

Selective public R&D funding

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Structure of the presentation

- main content of the project
- data
- characteristics of applicants and non-applicants
- related research conducted in Finland recently



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- Purpose is to analyse the selection mechanism underlying the allocation of public R&D subsidies.
- Focus on direct public R&D subsidies - grants and loans - to business enterprise sector.
- Starting point: The selection mechanism consists of two interlinked decision problems.

1) Firms decide whether to apply for a subsidy or not, for which projects to apply and what to apply.

2) Given the technology policy guidelines and budget constraints the public agency decides for which projects to give a subsidy, how large and what kind of a subsidy to give. Based on some criteria it ranks the applications and funds the best.

- Main idea: Firms integrate their knowledge of the public agency's behaviour in their decision problem, i.e. there is a feedback from the public behaviour to the firm behaviour.



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- **Research method**

theory: general game theoretic model that summarises the decision rules of the firm and the public agency and the interaction between them

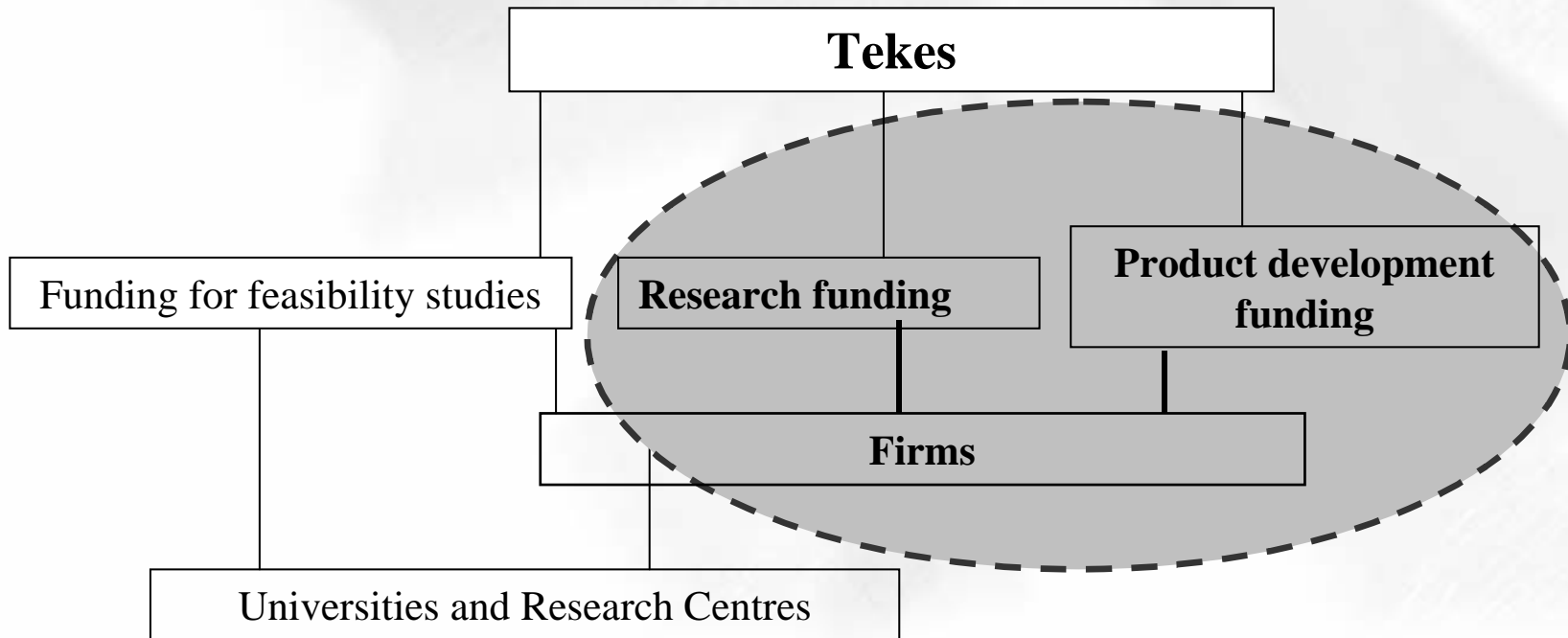
empirical analysis: quantitative approach, econometric model of a system of two equations

- **Goal: assess how changes in the funding policy are reflected in the composition of non-applicants, applicants and those funded**

- **Relevance of the expected results: provides a systematic description of the selection mechanism and helps in assessing how changes in funding policy affect firm behaviour**



