

Swedish Innovation System: Linking the public & private

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Why need to link them?

- Innovation involves public & private actors.
- Innovation Ecosystem figure links input to output through 'interaction fields', involving both actors.
- Improving interaction require both abstract and directly useful knowledge, to improve choices such as to promote sustainability
 - Not only science, engineering but also business, consumer, user knowledge

1. Sweden

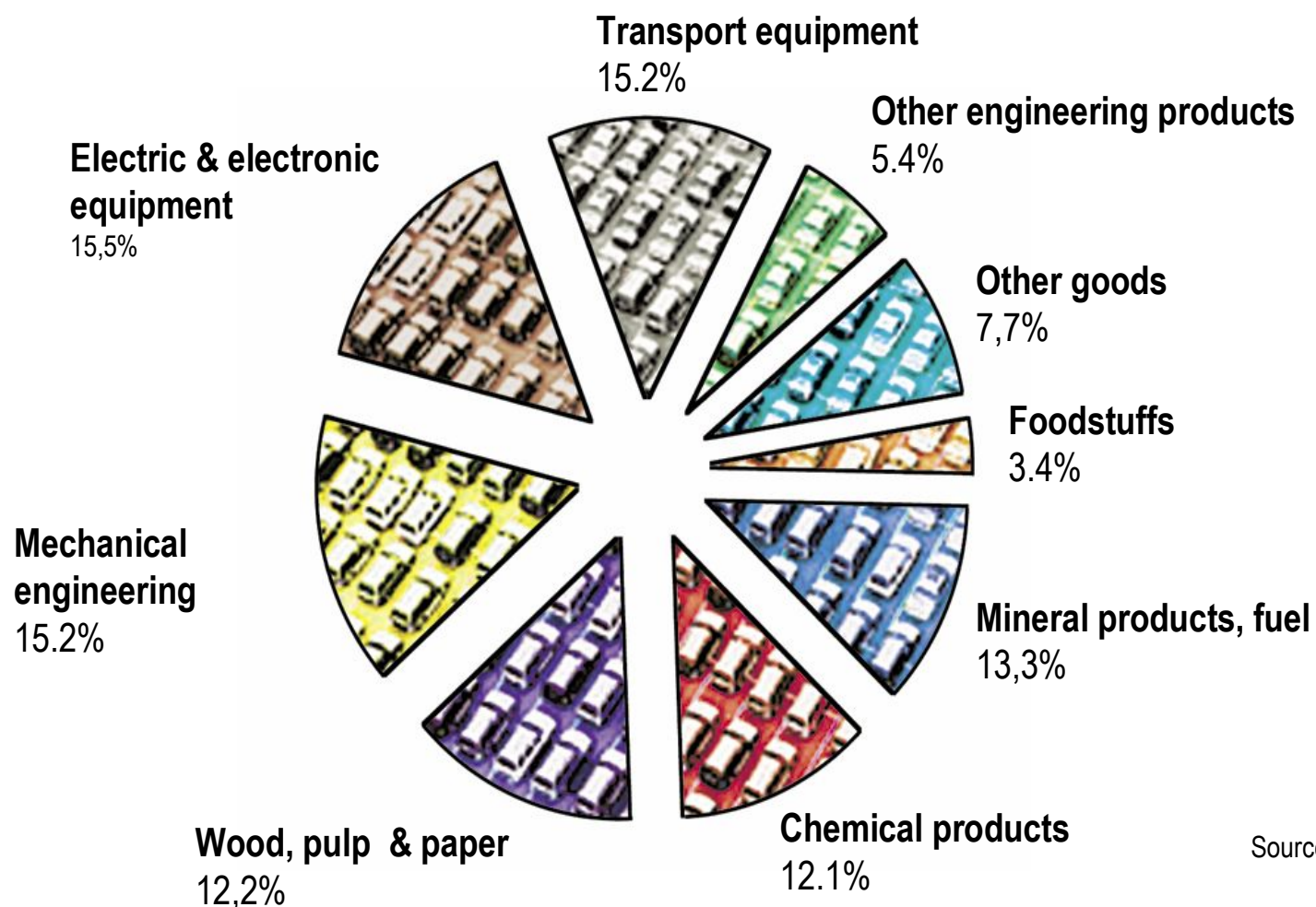
- Stockholm ○
- Göteborg ○
- Malmö | Lund ○
- University towns:
Karlskrona, Linköping,
Luleå, Norrköping,
Umeå, Uppsala,
Västerås, Växjö,
Örebro ○



