
Role of ICTs and knowledge-based industries in industrial restructuring – the Finnish experience

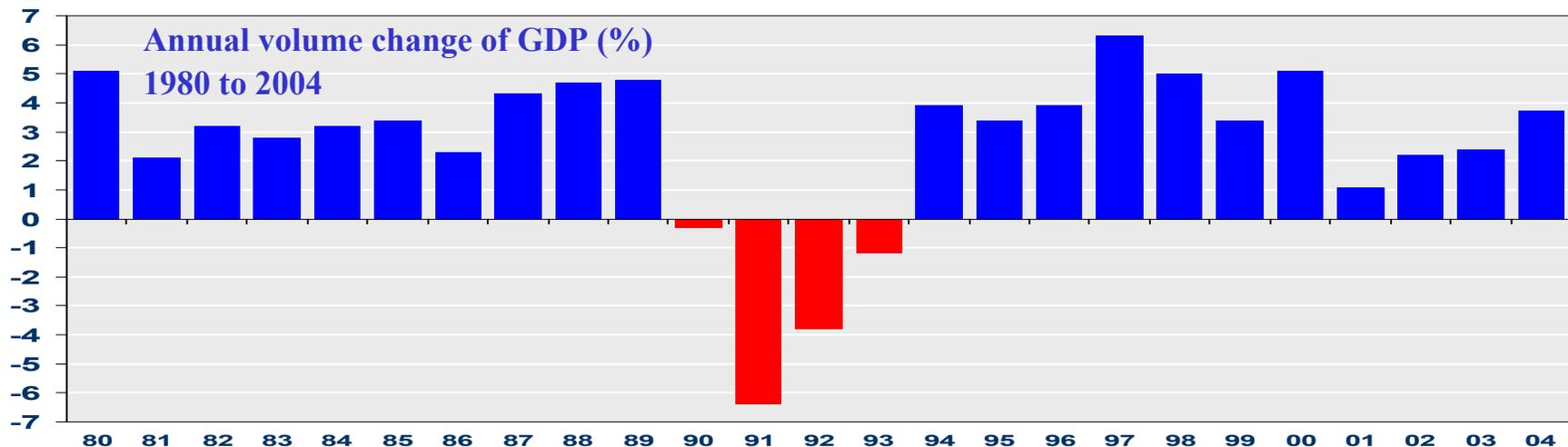
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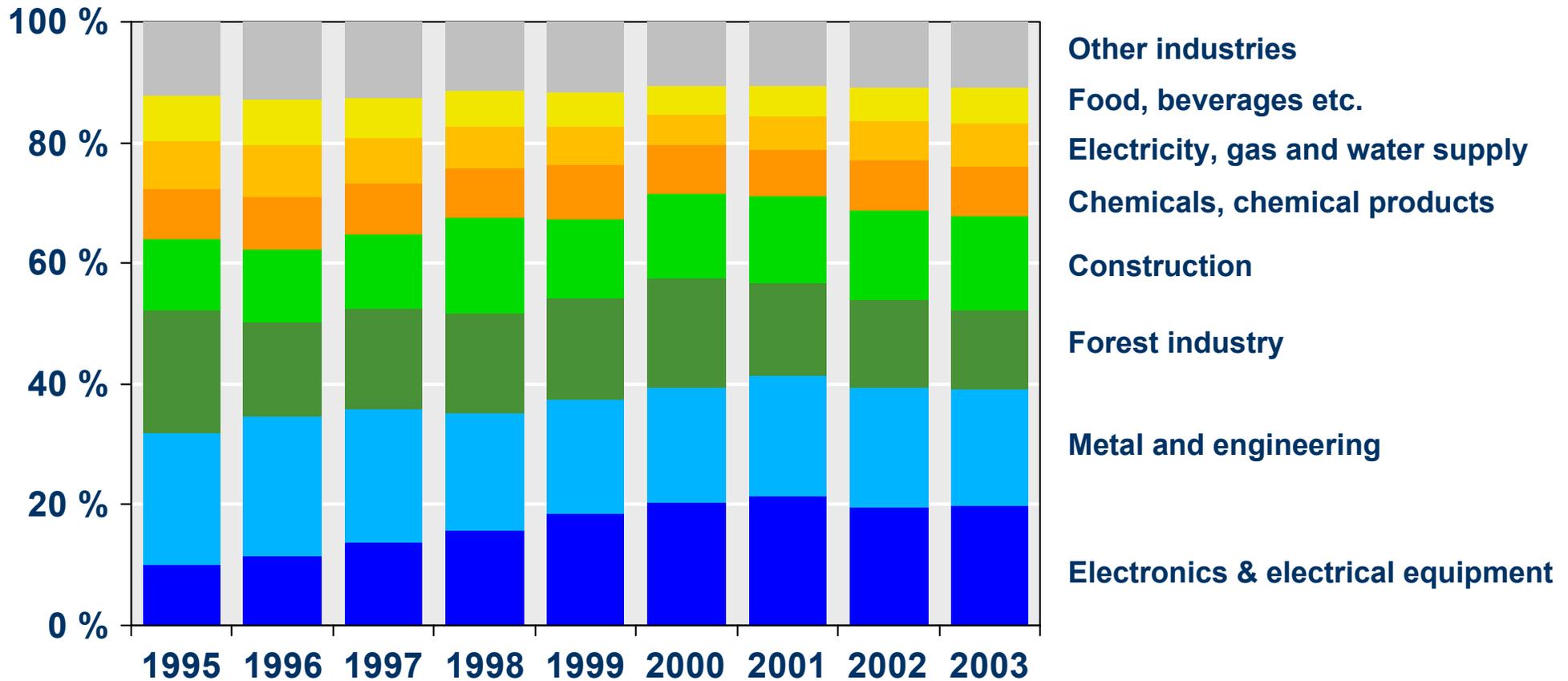
Background for industrial restructuring in 1990's

