

Transformation of Innovation system in a Small Country – elements of Success in Finland

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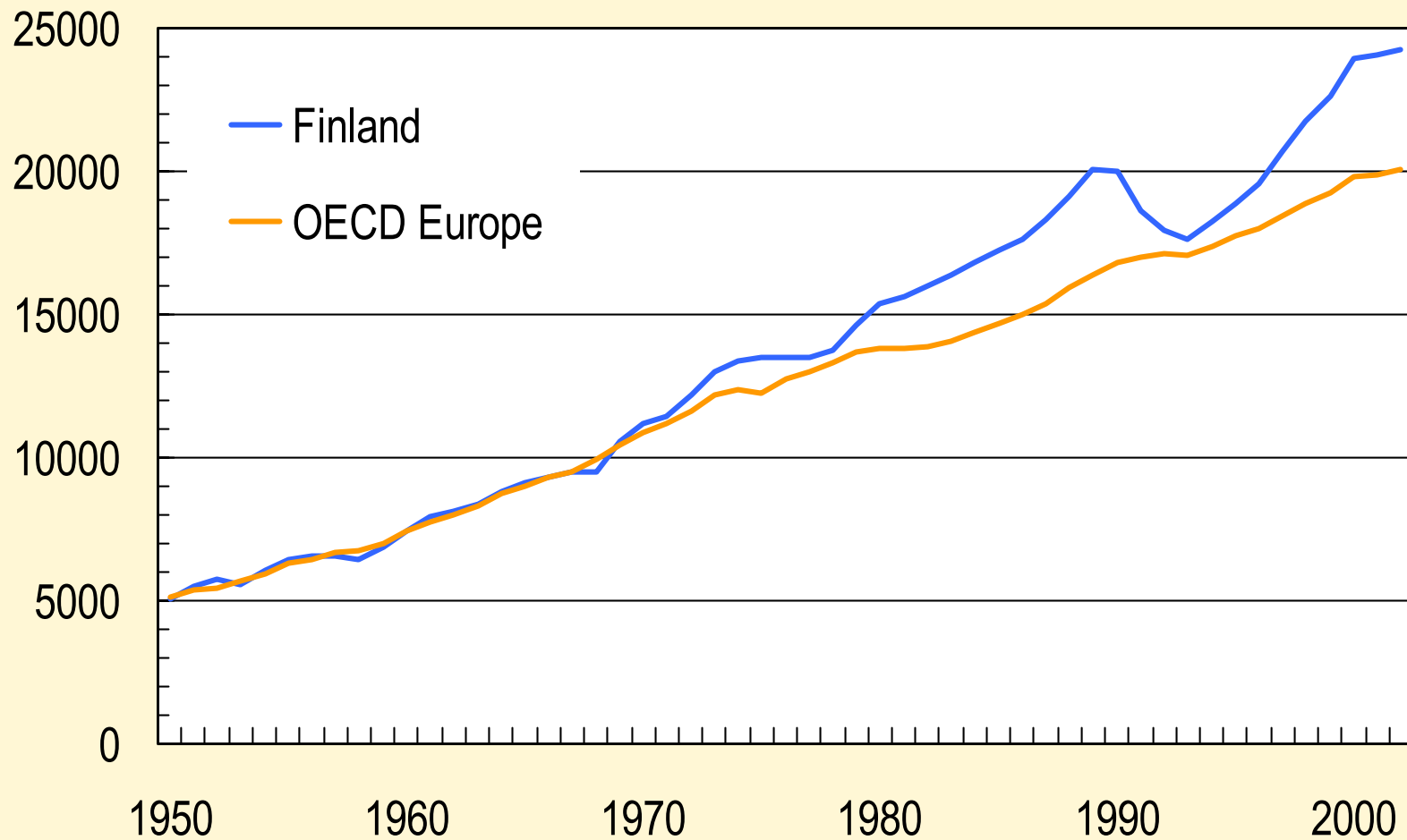
The First Globalics Conference, 3-6 November Rio de Janeiro

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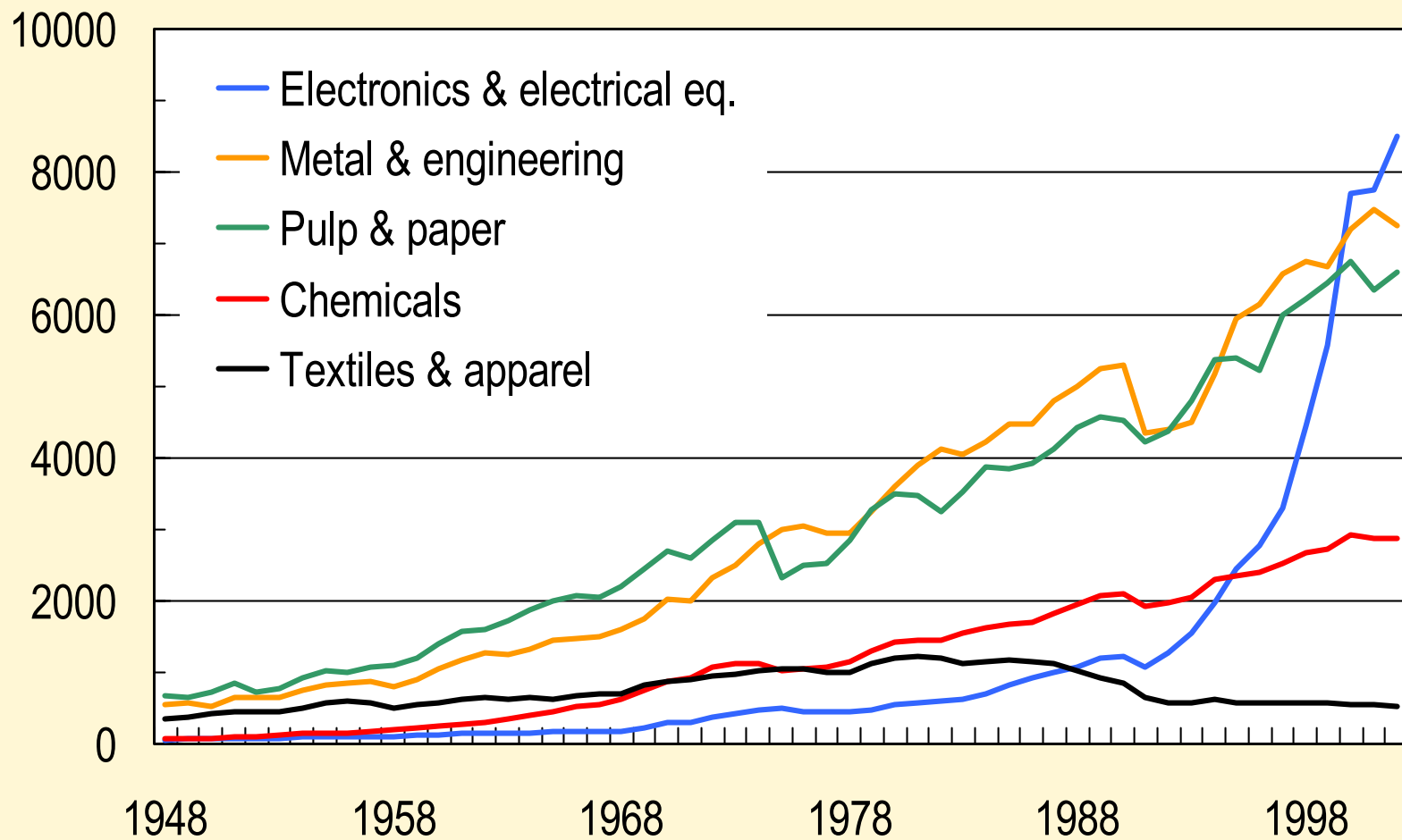
GDP/capita in Finland and OECD Europe

