

R&D and Non-Technical Innovation in Services: A Reevaluation

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Outline

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2. Posing the Problem
3. Explaining Growth
4. Changing Nature of R&D
5. Conclusions

1. Context

- Exploring R&D within services...
- ...using UK Office of National Statistics (ONS) data examining Business Expenditure on Research and Development (BERD; linked to Annual Business Inquiry; ABI) and Annual Respondents Database (ARD) datasets 1997-2005 (narrow panel: 1999-2003)
- Analysis can at best be described as challenging....

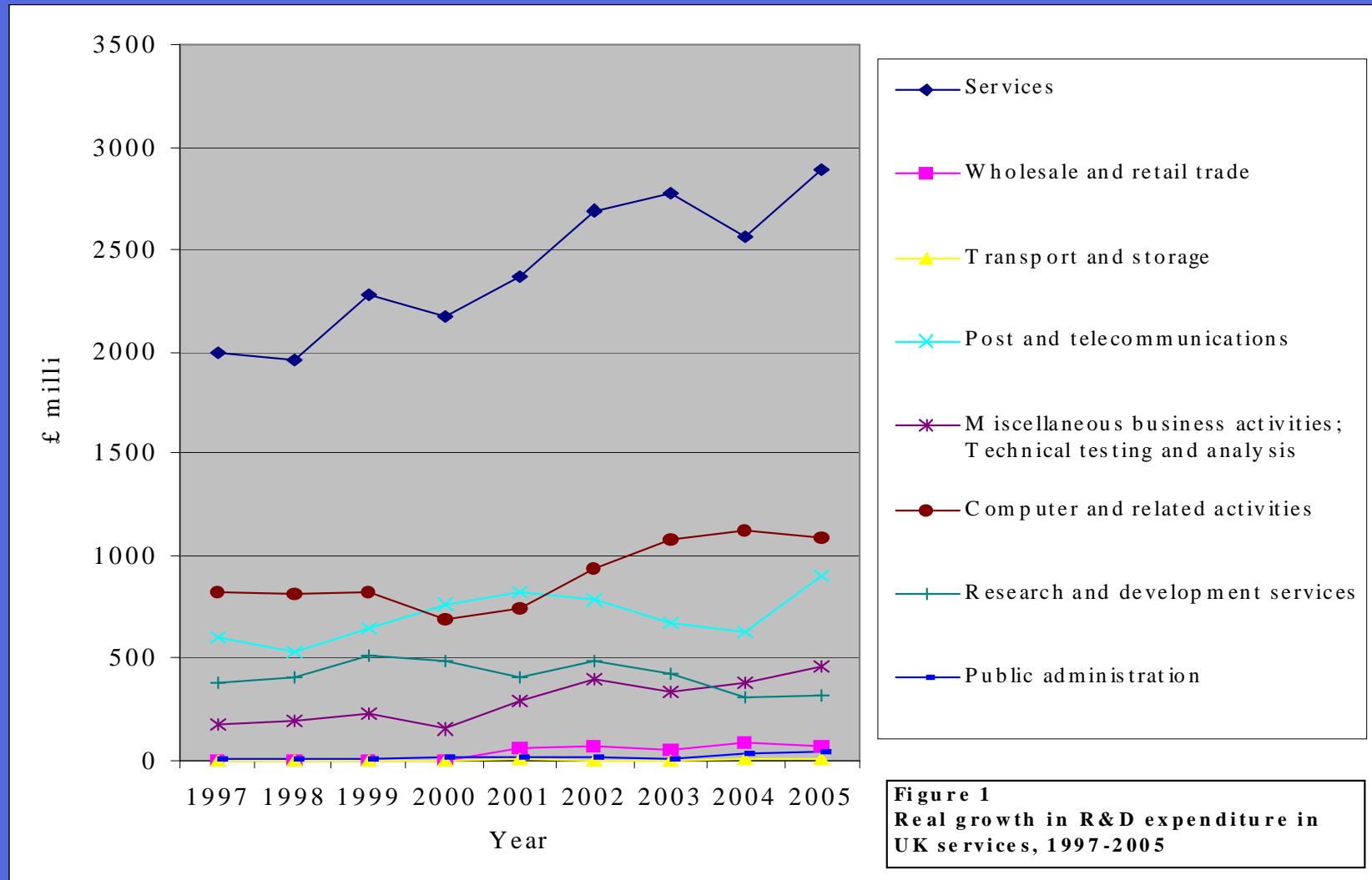
1. Context

- restricted in what can explore, but some interesting results...
- E.g. in relation to comparisons with manufacturing:
 - Large enterprises – SME distinction for those undertaking R&D
 - Large enterprises in manufacturing, c.f. services, more research intensive, but for SMEs undertaking R/D, service firms were more intensive – ‘Lone star’ argument