- Economic downturn in early 1990's; the GDP fell by 10 per cent in three years while unemployment increased from 3% to 17%



- Unsuccessfully implemented deregulation of financial markets in 1980's led to high level of foreign debt and crisis in the banking sector, bankruptcies
- Exports to the Soviet Union, accounting for 15% of all exports, diminished by 70% in 1991

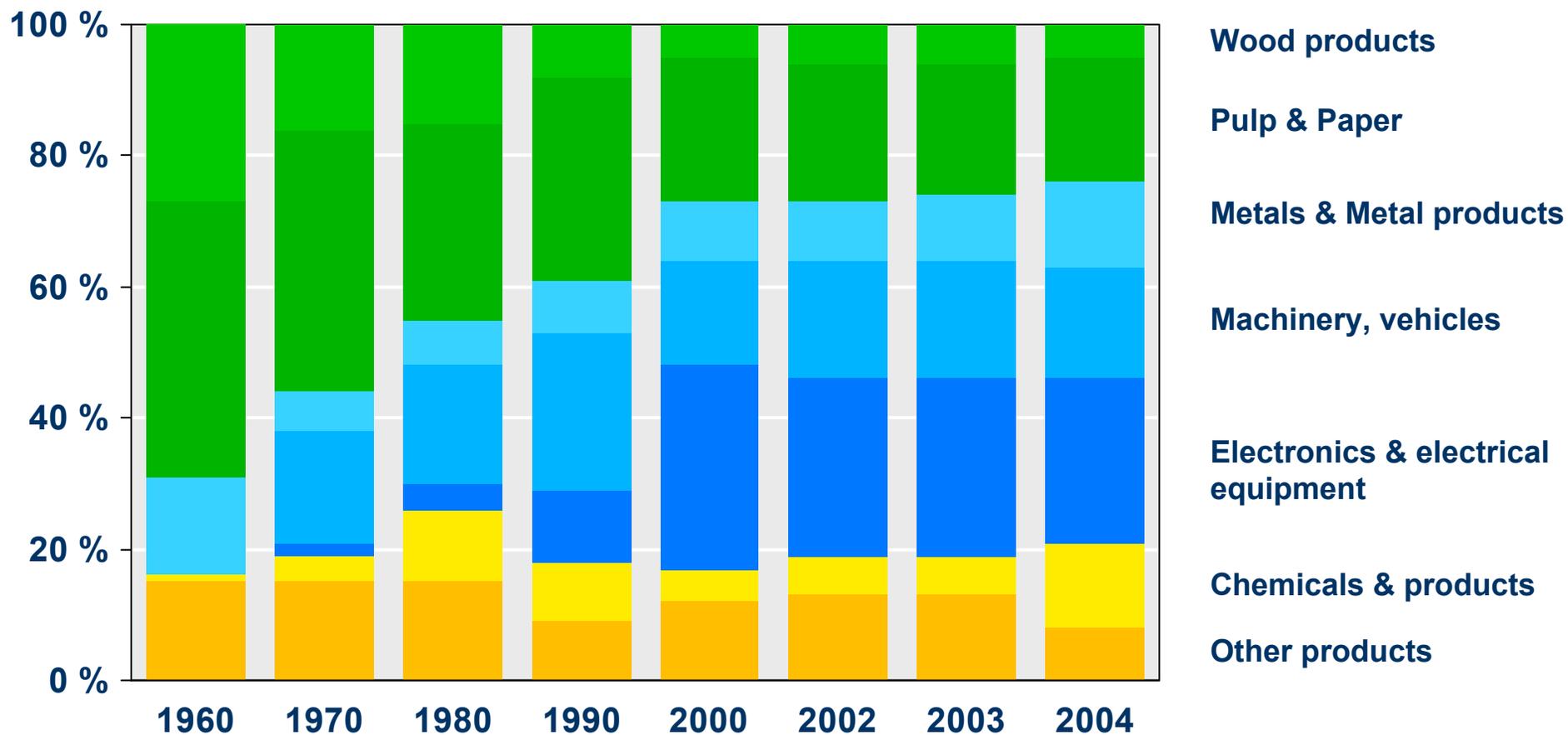
Share of value added of various industries and construction