Societal characteristics

- Small country, fairly homogeneous
- Population: 9 million people
- Land mass:
 - About size of California
 - One of largest European countries in land
- Social welfare:
 - Free education, inexpensive daycare, high taxes
- Representative democracy + monarchy

Exports of Goods 2004, %



Source: SCB

Sweden represents:

- High income country
- Small population = small home market
- Economy depends heavily upon large, globalized multinational corporations

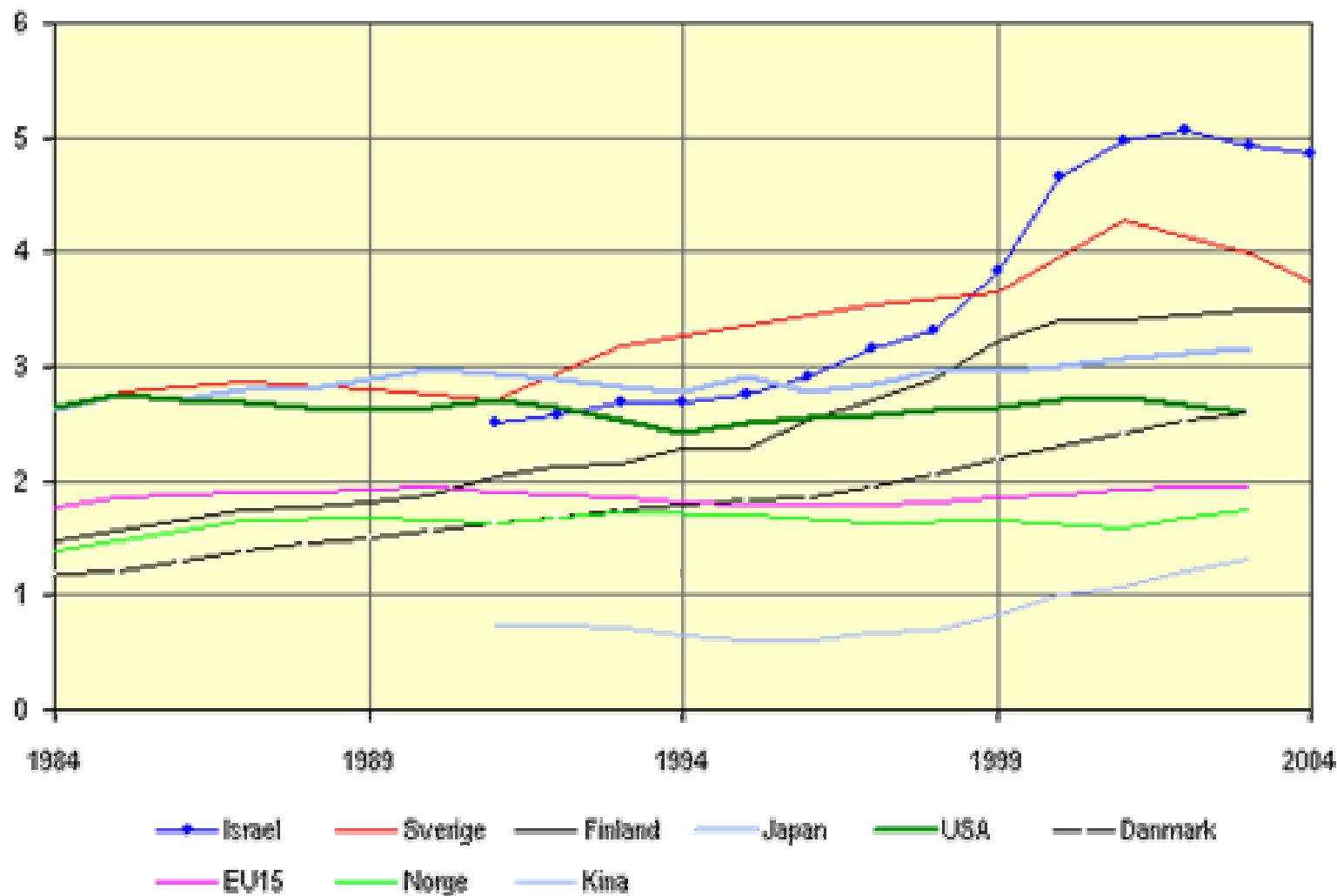


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2. Traditionally see R&D paid by:

- *Governments*
 - Pay for public R&D because society benefits
 - Basic science (some development)
 - New fields, industries are created
- *Firms*
 - Pay for private R&D because believe returns to their company
 - Development work (some research)
 - Of direct relevance; sometimes longer term

