

The state of the art in economics applied to animal health

Etat de l'art en économie de la santé animale

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Based on NEAT project literature review data collected by

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Introduction

- Economics applied to animal health is quite recent field of study
 - The main body of literature has been published during the past 20-25 years
- Our goals
 - To have an overview of literature that is available in the field of economics applied to animal health (EAH) (topics, methods, publication channels etc.)
 - To identify information gaps
- Data, methods & concepts used in education, research & policy making

Out approach

- Search for peer-reviewed and other publications in the field of EAH in Ebsco Discovery Service (EDS) reference database
 - Complementary information
 - AgEconSearch (ageconsearch.umn.edu)
 - SVEPM proceedings
 - Well-known journals in the field
 - NEAT partners' contributions
- ➔ Preliminary result about 19,000 publications

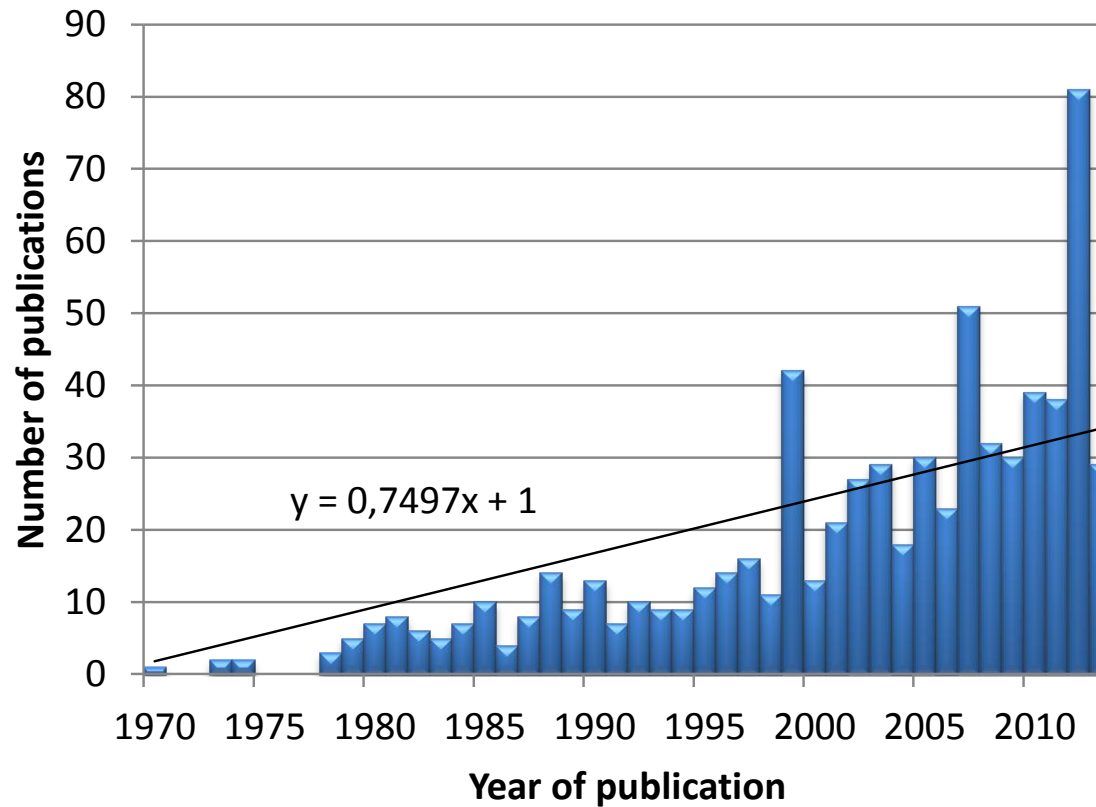
Review process

- Primary screening and selection of relevant literature resulted in 850 publications for evaluation by NEAT members
 - This presentation is based on 695 peer-reviewed publications
- Categorisation of publications by content and type