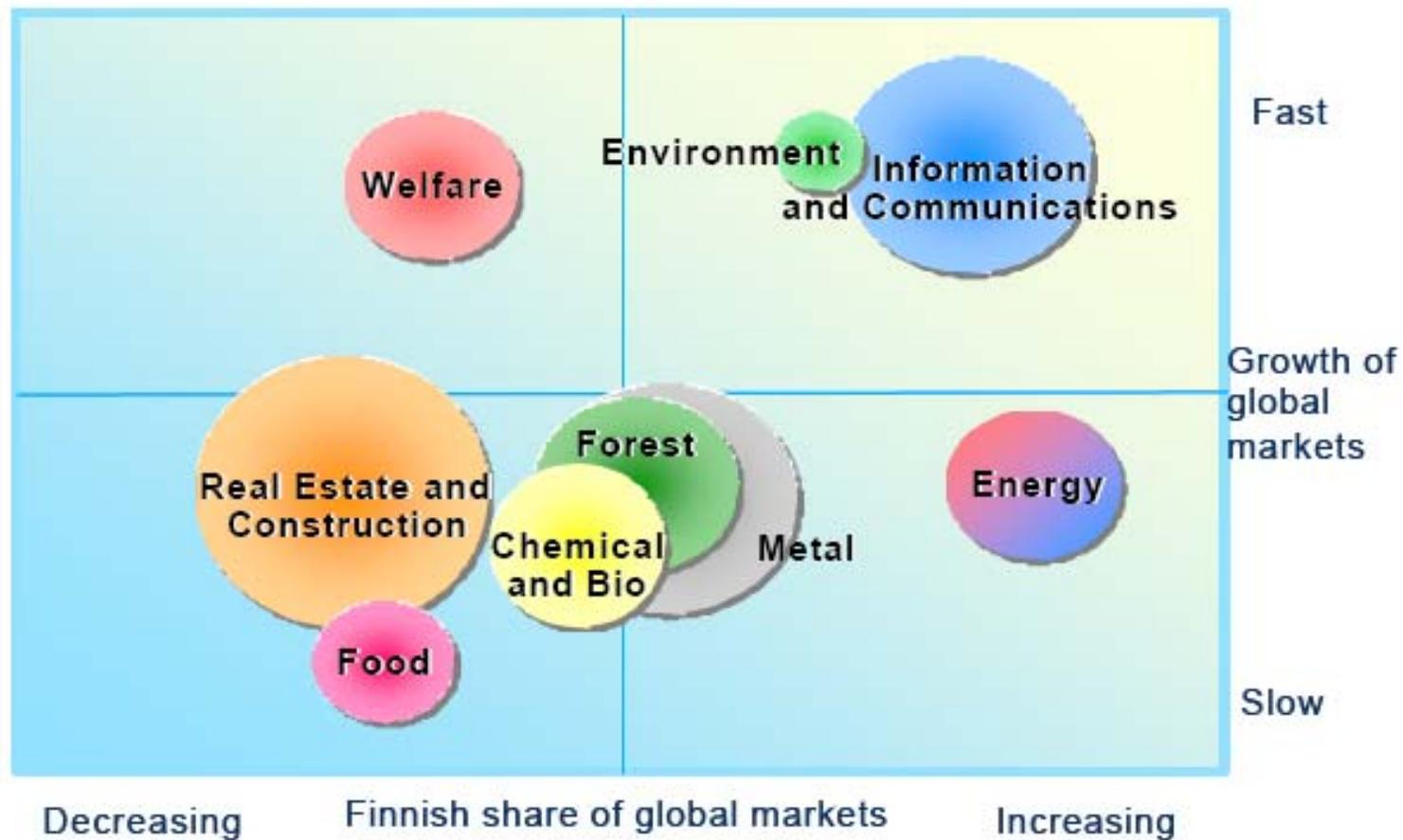
Industrial restructuring in 1990's

- The economic recession in early 1990's speeded up restructuring of industry
 - within industries i.e. in form of closing of unproductive plants, bankruptcies
 - between industries with electronics & electrotechnical industry emerging as a third pillar of the Finnish economy (in addition to forestry and mechanical engineering industries)
- Multisector enterprises started to focus on narrower specialisation
- Networking in industry, industrial cluster effects were strengthened