R&D as % GDP, country



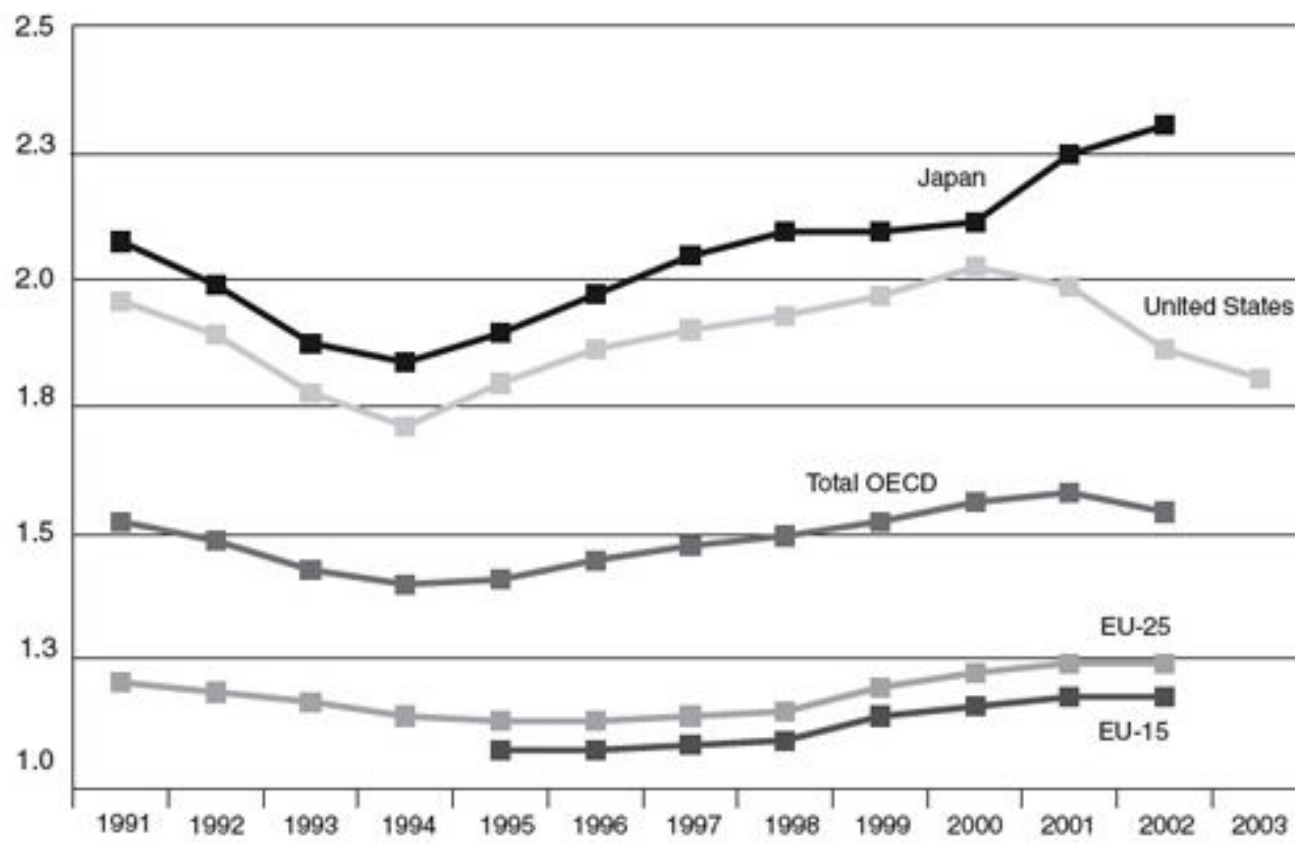
Sweden: Two opposing voices

- 'Best in world'
 - *Policy discourse* – This is the knowledge society come true. Look at R&D as GDP, citations, productivity in the university system.
- 'Local moaning' (at universities)
 - *Individual view* – This is a dehumanizing system. We have no money for research & too many students.

Country differences by financing (2003)

| | % GDP into R&D | % financed by industry | % financed by public |
|--------------|----------------|-------------------------------|----------------------|
| Sweden | 4.1% | 71.9% | 21% |
| USA | 2.6% | 63.1% | 31.2% |
| OECD average | 2.1% | 61.6% | 30.5% |

Business R&D as % of GDP



Sweden: public-private efforts

Public Policy R&D:

- Only average spender on public financed R&D
- Stimulate networks and communication
- Experiment with types – basic science, mission oriented, industrial relevant
- Experiment with public-private interactions

Private efforts (firms):

- Firms spend much on R&D
- Mainly in sectors where Sweden exports
- Highly concentrated to the 10 largest firms – Ericsson, Volvo, AstraZeneca, etc.