1. Context

- However some of most interesting centre on trying to explain rapid growth in R&D in service sectors.... albeit from low base
- UK R&D services growth: from £1,994 million to £2,892 million between 1997-2005, a 45% real growth rate (c.f. 12% for manufacturing)
- Services R&D in 2005 21.6% of total BERD c.f. 17.3% in 1997
- UK not unusual indeed somewhat slower than av. OECD rates (12% p.a. in OECD, 1990-2001)

1. Context



2. Posing the Problem

- Non-technical forms of innovation important in services and innovation in services more ‘outward looking’ c.f. ‘inward facing’ (Howells & Tether 2004)
- ... but at the same time continued rapid growth of R&D in services
- Paradox in that R&D typically been closely associated with technical innovation and inward looking forms of innovation (and manufacturing)

2. Posing the Problem

- Recent analysis of, for example, CIS4 data (Tether & Tajar 2008; Castellacci 2008) indicates group - advanced knowledge providers – where this set of manufacturers and service firms very similar profiles
- This group from both manufacturing and service firms hold a similar profile of more inward looking, technological innovation with high levels of R&D
- ... Would expect R/D growth in more technical sectors

2. Posing the Problem

- But when looking at service R/D growth... more growth in less intensive R/D, non technical sectors
- R&D may have more links with 'soft' non-technological & organisational activities than previously recognised especially in services
- In looking at and reexamining innovation in services and service innovation we may need to reassess our view of how R&D is used by (service) firms

3. Explaining Growth

- How do we explain this rapid growth in R&D in services?
 1. Better definition and measurement of R&D in service firms... Frascati revisions
 2. 'Trickle down': absolute low values and some kind of catch up process - temporary
 3. 'Externalisation' and reclassification: by and of former manufacturing firms - externalisation spin-off process (Howells 1989); some R&D reclassified by this process

3. Explaining Growth

4. Changing nature of new firm formation:

4.1 'Soft-hard' model of new high tech firm formation becoming more common or dominant model (firms start up as service enterprises and then move into manufacturing at a later stage)

4.2 Fewer firms converting from 'soft-hard' model; i.e. staying 'soft'

For knowledge and R&D intensive firms this means R&D in service sectors benefiting from this process

3. Explaining Growth

5. 'Hollowing out' and offshoring and outsourcing – basically give up manufacturing and offshore (China, India, etc.) it and/or outsource it, but continue undertaking R&D
6. R&D outsourcing (manufacturing > services; net flows) and offshoring (net inflows) in its own right benefiting R&D providers in services

3. Explaining Growth

7. 'Service research intensification': fundamental nature of services is changing – knowledge intensification; requires more R&D amongst other technical elements
8. but also changing nature of R&D, especially in service sectors....

4. Changing Nature of R&D

- In what ways?
 - Links between (intramural) R&D and innovation expenditure on marketing and (in certain service sectors) design activities appear much closer in services than manufacturing (Tether and Tajar 2008)
 - R&D expenditure in service enterprises not linked to scientific and engineering graduate staff (as in manufacturing), but to ‘other’ (non-scientific and engineering) graduate staff

4. Changing Nature of R&D

- R&D in service firms may have more of an external scanning role, especially if services are more oriented to external innovation activities and acquisition of external knowledge
- Equally R&D may also play a much more significant role in the absorptive capacity of firms than previously acknowledged and this is especially true in services

4. Changing Nature of R&D

- The fragmented (distributed) and less formalised nature of R&D in services may also require/encourage this....

What does this all mean?

A reevaluation about how we perceive R&D and its links with non-technical activities, especially in services....

5. Conclusions

Need to reevaluate of how we view R&D and how it may be used differently in service firms:

- R&D links with non-technical aspects of the firm's innovation profile much higher...
- ...including, marketing, design, new media & professional (accountancy, legal, etc.) services
- growth in R&D links with social sciences
- The less structured, distributed nature of R&D may allow/encourage this....
- together with more informal nature

5. Conclusions

- Service firms are therefore using R&D differently and seeking a different role for R&D than manufacturing firms
- Service firms appear more innovative in their use of R&D and this may be because less legacy issues, less tied down by existing formal structures, but also because they have to search for new models
- May also be a reflection of the more outward facing innovation profile of service firms, better aligned to open, distributed innovation frameworks and less attuned to old traditional R&D paradigms