- Foreign investment legislation revision in 1993 in anticipation of Finland's EU membership (and the membership!) speeded up foreign investment in Finland
- Investments by Finnish industrial companies abroad increased rapidly
- Overall productivity increased by 29 per cent from 1990 to 2001, even though the average number of working hours or demand for labour did not increase

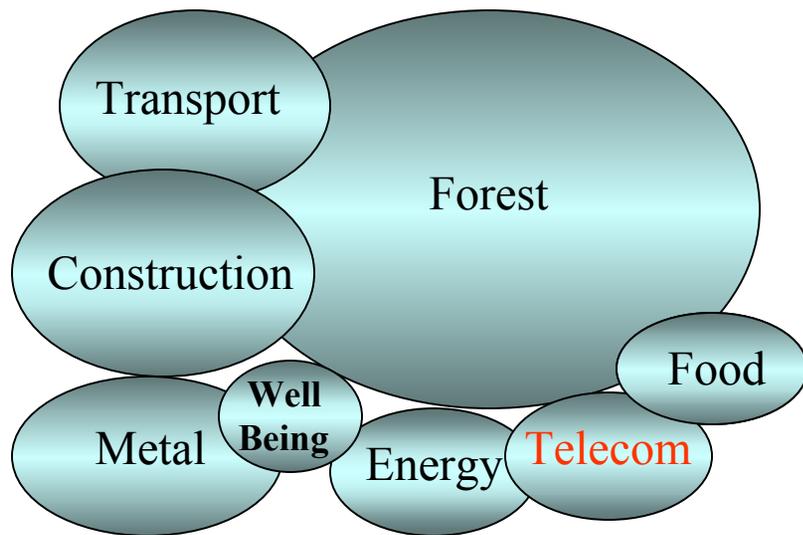
Share of various product groups of goods exports



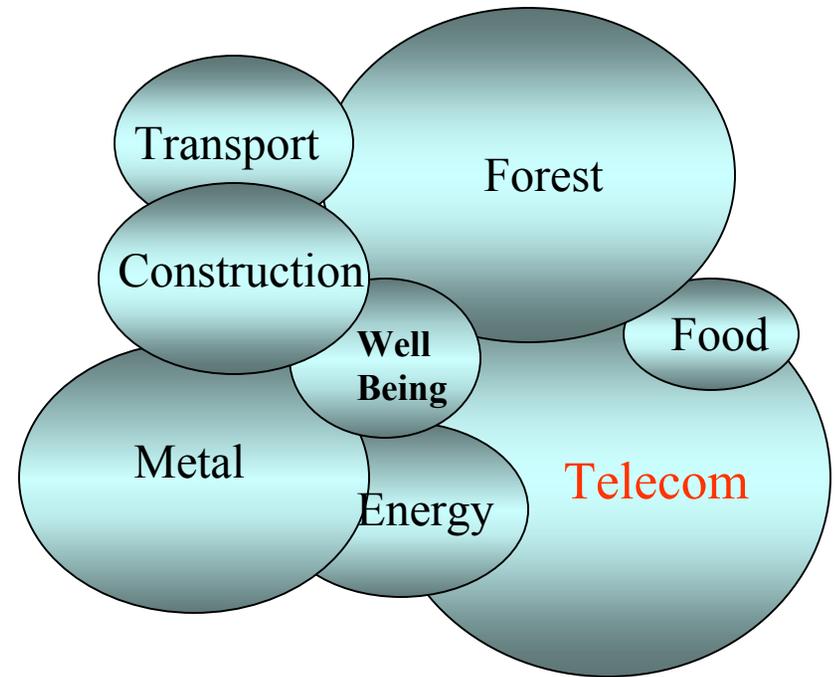
Finnish industrial clusters; global market positioning