3. Today's challenges set within broader societal changes

Historically, an agricultural society

- *Poor, periphery of Europe*
- *One of fastest growing economies, 1850-1970*

Corporatist social welfare model, where
government – employers – labour unions:

- 1) *Increased mobility of workers*
- 2) *Developed standardized pay scales*
- 3) *Developed welfare state, including 'safety net' (unemployment benefits)*

By 1990s, Sweden faced:

- 1) Collapse of Swedish model's power
- 2) Downturn for consensual decision-making
- 3) Problem of governance (more diversified)
- 4) Problem of responsibility for decisions
- 5) New economic paradigm (markets)
- 6) New political actors
- 7) Globalization (less focus on 'Swedish')
- 8) Policy to act faster, more overlap

VINNOVA report, 2006

Ministry initiative: Innovative Sweden (2004)

- 'Our vision is for Sweden to be Europe's most competitive, dynamic and knowledge-based economy, and thus one of the world's most attractive countries for investment by large and small knowledge-based enterprises. World-leading knowledge will flourish in a number of priority research areas...'

4. Improving Swedish innovation system requires more debate on:

How and why innovation policy has to reach beyond mandates of government.

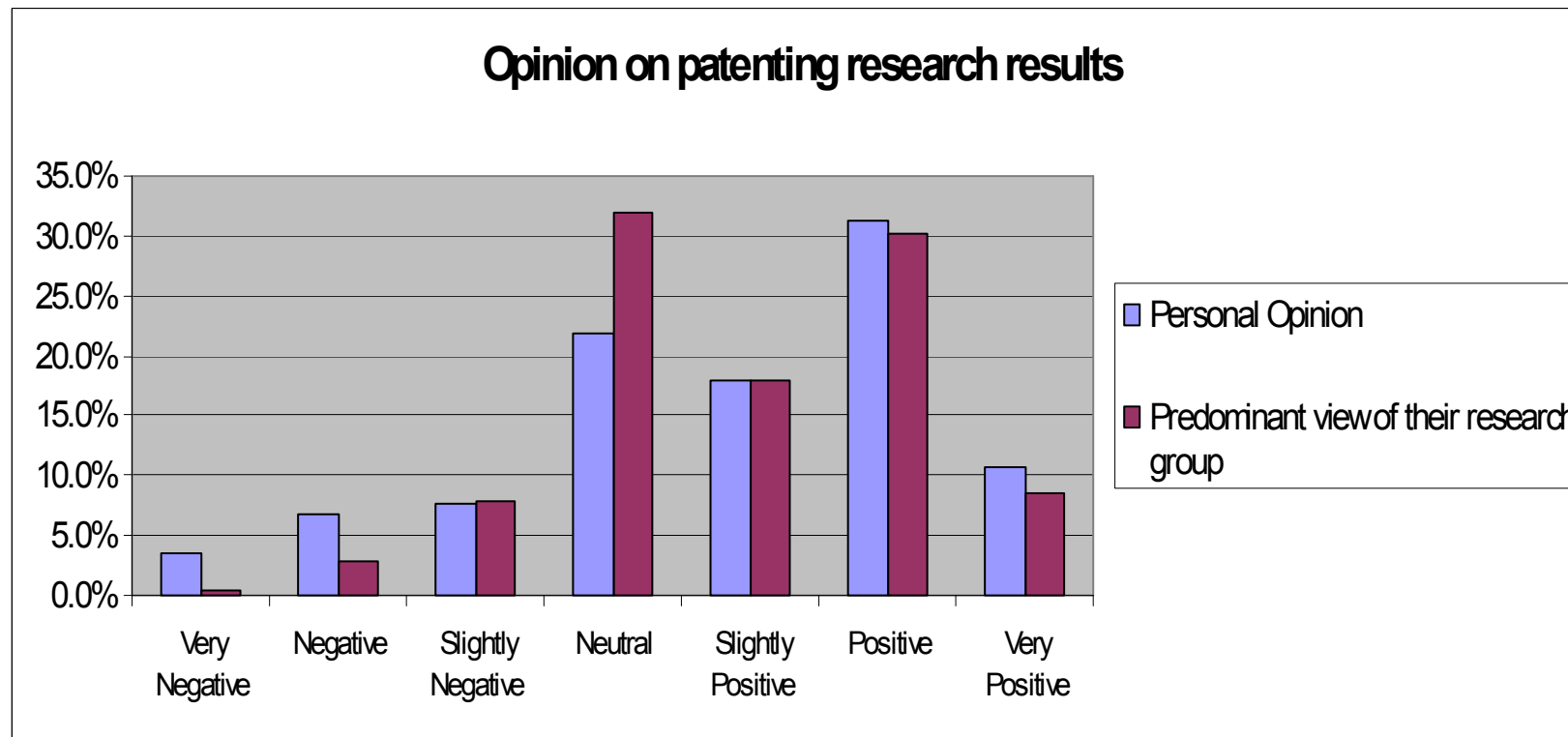
AND

What industry does matters for the country – but what can the country do that matters to industry?

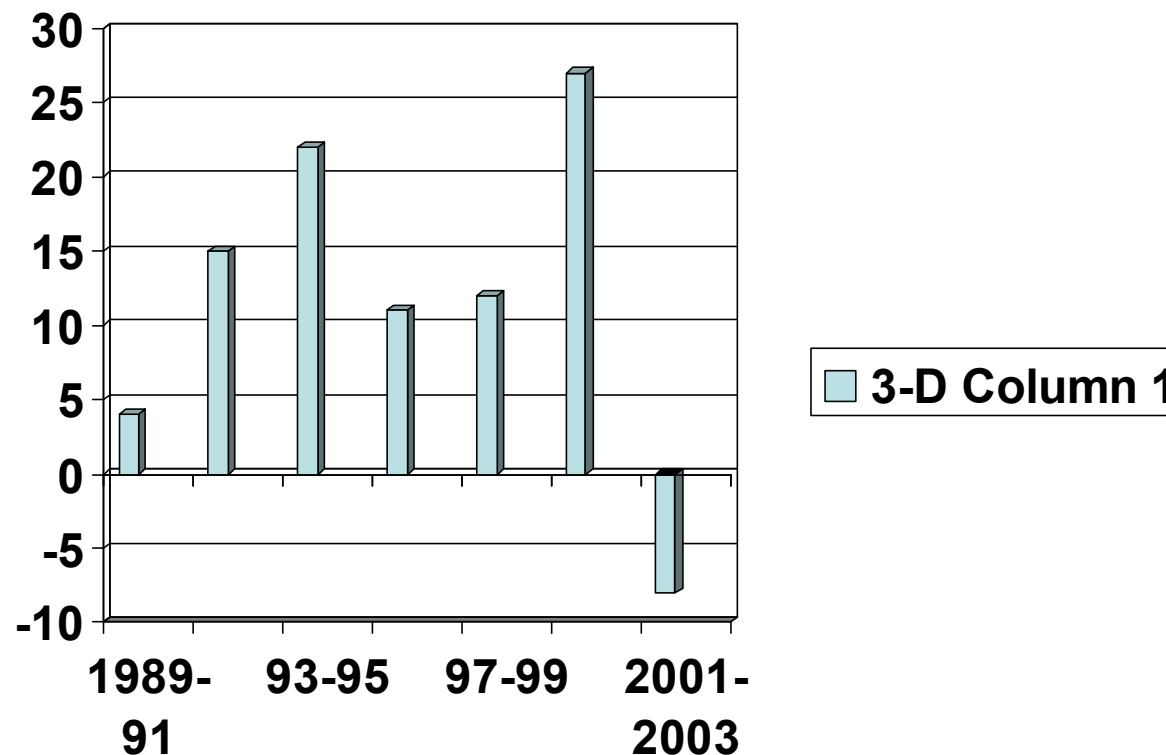
Debate whether public policy reaches relevant stakeholders.

- 1) Start-up, innovation and growth in SMEs
=> *Not focus on MNCs*
- 2) Improve supply, use, mobility of human resources
=> *Rapidly expand higher education*
- 3) New regimes for user-producer public-private partnerships
=> *Try stimulate through demand / biofuels*
- 4) Increase mission oriented research
=> *Larger groups*
=> *Encourage groups to interact with firms and with less 'basic science' focus*