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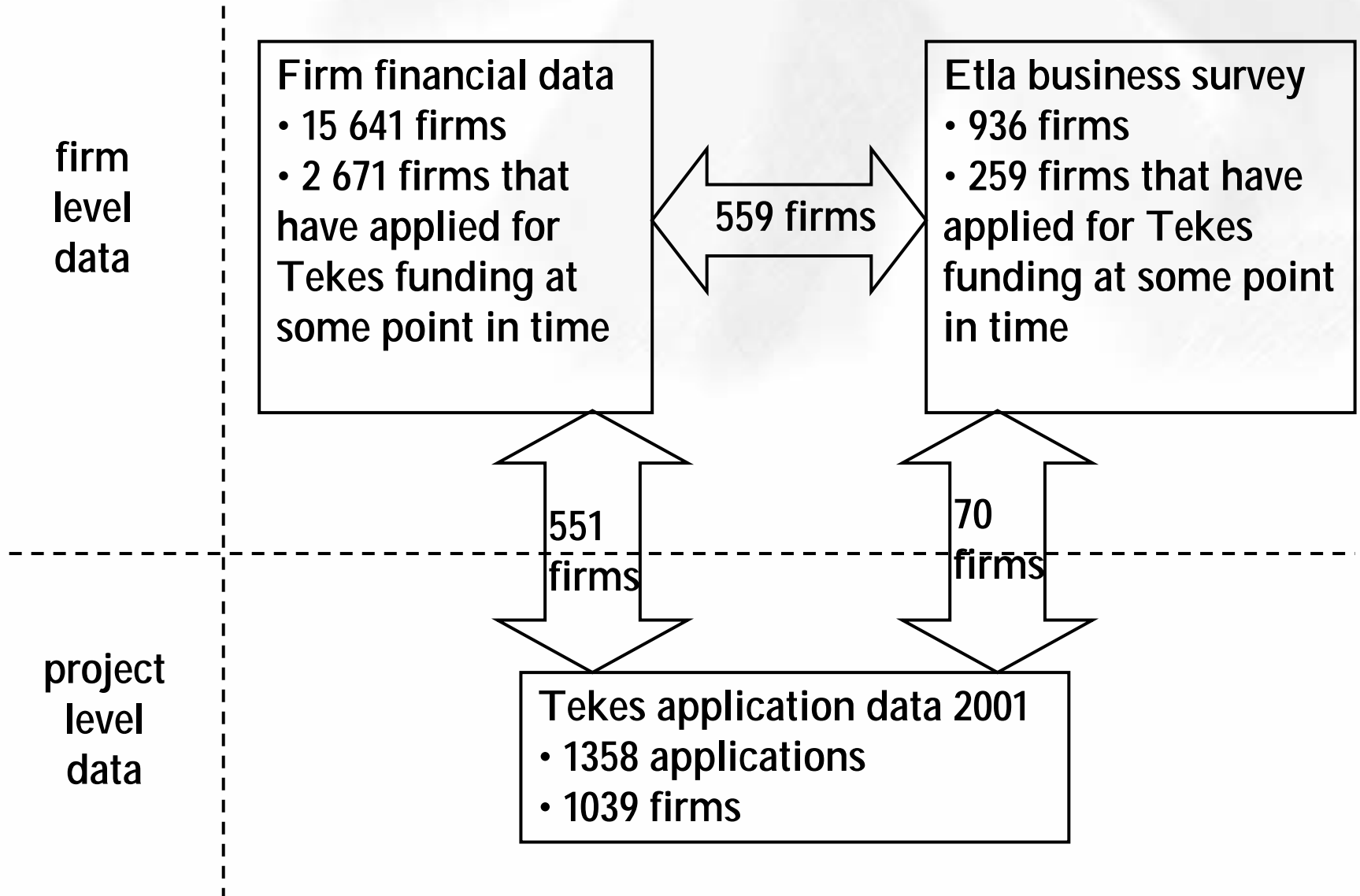


- In 2001 Tekes received in total 1358 business R&D applications for product development and industrial research.
- 67 % of applications were accepted.
- Corresponding amount applied was 526 million euros and 211 million euros were granted (40%).
- Subsidy applications covered 83 % of the applications.



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Some general characteristics of the applicants and non-applicants

Basic issues

- - among applicants relatively more firms from electronics and data processing industries
- - among applicants relatively more young firms
- - applicants more internationally oriented and have greater growth expectations

R&D-activities

- - even compared to the non-applicants that have reported R&D expenditures the applicants are clearly more R&D intensive, have more often experienced considerable R&D intensity growth over the last three years
- - large majority of applicants have introduced a product or process innovation during the last three years while the same is not true for the non-applicants



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Ownership

- - applicants have had more often considerable changes in the ownership structure over the last three years
- - ownership is on average somewhat more diversified among applicants
- - foreign ownership is more common among applicants – however it is rare in general

Public funding

- - among applicants relatively more firms have received some kind of public funding from other sources than Tekes

Financing structure

- - with the exception of venture capital and public funding, which are more common among applicants, financing structure of the applicants and non-applicants looks on average relatively similar



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Quantitative studies related to the impacts of business R&D subsidies conducted in Finland recently:

Additionality of business R&D subsidies:

- business R&D subsidies increase firms' own R&D investments (Lehto, 2000)
- business R&D subsidies increase the own R&D investments of firms with high R&D intensity (Niininen, 1999)
- business R&D subsidies increase the own R&D investment of partially credit constrained firms (Toivanen and Niininen, 2000)

Effect on employment:

- Firms that have received Tekes funding have contributed much more to the net employment growth than the non-supported firms (Maliranta, 2000)



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Effect on productivity:

- Firms that have received Tekes funding have higher productivity level and growth than Finnish firms on average (Lehtoranta, 2000).
- At the firm level no evidence that public R&D funding has direct positive effect on the firms's productivity, however the R&D intensity of the firm's industrial environment has a positive effect on the firm's productivity (Maliranta, 2000)
- At the industry level both firms' own and public R&D investments increase productivity growth (Niininen, 2000).



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