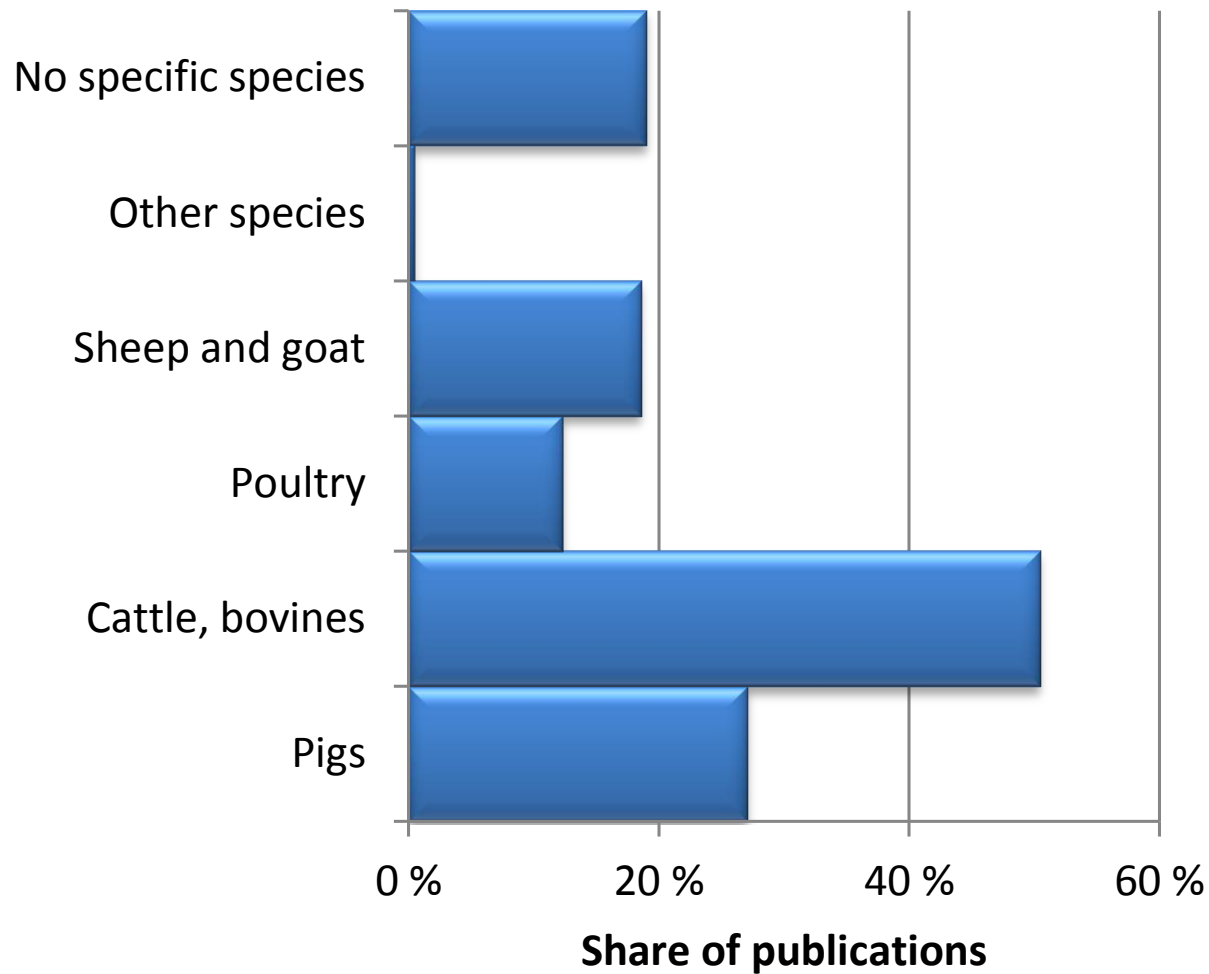
What was evaluated?

- Bibliographical information (e.g. publication channel and type)
- General overview
- Content
 - Species, disease and geographical coverage
 - Data and methods used (specify)
 - The goal of publication?
 - Main findings?
 - Other remarks: contribution to literature, usefulness in teaching, merits and drawbacks?