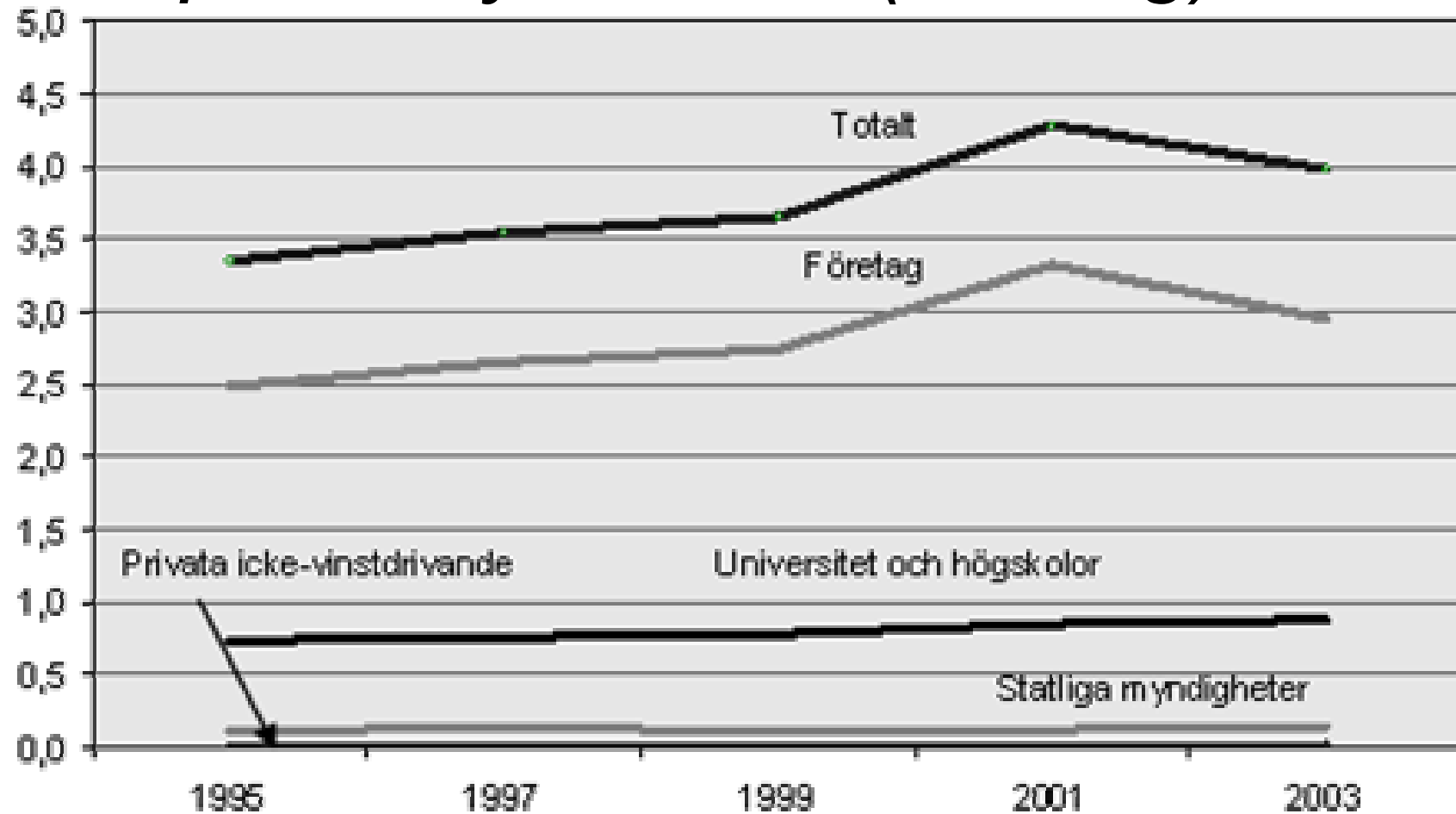
Debate if the problem is university- industry interaction.



*Debate the impact of the trend break,
decreasing total R&D in Sweden.*



Where the R&D decrease is primarily in firms (företag)



And if can impact firm strategy

MNCs

- No longer do as much R&D in Sweden: Pharmacia (Upjohn, Pfizer)
- Have a global R&D strategies, with centers
- Are often foreign owned: Volvo, Saab, AstraZeneca
- Are no longer able to cover all technologies & standards: Serious reductions in R&D
- Are changing their in-house R&D model: More interaction, less in-house R&D
- Have benefited from stringent sustainability regulation in past: Are they prepared to do so in future?

New view needed: Innovation is a future potential:

- Training people to think in new ways (new ideas, solve new problems)
- Keeping options open – What other ways can you solve the problem?
- Making new options possible – Are there new techniques, products, processes that society will purchase?