(at 2002 prices – PPP)

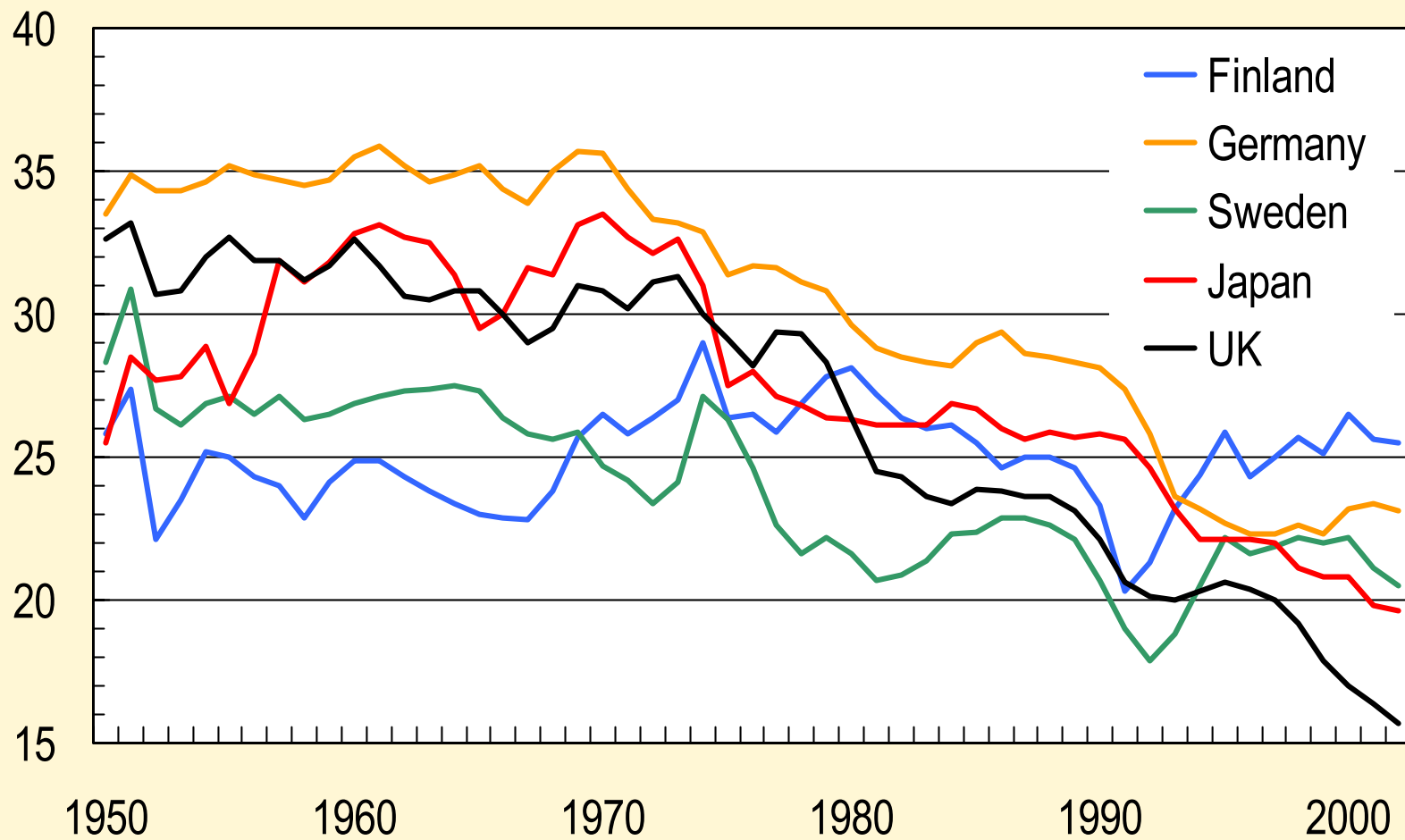


Manufacturing output in Finland by industries

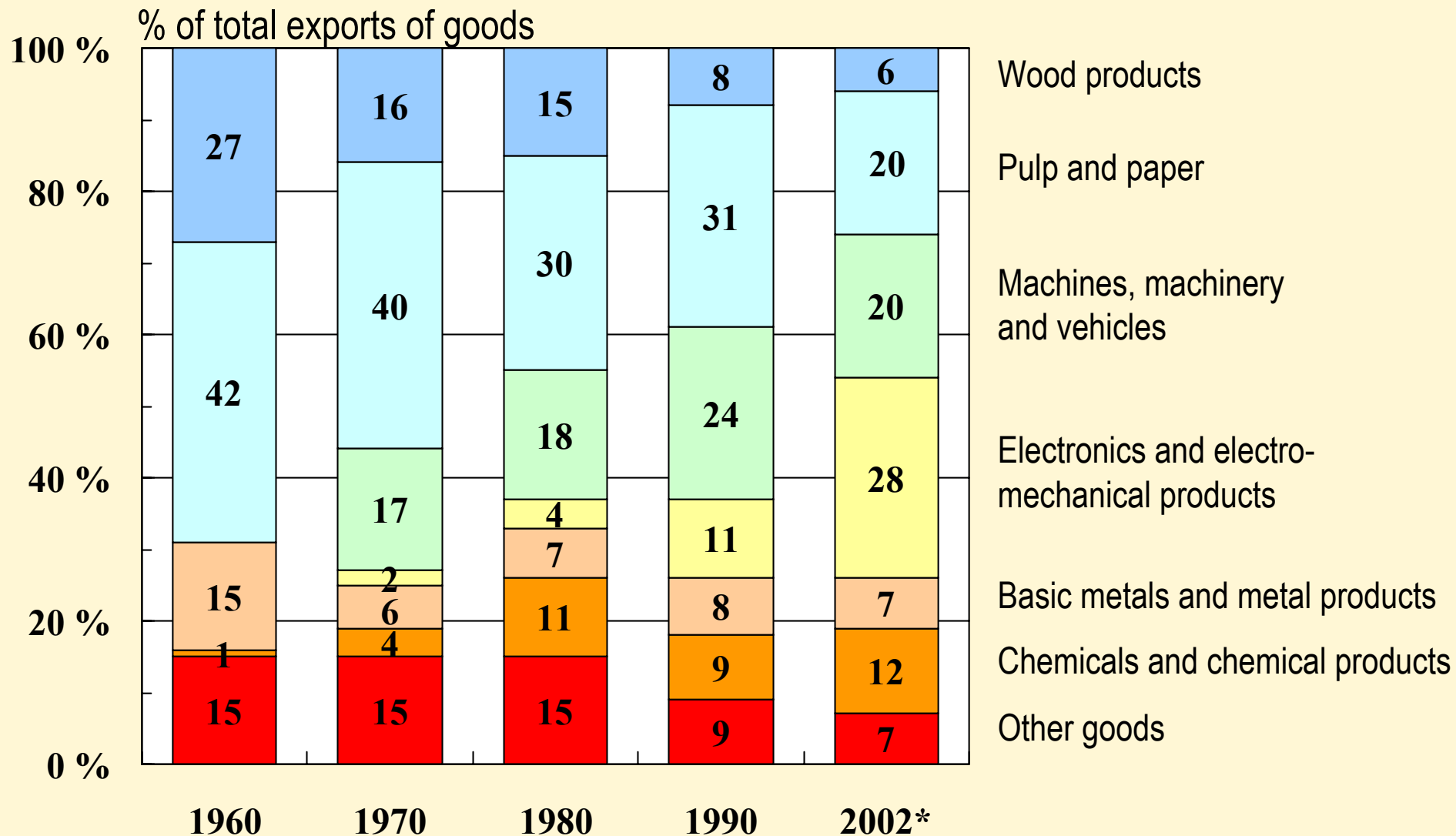
(at 2002 prices)