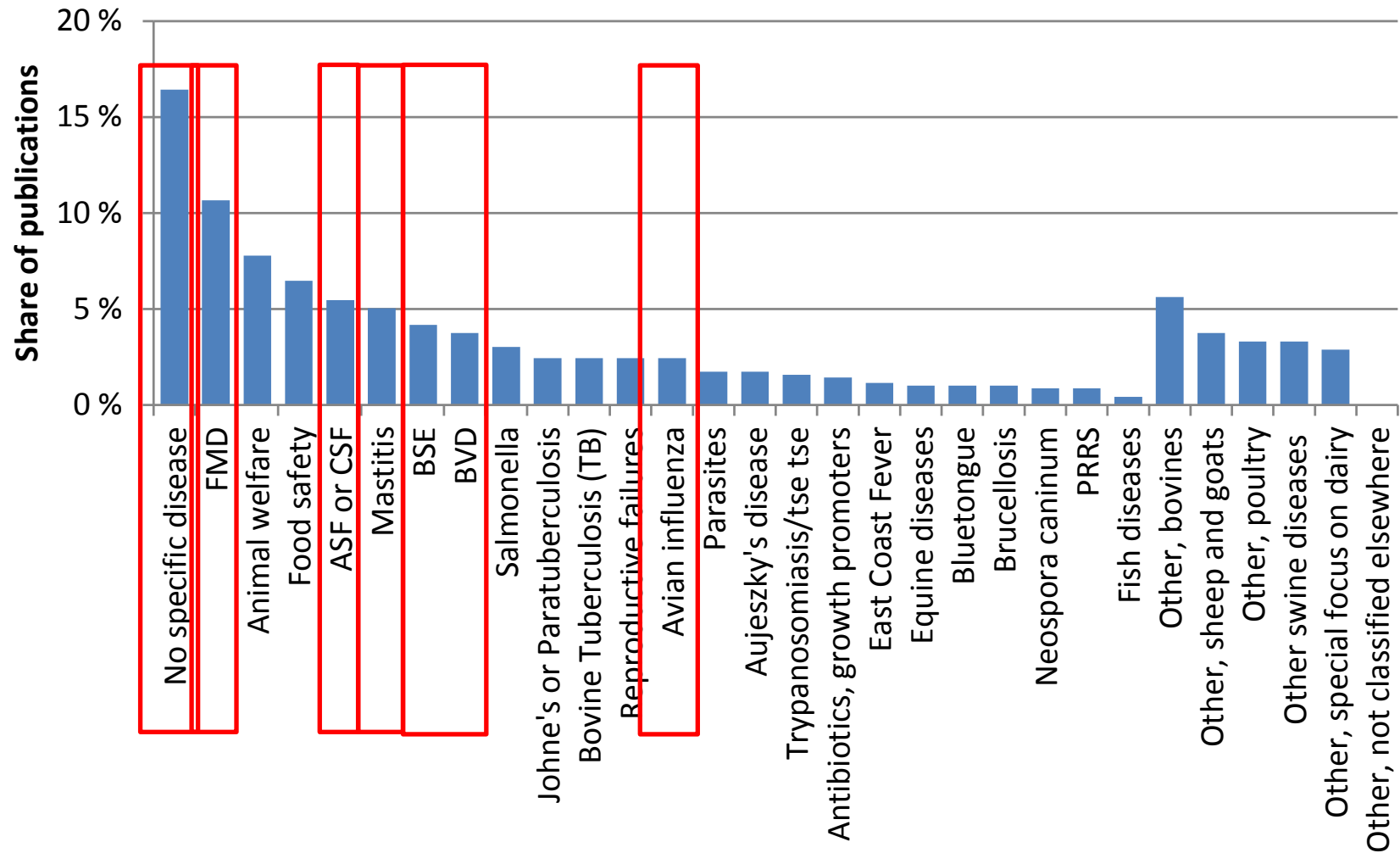
Development of the number of publications