Proportional size of Finnish industrial clusters



Early 1990's



Early 2000's



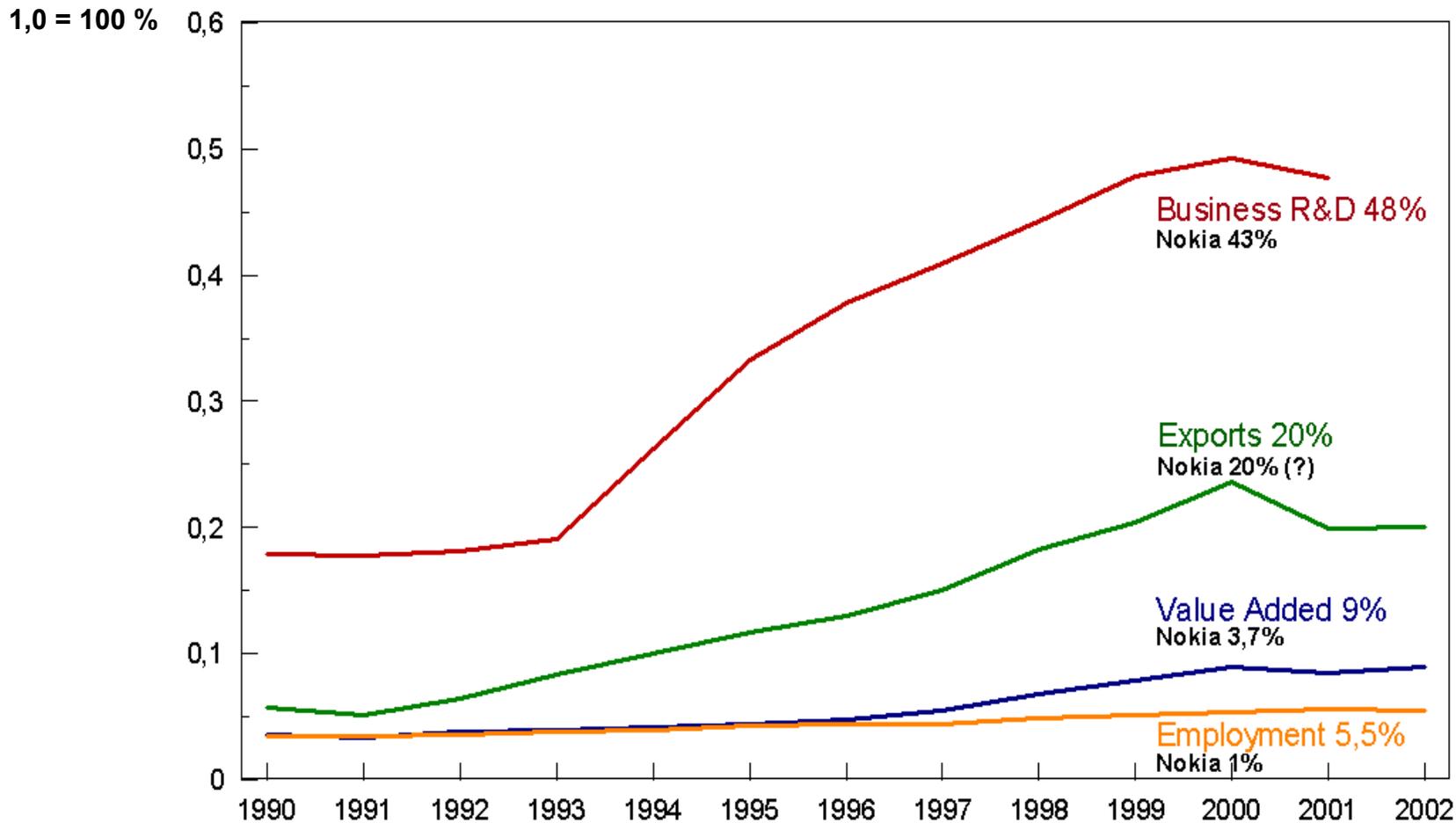
Growth of ICT sector / cluster in 1990's

- Opening of the telecommunication sector to competition
- Finland was the first country to open a commercial digital mobile network (GSM)
- Nokia made the strategic decision to focus on telecommunication, has had a significant role in the Finnish ICT cluster
- Technological developments in other strong Finnish industrial clusters, such as forestry, energy, health and welfare also provided a demanding customer base
- ICT sector companies networked, cooperated and outsourced operations
- Exports of the ICT sector grew rapidly in 1990's
- Nokia's parts suppliers followed Nokia abroad
- R&D activities mainly remained in Finland thanks to strong technology know-how
- Strong growth in knowledge intensive services



Shares of ICT cluster in the Finnish Economy

(Estimates of Nokia's share by ETLA - Research Institute of Finnish Economy)