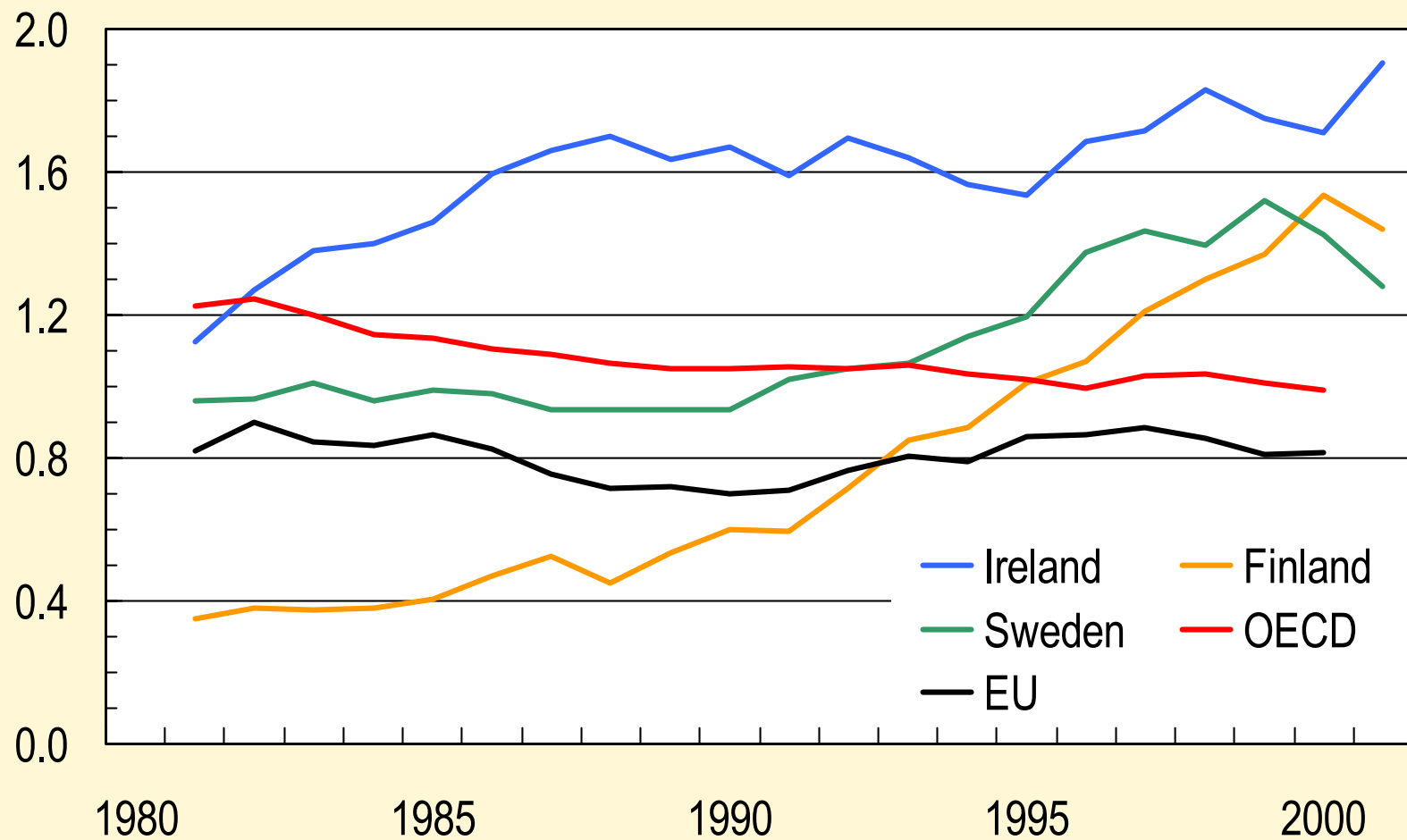
Share of manufacturing in GDP (%)



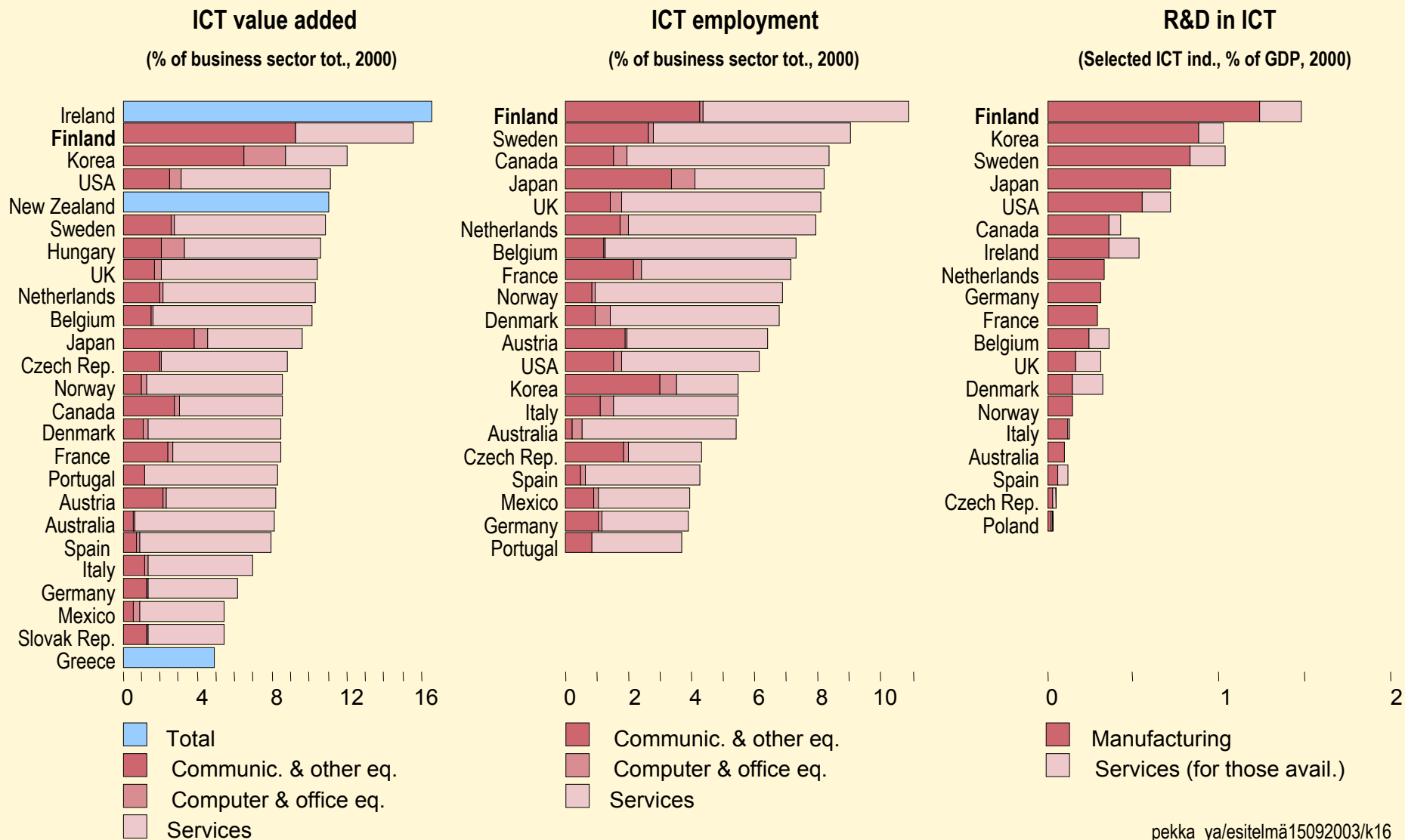
Finnish exports of goods by industry 1960-2002 (%)



