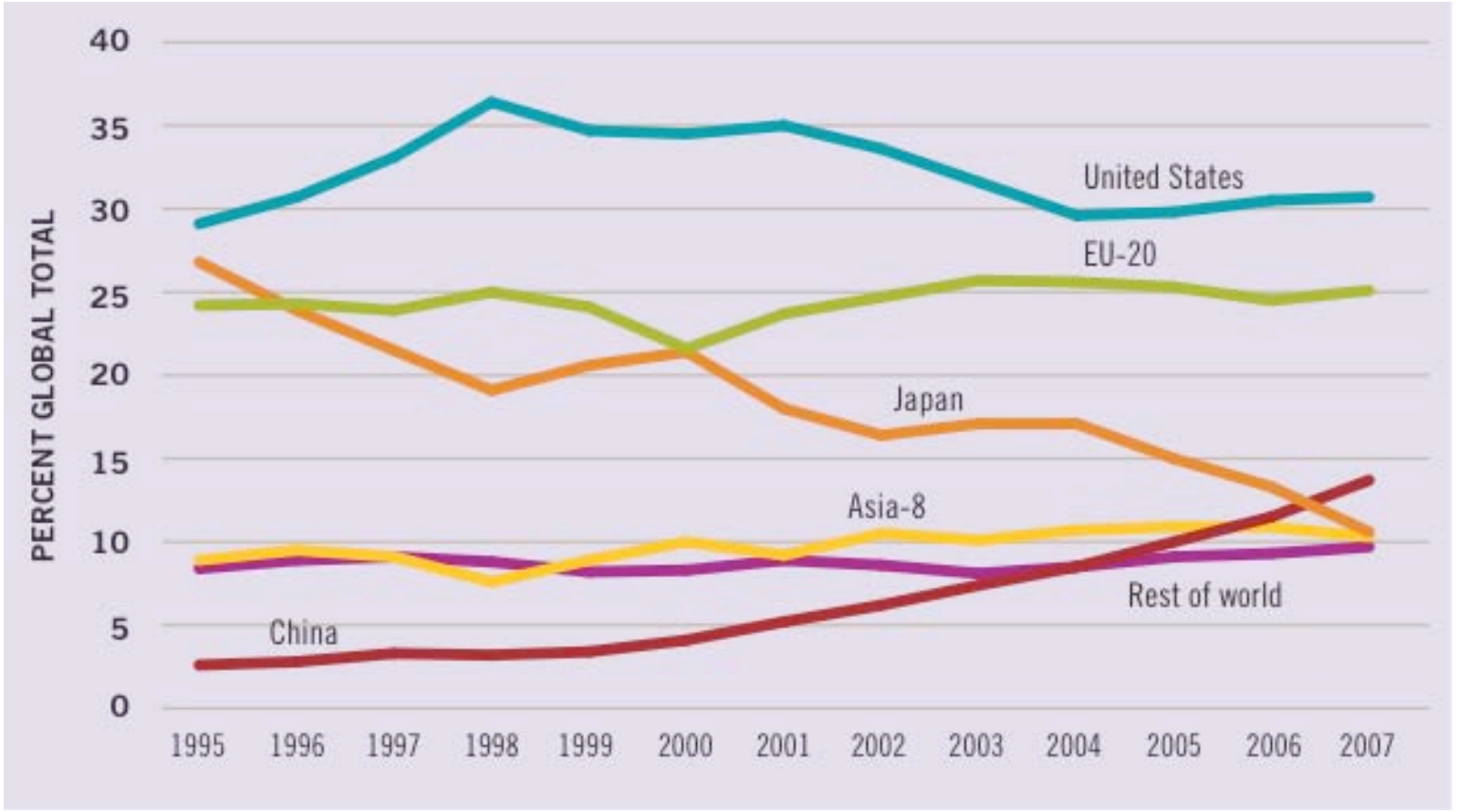


SEI 2010: Trade of High-Technology Goods, Chapter 6

Trade balance in high-technology goods : 1995–2008

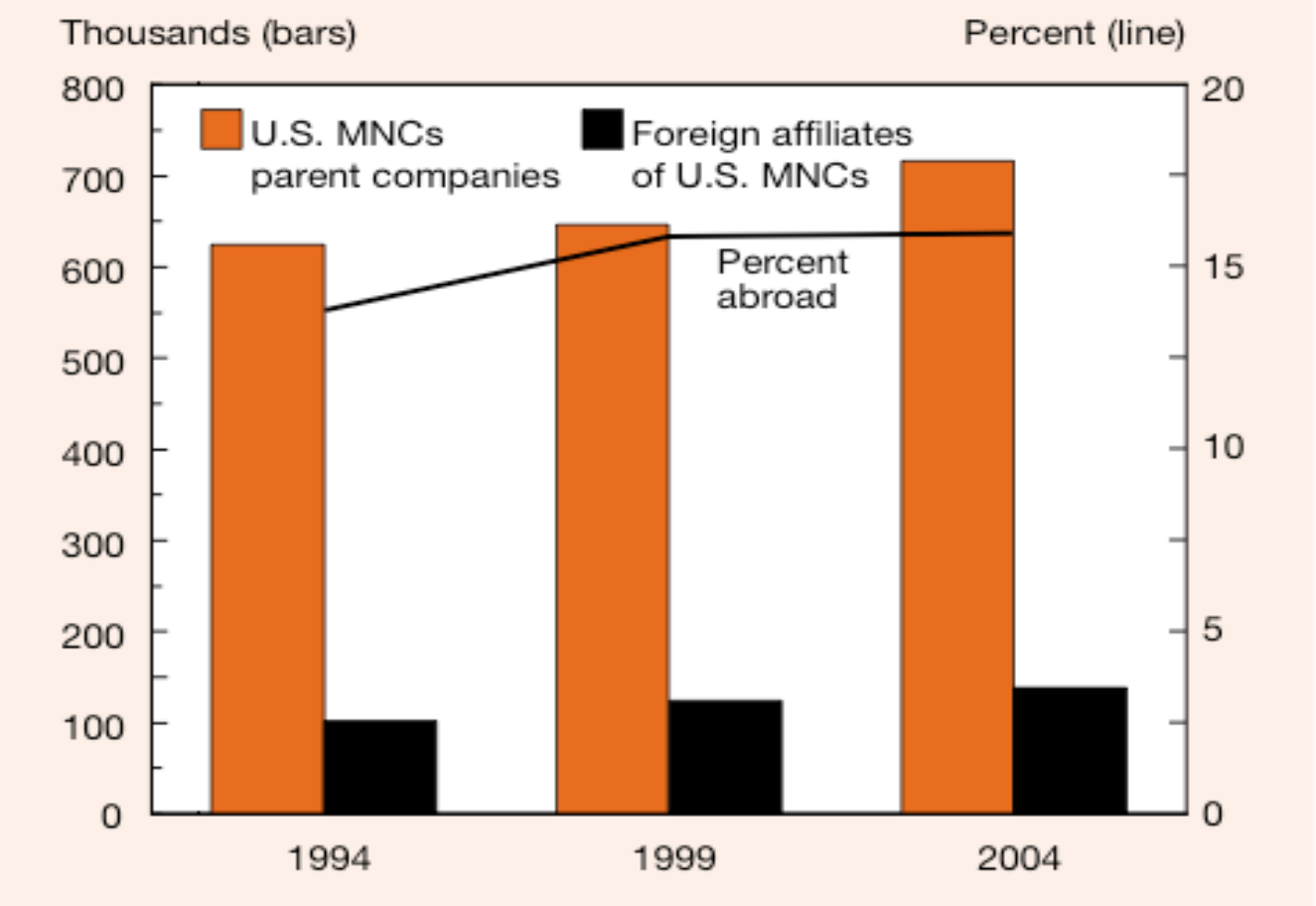


High-Tech Manufacturing Value-Added Share



SEI 2010: High-Technology Manufacturing Industries, Chapter 6

