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(How) Do tax incentives for R&D match trends in business R&D practices?

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A new perspective on a key research policy instrument

- **Are tax incentives for R&D an effective instrument to stimulate growth and jobs?**

⇒**New analytical starting point:** impact of changing environment in which tax incentives operate

- **Focus:** shift of business R&D growth dynamics to the (job creating) service sectors
- **Main argument: design matters**
  - definition and scope of eligible R&D
  - (dis)incentives on co-operation and subcontracting

Outline of the presentation

1. Growth dynamics of business R&D in services: relevance, drivers and features
2. Conceptual implications for the design and use of tax incentives as policy instrument
3. Comparison of results with current policy practices in the US and a set of EU countries
4. Conclusion and policy implications

1.1 Importance and drivers of business R&D in services (I)

- **R&D level in the services sectors still lower than in manufacturing, but growing**
  - R&D share EU: from 8.2% to 15.1% (*1991-2002*)
  - R&D share US: from 24.3% to 39.1% (*1991-2002*),
  - R&D exp./ value added around 0,5% (OECD average)
  - Main R&D relevant services sub-sectors: computers and related activities (Scoreboard: *10,7% R&D/sales*), telecommunications, R&D services
  - Measurement problems: underestimation of R&D level, overestimation of R&D growth rates

1.1 Importance and drivers of business R&D in services (II)

- **Business R&D in the services sectors grows at a much higher rate than R&D in manufacturing**

EU, 1995-2003	Total	Business	Manufact.	**Services**
Expenditures	**29%**	**33%**	**25%**	**122%**
Researchers	**29%**	**38%**	**24%**	**151%**
BERD in constant 1995 PPS, Researchers in FTE			Source: Eurostat/ IPTS	

- **Drivers:** service economy**,** ICT, R&D outsourcing
- **R&D Growth dynamics also in less R&D intensive subsectors** (see following table)

1.1 Importance and drivers of business R&D in services (III)

Industrial Scoreboard Sector (FTSE, Top 942 World)	Sector share	R&D growth rate 2001-04	R&D growth Top EU 700
Leisure & Hotels	0,1%	**18,8%**	**5,7%**
General retailers	0,2%	**18,5%**	**-2,1%**
Health	2,1%	**8,9%**	**5,8%**
Software & Computer services	6,4%	**8,0%**	**4,0%**
Media & Entertainment	1,2%	**7,7%**	**-8,3%**
Support services	0,5%	**6,9%**	**5,1%**
Scoreboard average	*100%*	*2,9%*	*0,1%*
Telecommunication services	2,1%	**-3,8%**	**1,7%**

Source: DG JRC/ DG Research: 2005 EU Industrial R&D investment scoreboard

1.2 R&D in services sectors differs from R&D in manufacturing

- **Less tangible outputs**
- **Importance of software development as carrier**
- **Strong linkages with non-technological R&D**

⇒measurement problems

- **Stronger role of users as drivers of R&D**

2 Conceptual implications for the design of tax incentives

- **Effectiveness of tax incentives linked to account of specific features of service R&D**
- **Relevant R&D growth rates but low level**

  ⇒ higher leverage of incremental (elements of) schemes
- **Linkages with non-technological R&D; Importance of software as carrier**

  ⇒ traditional S&T oriented definition of R&D as constraint
- **Strong role of users as drivers of R&D**

  ⇒ accounting for co-operative arrangements important

3.1 Comparison with policy practices in the EU and the US

- **Overview of relevant trends in view of openness to service R&D features**
  - US: federal incentive for incremental R&D expenditures
  - 13 of 25 EU Member States use tax incentives for R&D, 17 of 23 incentives in EU have no incremental element
  - Updated OECD Frascati R&D definition of 2002 opens up with regard to non-technological R&D
  - Frascati definition is basis for many EU incentives in place, but most remain limited to technological R&D
  - A range of countries have revised and/ or broadened the scope for software development eligibility

3.2 Three schemes as examples (I)

	UK	France	United States
In place since	2002/ 2004	1983	1981
Scope of eligible R&D	volume-based	incremental but increas-ing vol-based element	Mainly incremental
Core element of R&D definition for eligibility	Advance in science and technology (definition for general tax more open)	Novelty, reduction of scientific and technological uncertainty	tax credit restricted to S&T related R&D, for general tax purposes open

3.2 Three schemes as examples (II)

	UK	France	United States
Software-related aspects	As other R&D, specifics removed	Included if R&D aspects	For internal use except R&D excluded
Co-operation/ subcontracting	for large firms restricted	If with firms approval needed	Possible as long as US companies
Share of business R&D in services	20,2% (2002)	11,1% (2002)	27,4% (2002, Source of data: S&E indicators 2006)
Share of services in incentive use	?, concern that below R&D share	above R&D share (also due to cap)	depending on subsector

4 Conclusion and policy implications

- **Policies aiming at stimulating growth by tax incentives for business R&D should reflect trends such as the growth of R&D in services**
- **Possible ways to do so are only partly exploited by current tax incentive schemes**
  - No need to break with the non-specific character
  - Maintenance of incremental element for eligibility?
  - Broadening of the definition of eligible R&D
- **Comparative research on impacts needed**