Export/import ratio of high-tech products

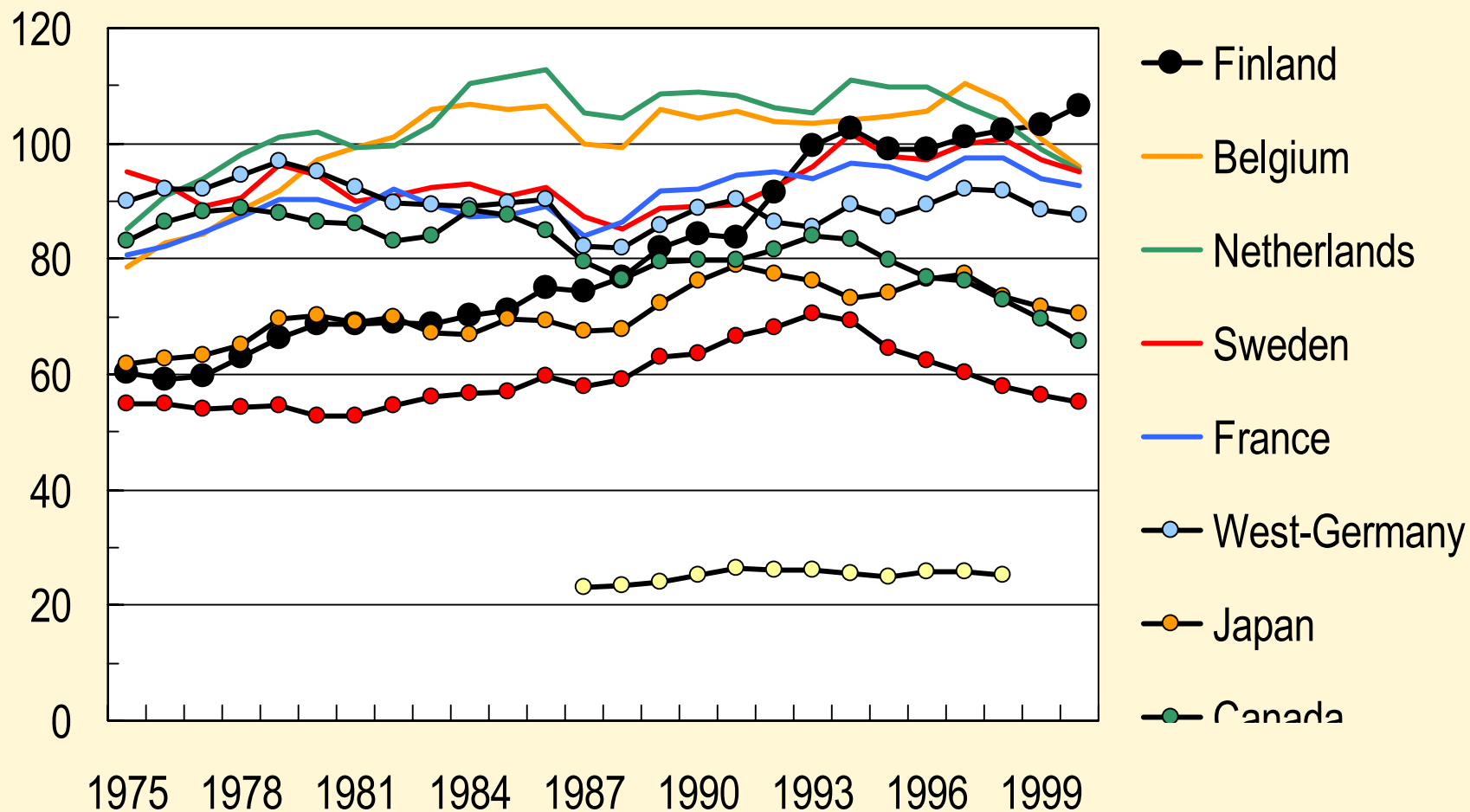


ICT sector's share in value added, employment and R&D

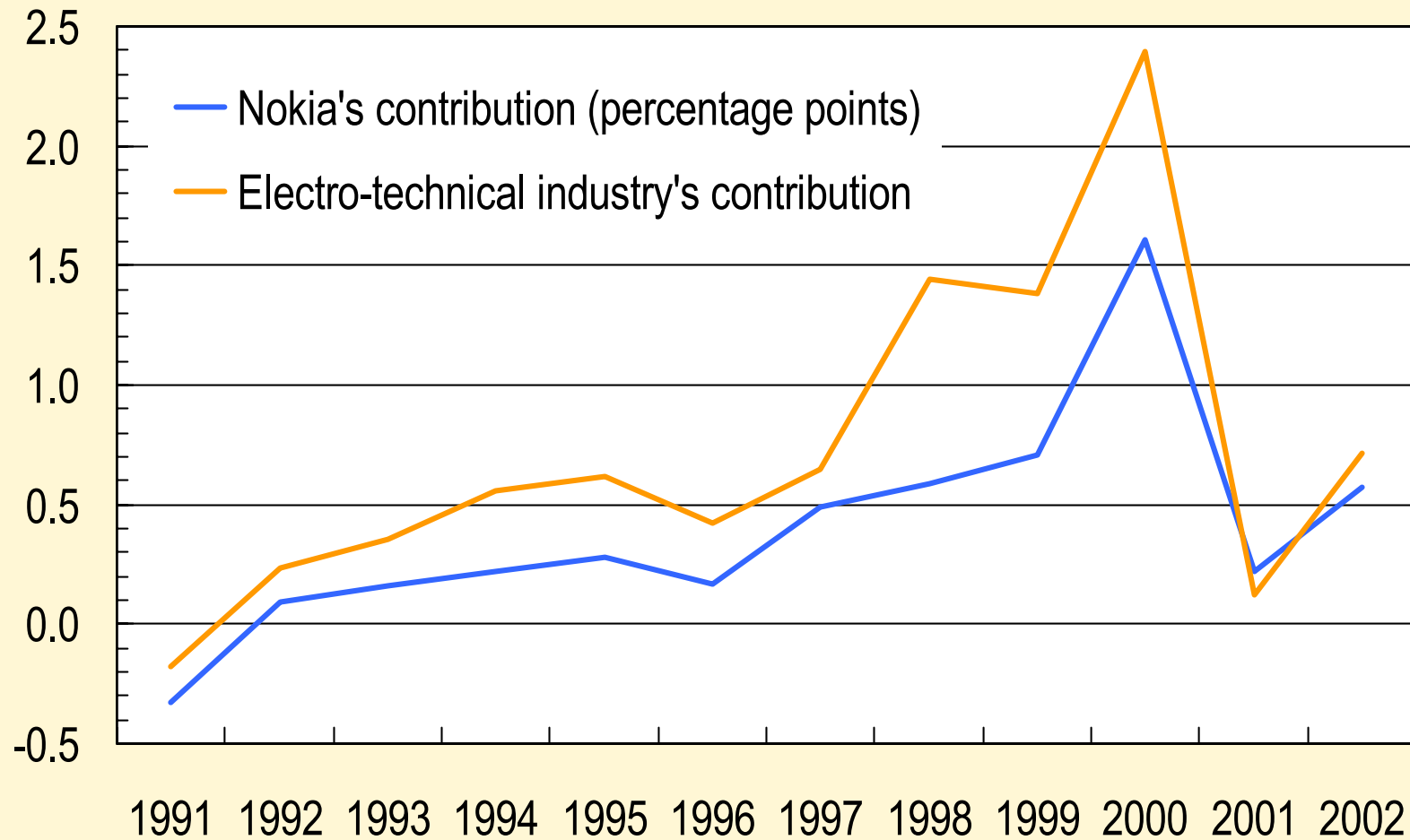


Manufacturing productivity in selected countries

(USA = 100)



Nokia's contribution to GDP growth in Finland



NOKIA - a big company in a small country

Nokia's share (2002) in:

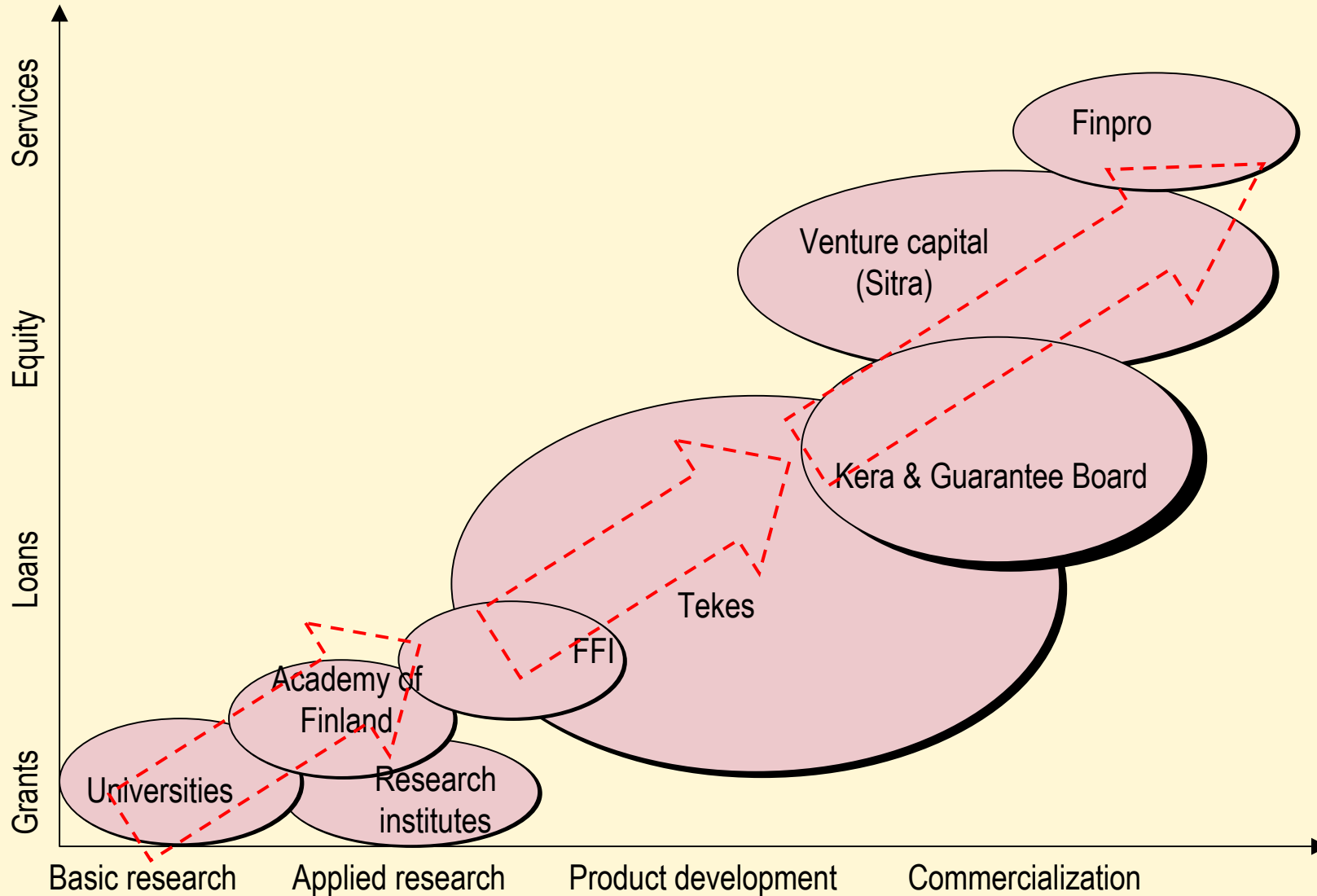
| | |
|---|---------------|
| GDP | 2.7 % |
| <i>Contribution to GDP growth</i> | <i>0.57 %</i> |
| R&D expenditure | 40 % |
| Exports | 21 % |
| Total employment | 1 % |
| Manufacturing employment | 5 % |
| Market value of Helsinki Stock Exchange | 60 % |

S&T Policies – Phases of development

- No “Master Plan” in the 1990s
 - roots in the 1970s and 1980s – designing of policies and creating competitive advantages take time
 - complementarities between policies, financial market liberalization, and institutional changes
- Phases of development
 - The building phase of the 1960s and 1970s
 - imitating, learning from others
 - building institutions & organizations
 - Technology phase - 1980s
 - technology policy more target-oriented – National Technology Agency (Tekes) established
 - commercialization of technologies
 - Era of national innovation system – 1990s
 - Finland the first country to adopt the concept
 - collaboration nationally and internationally, including industry/university collaboration
 - Interplay between education, science, technology, and commercialization
 - concrete target: increase in R&D expenditure