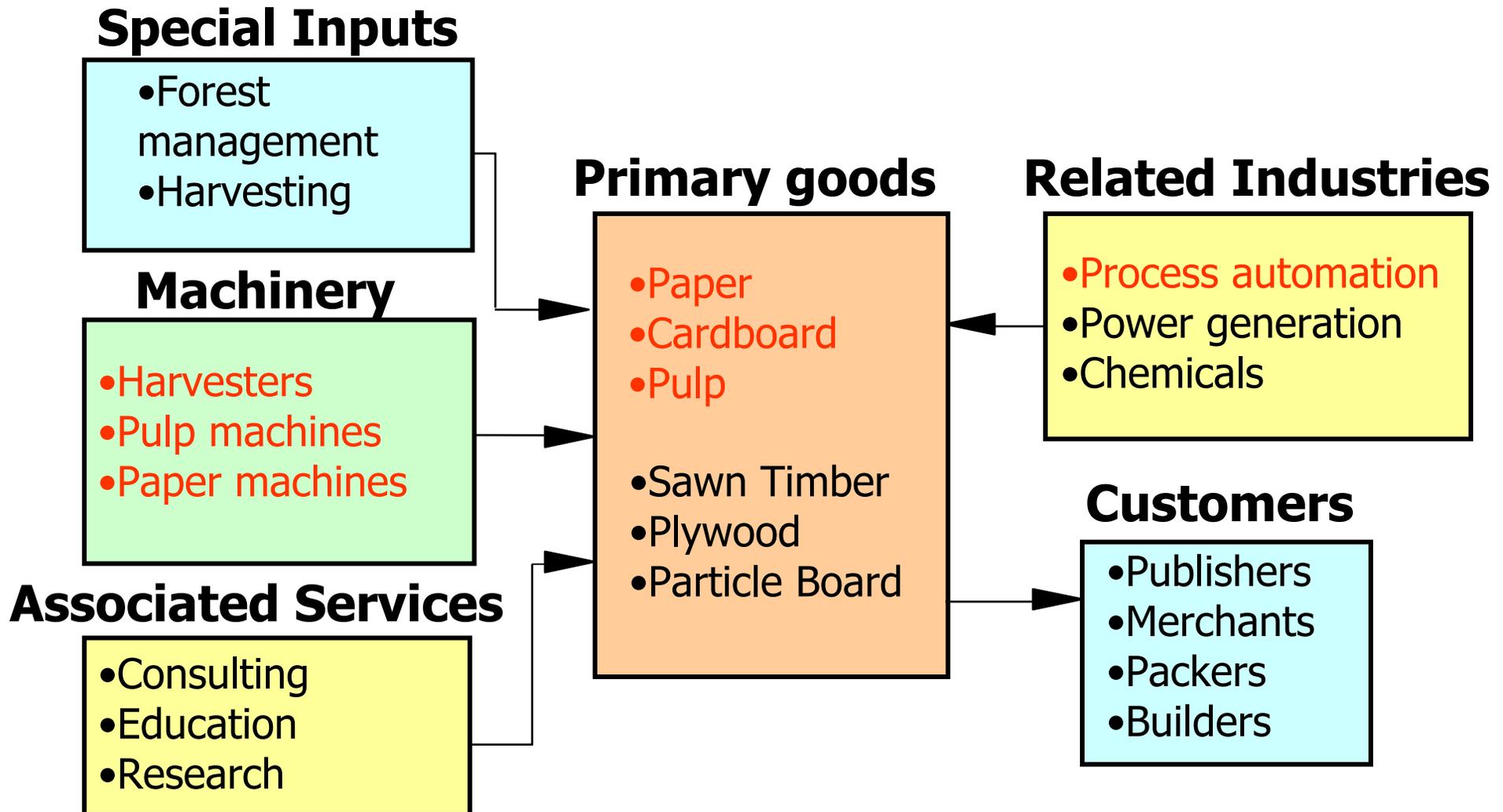
ETLA

Source: OECD, ETLA



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Finnish Forestry Cluster

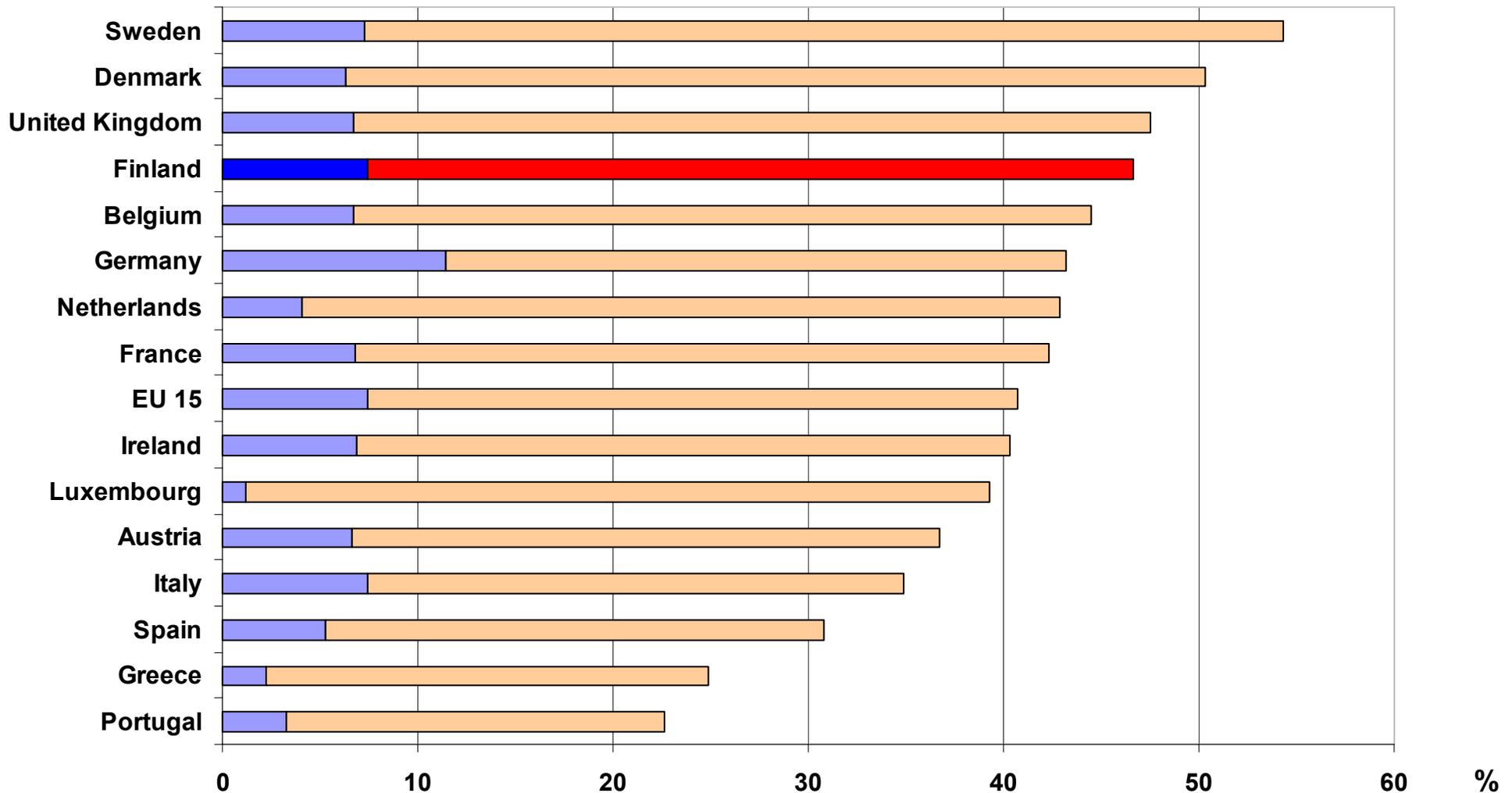


Forestry cluster becoming knowledge-intensive

- Early user of electronics and ICTs in 1970's and 1980's provider of market for pioneering electronics firms
- Early development and adoption of process control systems to optimise value chains
- Changing division of labour within cluster, outsourcing ICT, R&D, project management, logistics, maintenance
- The contribution of forestry-related industries to knowledge economy development
 - Backward linkages from forestry to engineering/machinery
 - Forward linkages from engineering/machinery to electronics/ICT
- Continuing consolidation, internationalisation and globalisation



Share of employment in high tech and medium tech manufacturing and in knowledge intensive services in 2002



Source: Eurostat 127/2003

Revising the industrial policy thinking

- From separate science and technology policy to integrated S&T policy
- From macro-oriented structural policies towards long-term micro policies
- From selective and target-oriented policies to conditions-providing policies
- From interventionist policies to enabling policies
- Acknowledging the increasing importance of knowledge as a competitive asset
- Acknowledging the importance of interdependency of research organisations, universities and firms and industries
- Towards systemic view of policy with concepts of
 - national innovation system
 - industrial clustersas basic policy frameworks