R&D Employment of U.S. and Foreign Multinational Corporations



Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (various years).

A National Action Plan for the STEM Education System

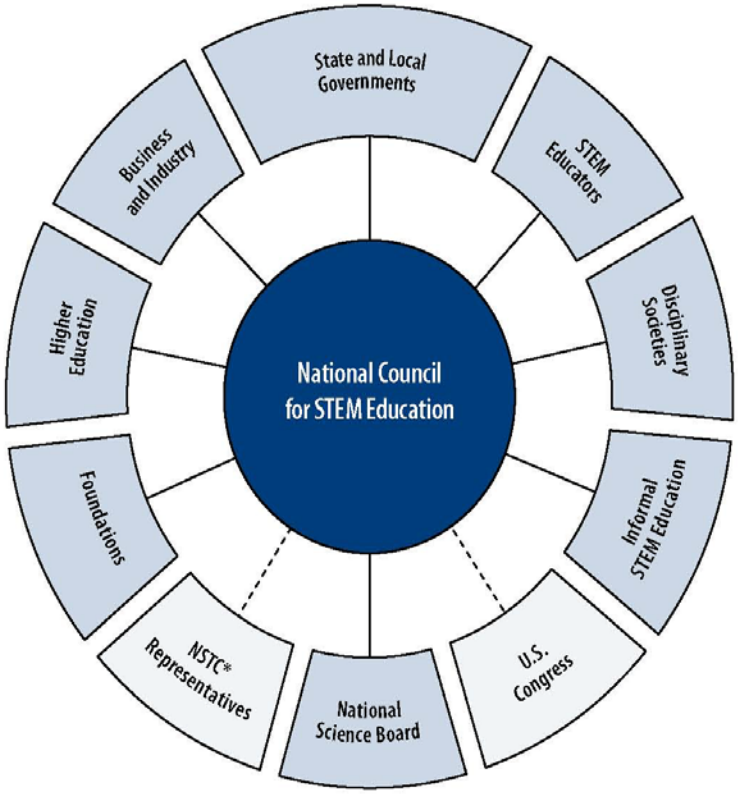
- Requested by Congress
- Board Used Statutory Authority to Appoint a Commission and Hold Hearings Around the Country