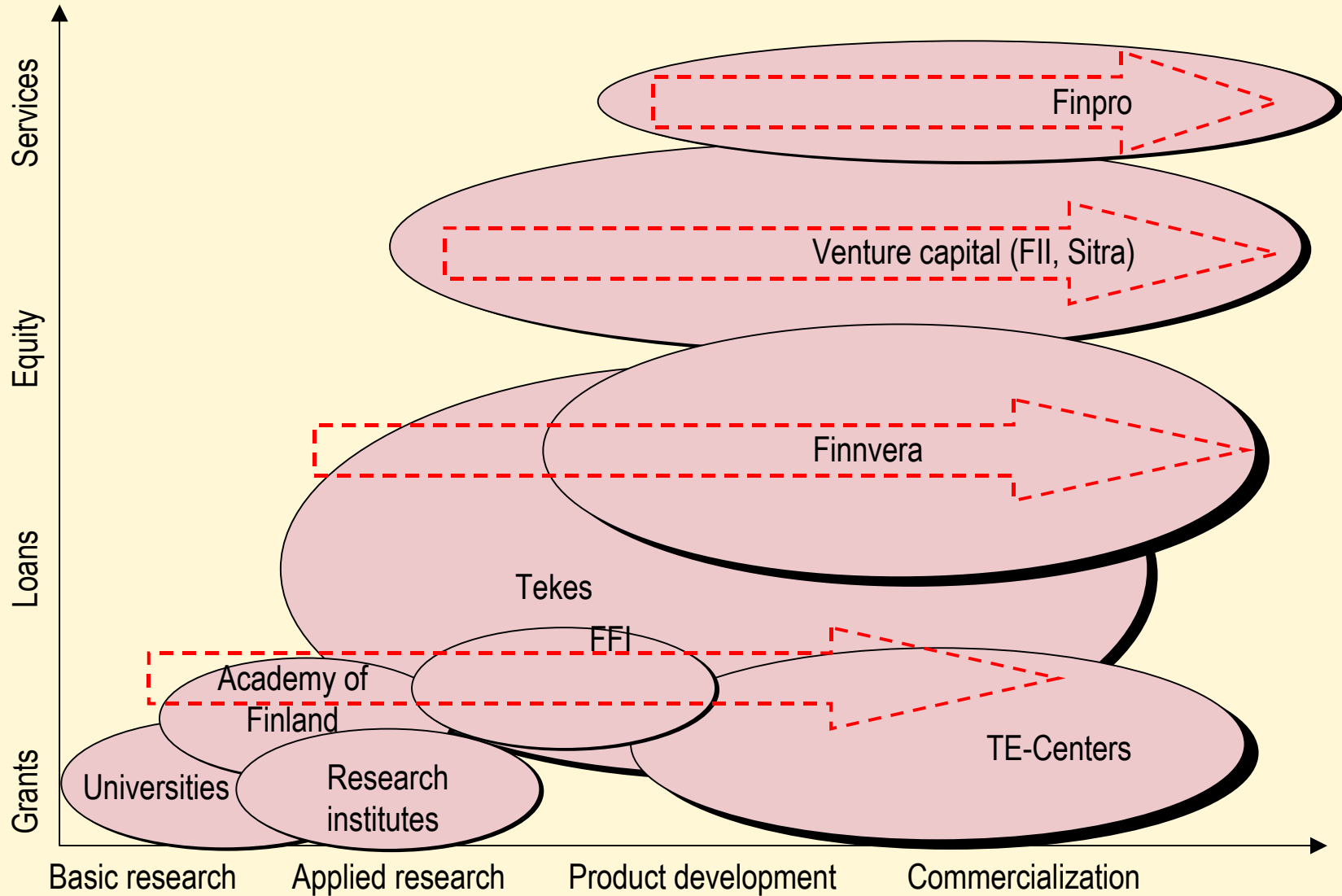
Innovation supporting organizations

The system in the 1980s

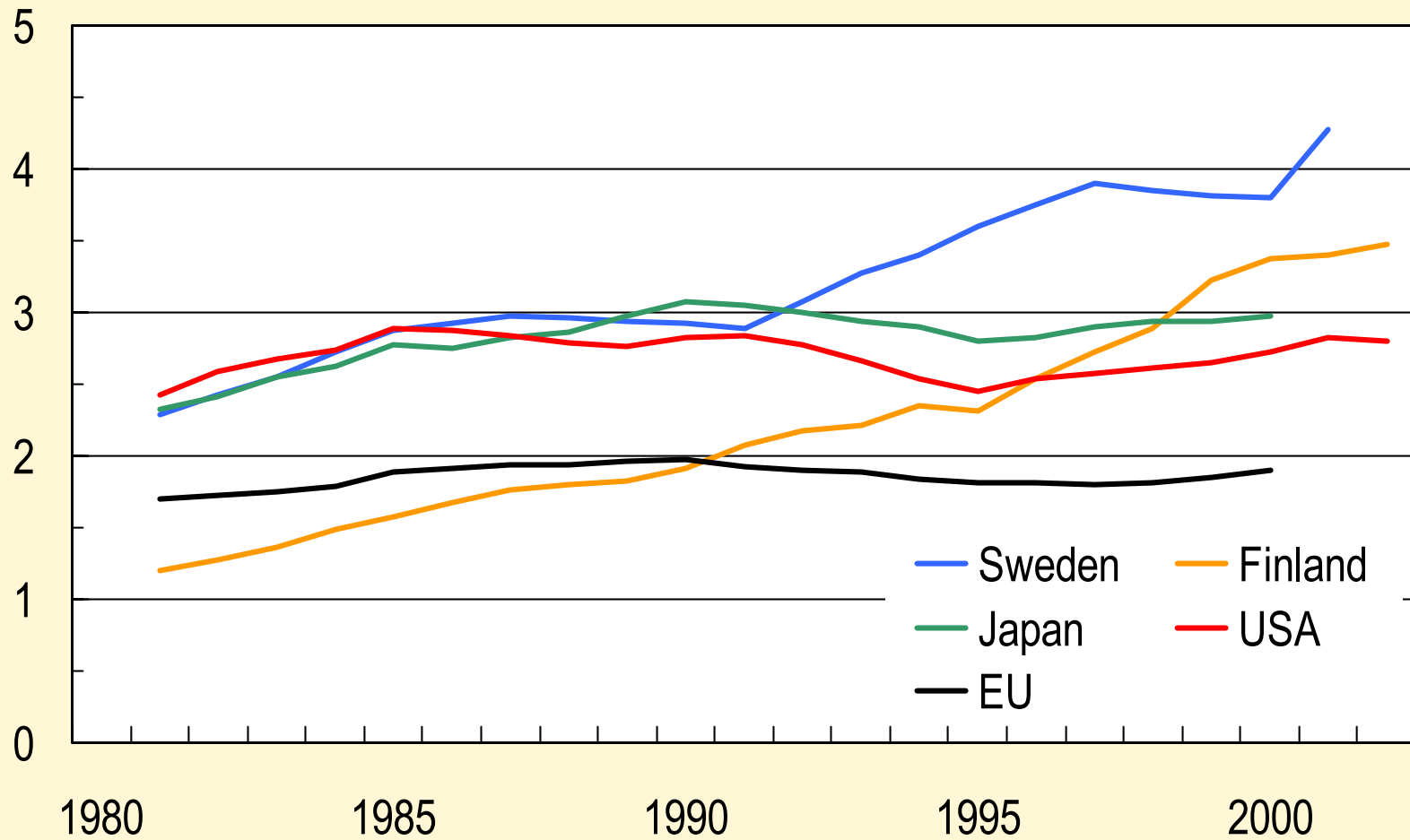


Innovation supporting organizations

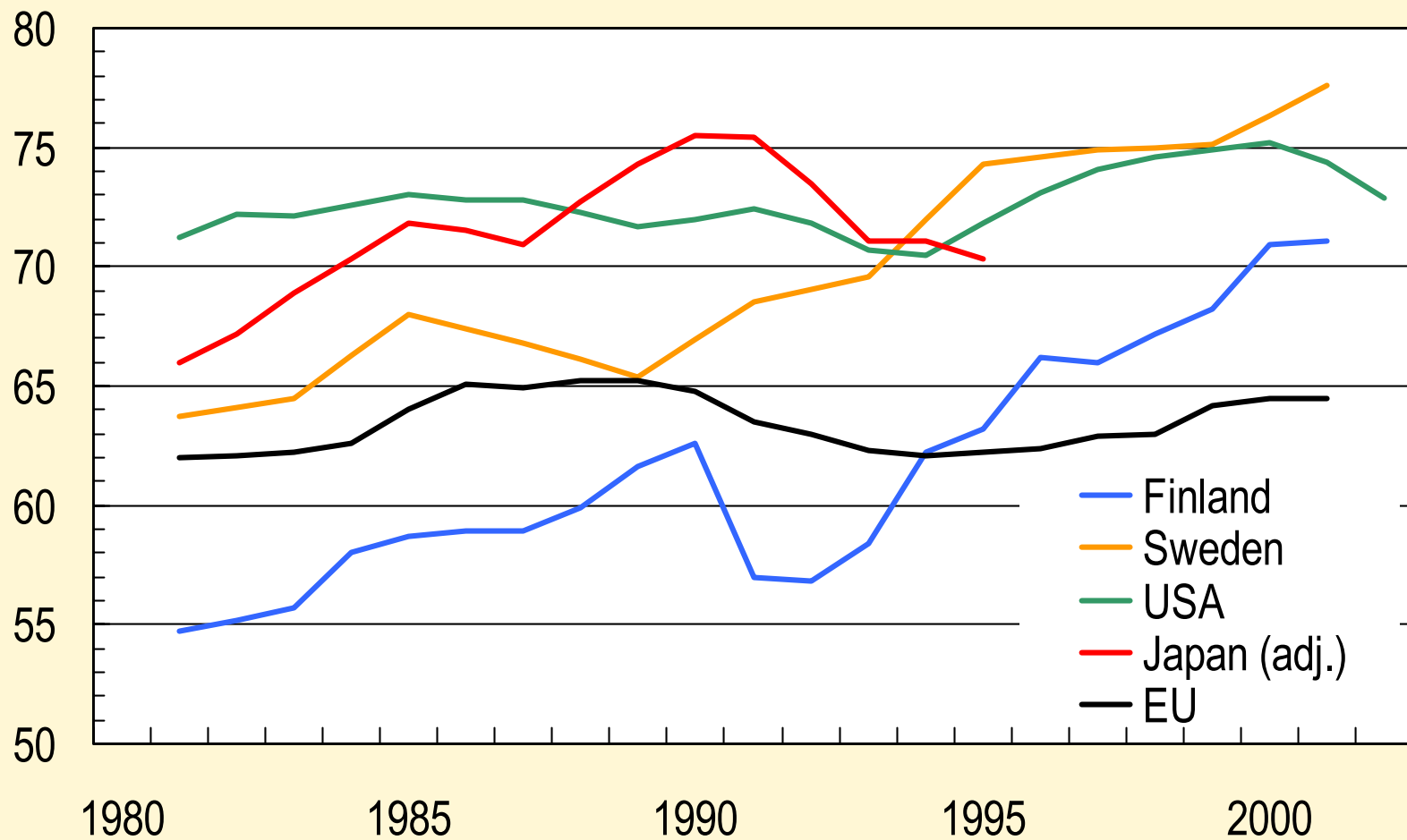
The current system



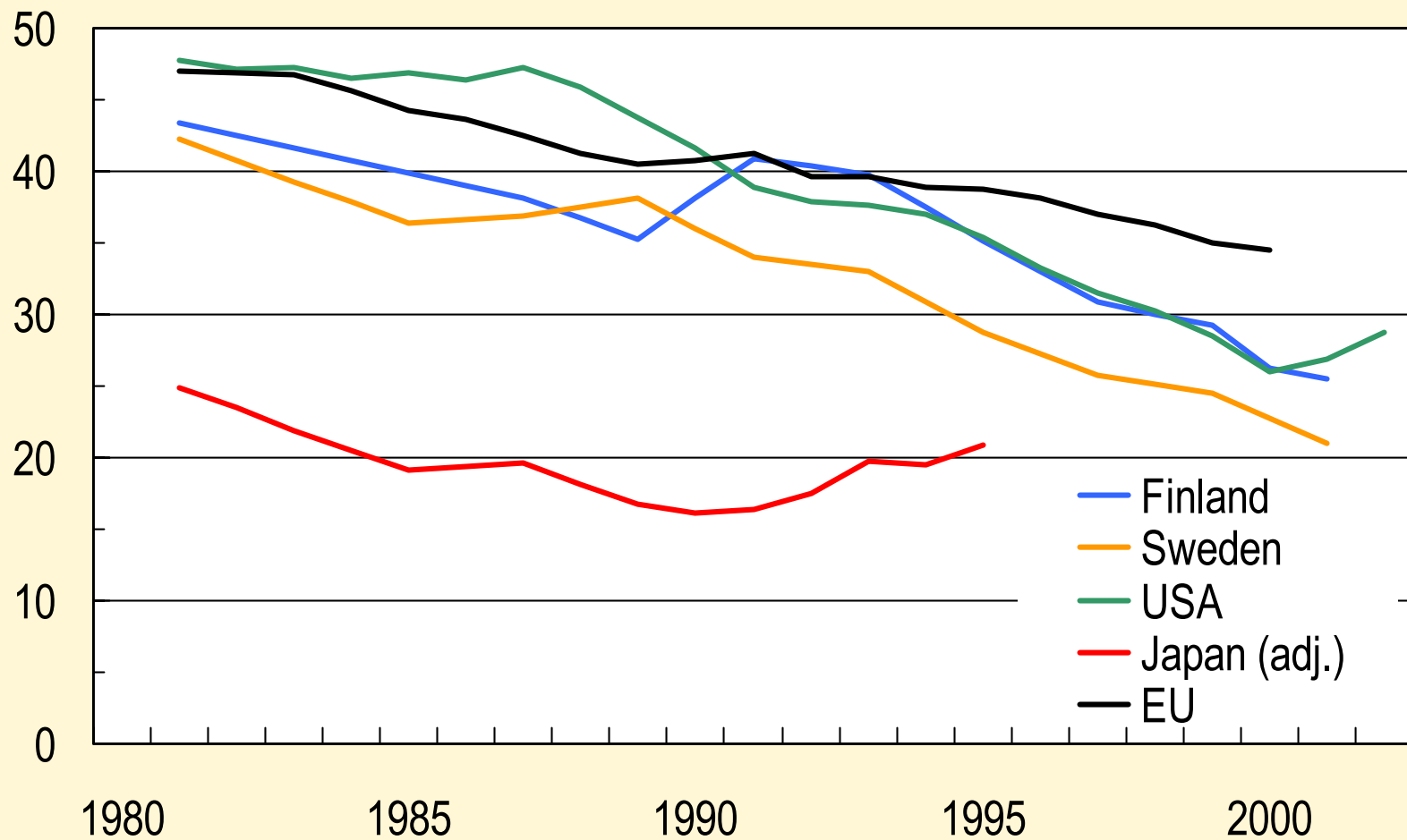
R&D expenditure, % of GDP



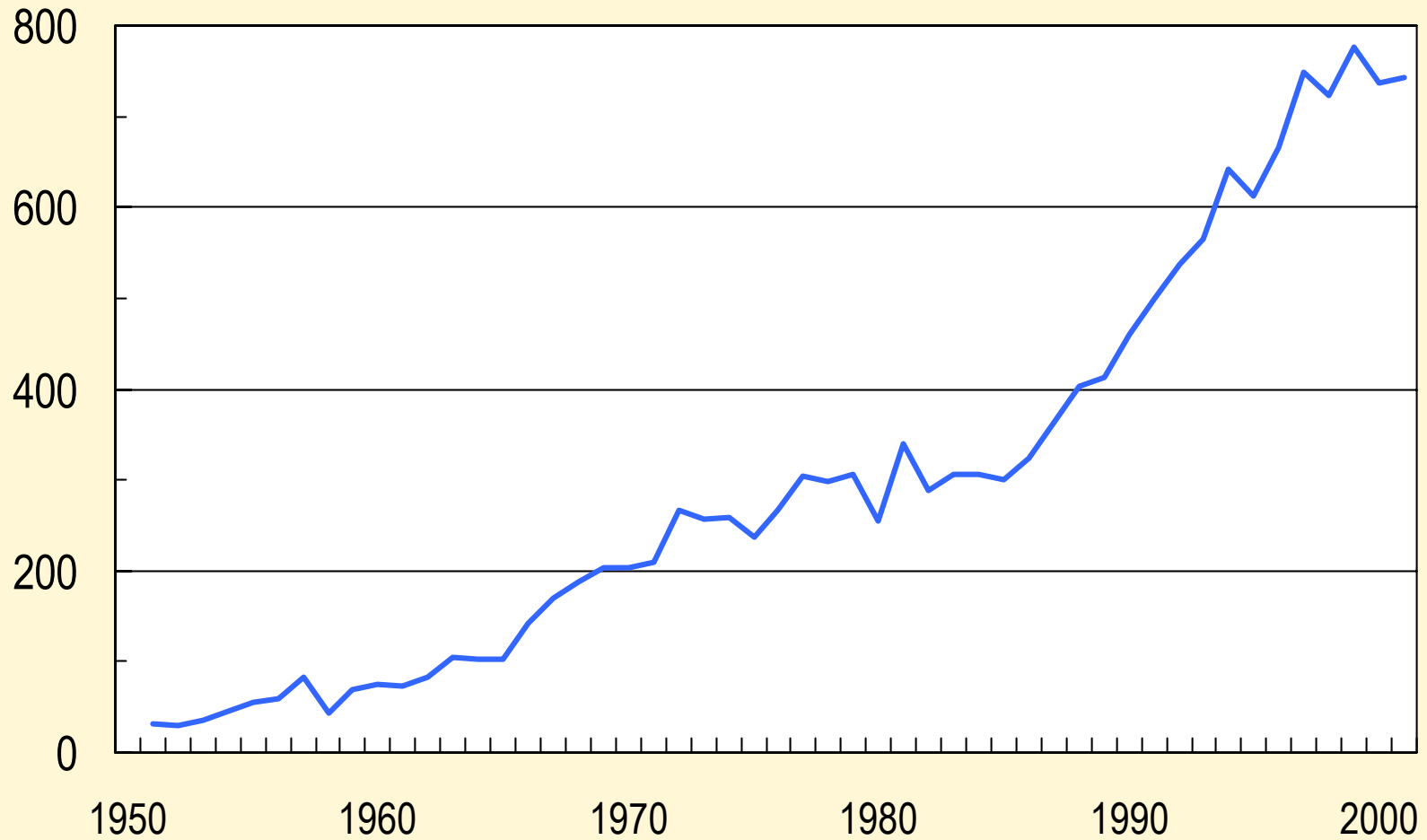
Share of GERD performed by the business sector (%)