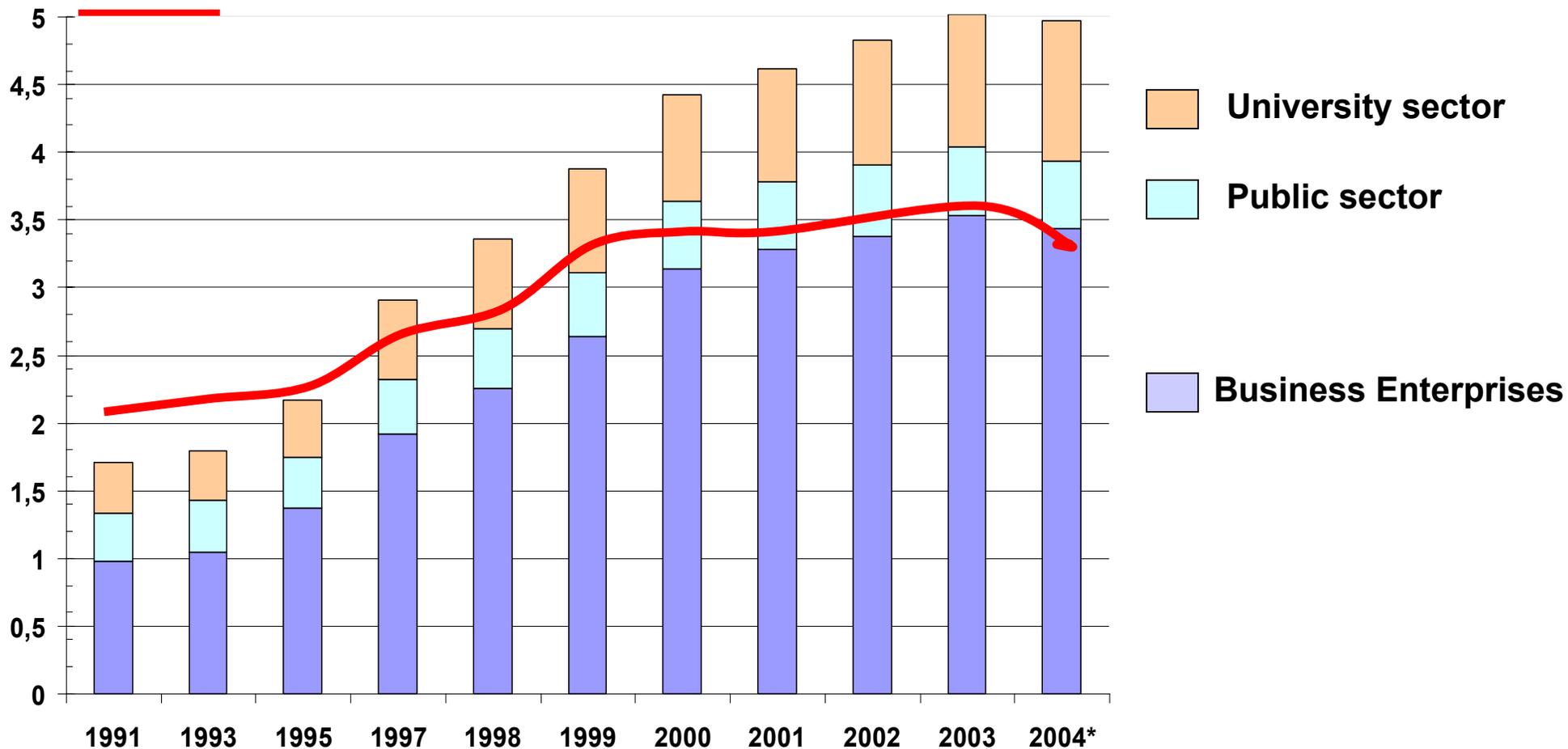
Knowledge, innovation, R&D as cornerstones

- Science and Technology Council established the national innovation system as a cornerstone for science and technology policy => knowledge highlighted in the titles of Council's S&T Policy Reviews:
 - 1993: Towards an Innovative Society: A Development Strategy for Finland
 - 1996: Finland: A Knowledge-based Society
 - 2000: Review 2000: The Challenge of Knowledge and Know-How
 - 2003: Knowledge, innovation and internationalization
 - High priority given to R&D investment at a time of severe economic recession of early 1990's when all other expenditures were cut
- => a long-term commitment still highly valued!



R&D Expenditure from 1991 to 2004

Bill. € / % of GDP



However, competitiveness of a country needs more...

- *A country's competitiveness cannot be reduced only to GDP and productivity because enterprises must also cope with political, social and cultural dimensions. Therefore nations need to provide an environment that has the most efficient structure, institutions and policies that encourage the competitiveness of enterprises."*

Rosselet-McCauley, IMD World Competitiveness Yearbook 2005
Methodology and Principles of Analysis

Finland ranking 6th (among 60 countries) this year, but advise given includes

- Create new jobs and reduce unemployment
- Improve public sector productivity and efficiency
- Ensure sufficient economic growth to finance the welfare state
- Become more attractive to domestic and foreign investments
- Lower taxes on labour income to promote the expansion of the private sector



Thank you!