Recommendations

- Vertical Alignment from Pre-K through to Higher Education
- Horizontal Coordination with National STEM Content Guidelines
- Well-Qualified and Highly-Effective STEM Teachers

Congressman Honda, Senator Obama and Senator Lieberman each introduced legislation to implement the Board's recommendations

National Council for STEM Education



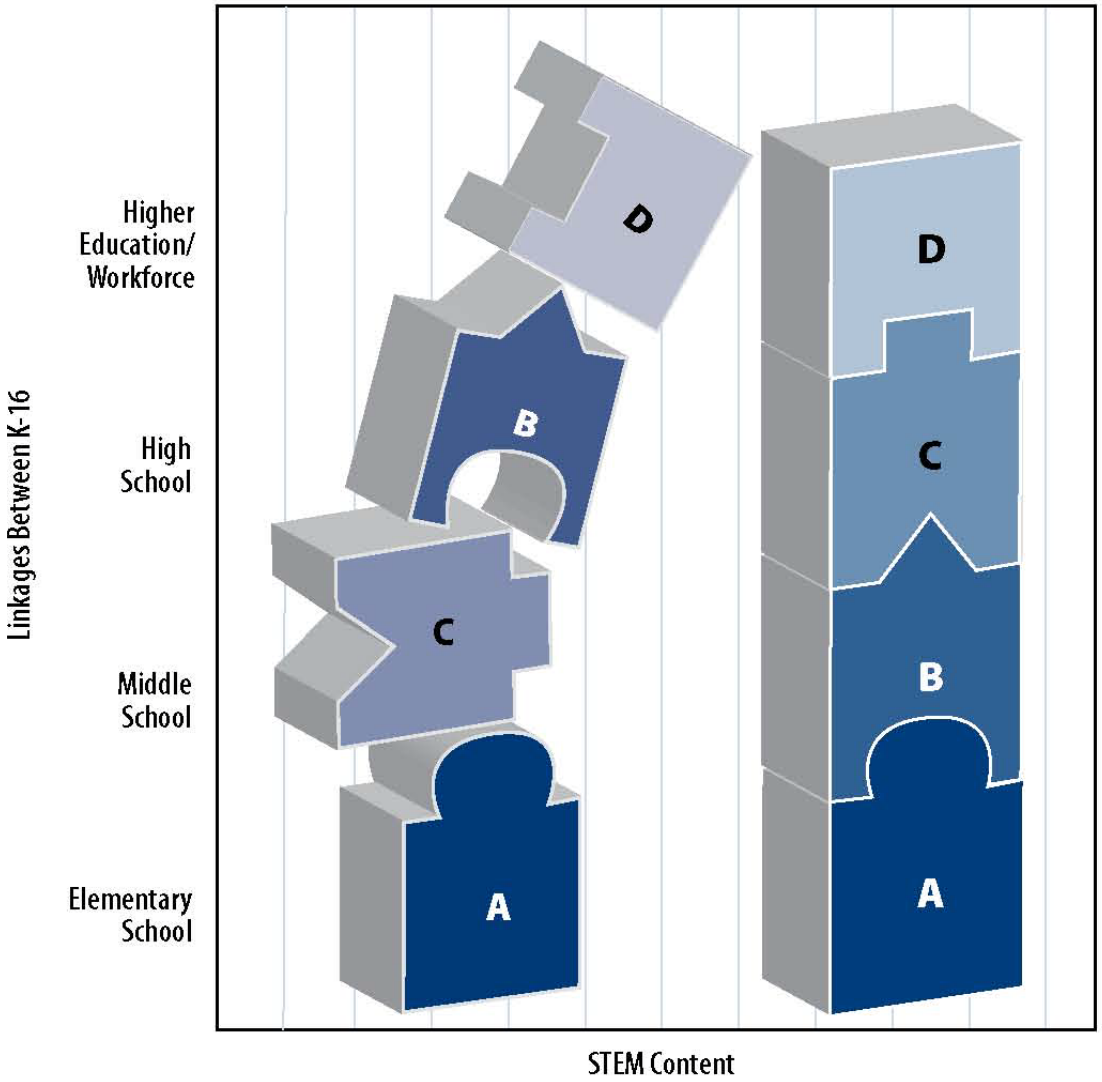
Horizontal Coordination, Across Stakeholders

-National STEM Content Standards

-Student Assessments Aligned with National Content

-Share and Disseminate Best Practices

Vertical Alignment



- Strong linkage between high school and higher education and/or the workforce
- STEM education-focused P-16 councils in each state

STEM Teachers

NSF Noyce Scholars assist teachers in high-need schools

Also see the NSB Letter to President-Elect Obama on **Actions to Improve Science, Technology, Engineering, and Mathematics (STEM) Education for all American Students**

Ensure students are taught by well-qualified and highly effective STEM teachers:

- Compensate STEM teachers at market rates
- Provide resources for the preparation of future STEM teachers
- Increase STEM teacher mobility between districts: national STEM teacher certification standards
- Provide strong STEM teacher preparation

NSB Reports 2007-2010
www.nsf.gov/nsb