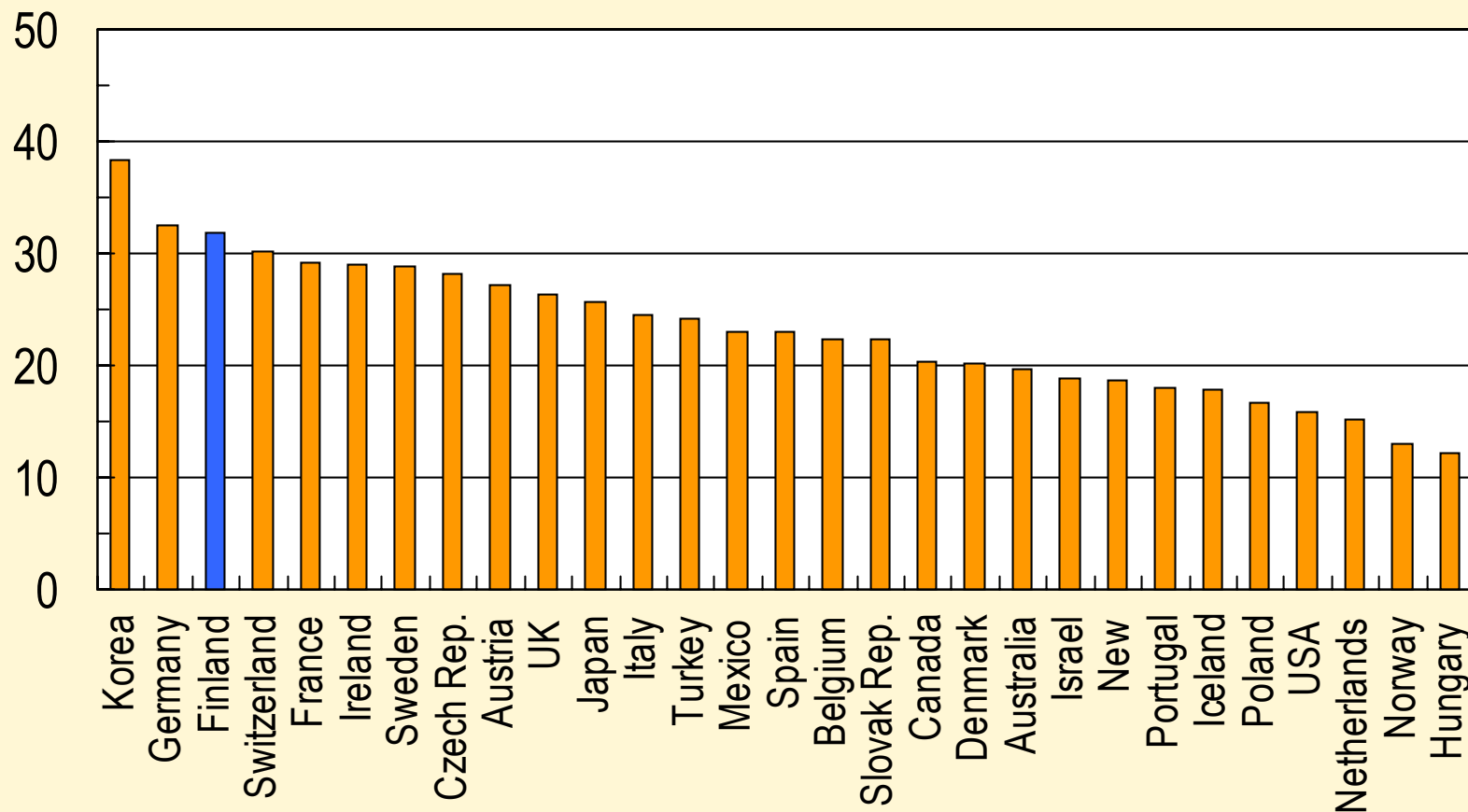
Share of GERD financed by government (%)



Post-graduate degrees granted in natural sciences and engineering (1951-2001)



Share of tertiary type of graduates in engineering, natural sciences, mathematics and statistics, and computing, % of all graduates



Lessons to be learned?

- Finnish miracle?
 - policies played a role, but it is not the whole story
 - business driven process
- Models come and go
 - Japan ranked the most competitive country in 1993(!) by IMD
- Small country advantage?
- Institutions matter
 - Openness to the external world has to be combined with dense interaction (collaboration & networking) internally
- Consistency of policies & long-term view
 - Stability in the rules of the game