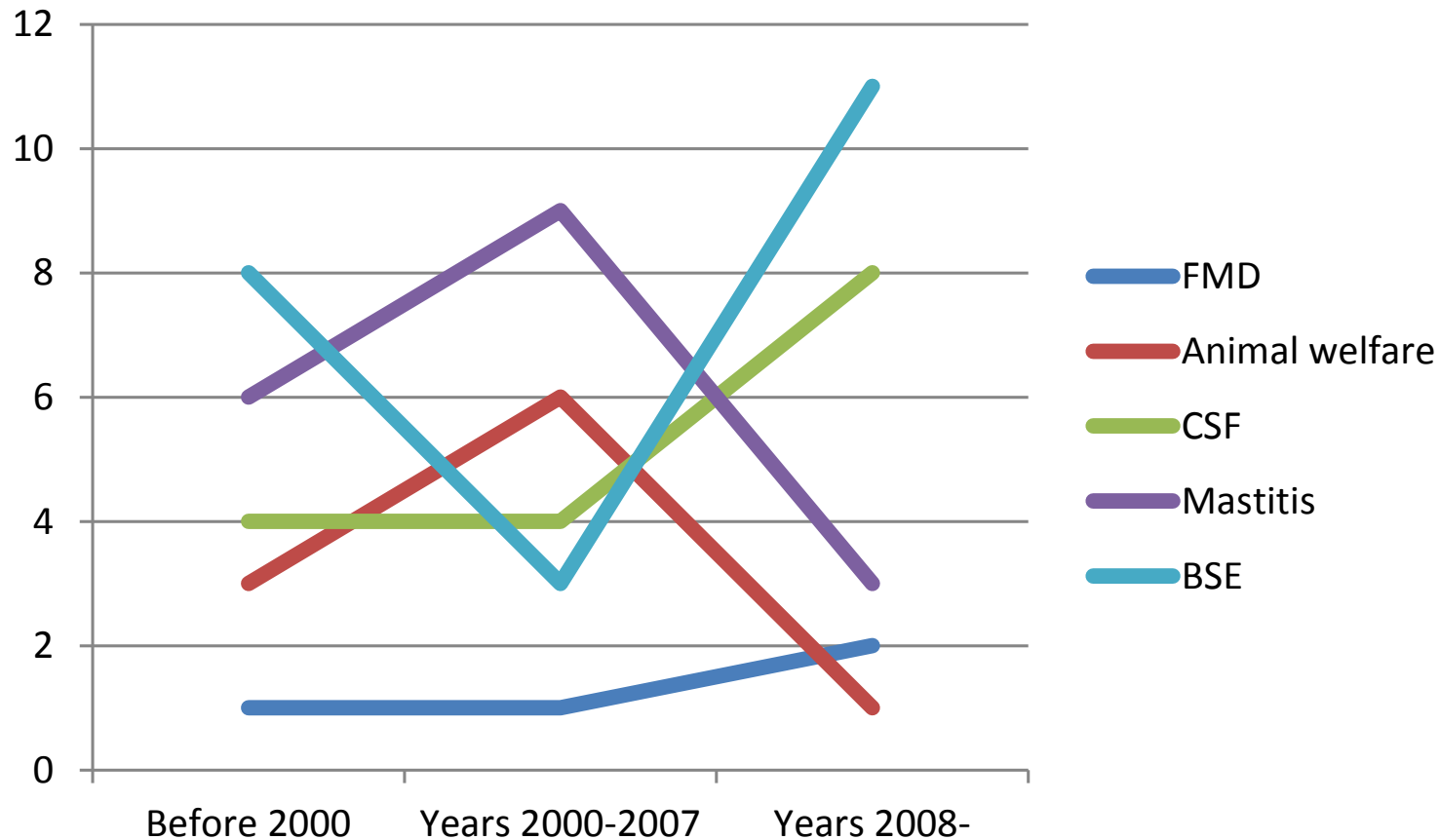
Focus by of species



The most common empirical topics in the sample



The most popular topics by time period



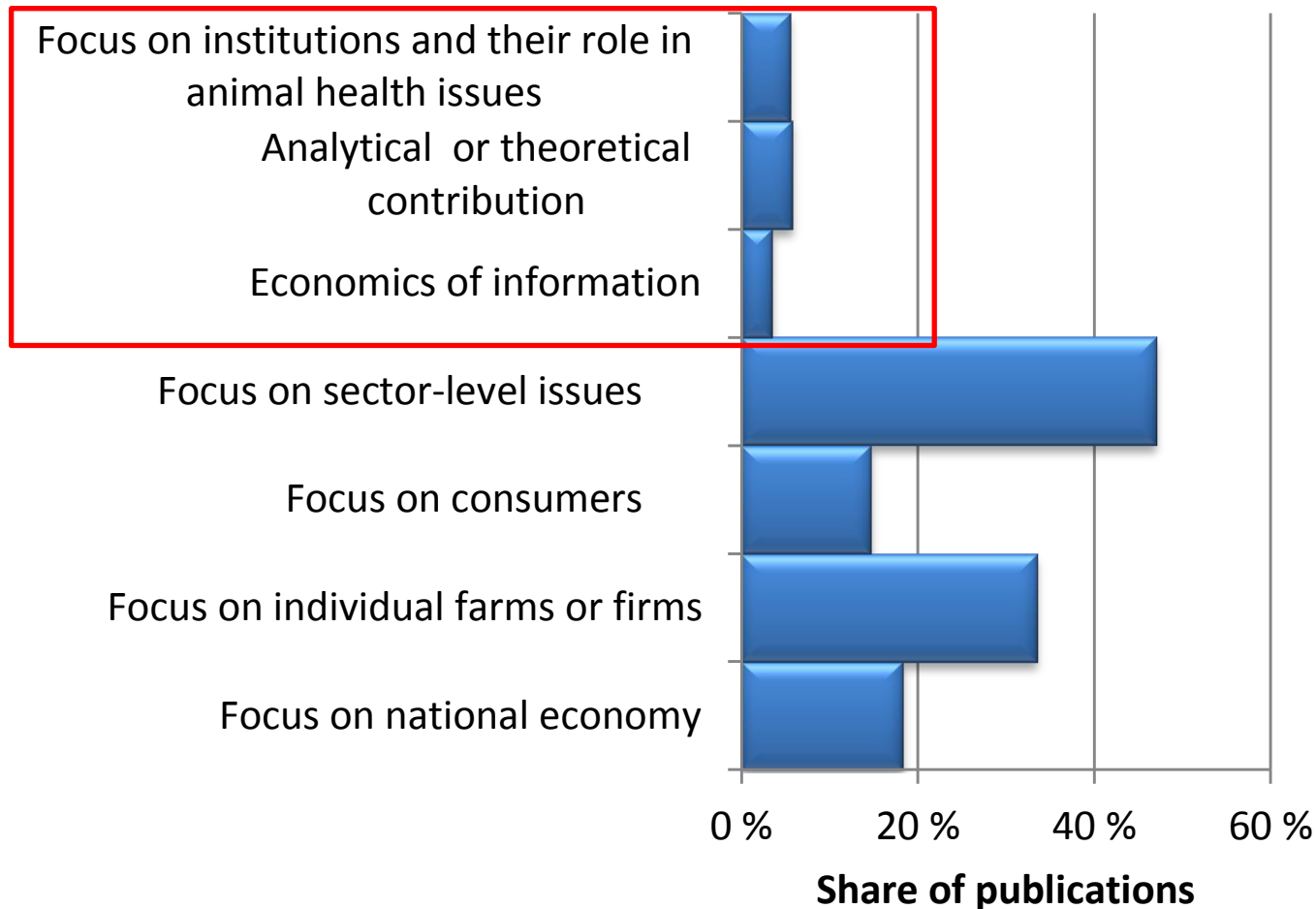
Remarks about the coverage

- High proportion of generic or multi-disease publications – cf. discussion papers
- Highly contagious animal diseases (FMD, CSF, AI) as a group
 - Possible overrepresentation?
 - Related to their impacts and government's role in research funding?
- Bovines are clearly the most studied species as they are important production animals
- BSE and animal welfare studies were focusing on consumers
- Salmonella was the most commonly studied food safety hazard
- Endemic bovine diseases

Geographical focus and the level of analysis

- Dominated by European studies, which represent about half of publications – UK and the Netherlands were major contributors especially in the early years
- North America has also contribute major proportion of publications
 - Many theorethical/analytical studies originate from the USA
- Rest of the world had produced about one third of publications
- About 60% of studies focus on national/regional/international, 32% on farm-level and the rest on animal-level issues or NA
- Some type of cost-benefit or cost-effectiveness analysis is carried out in about 35-40% of studies.

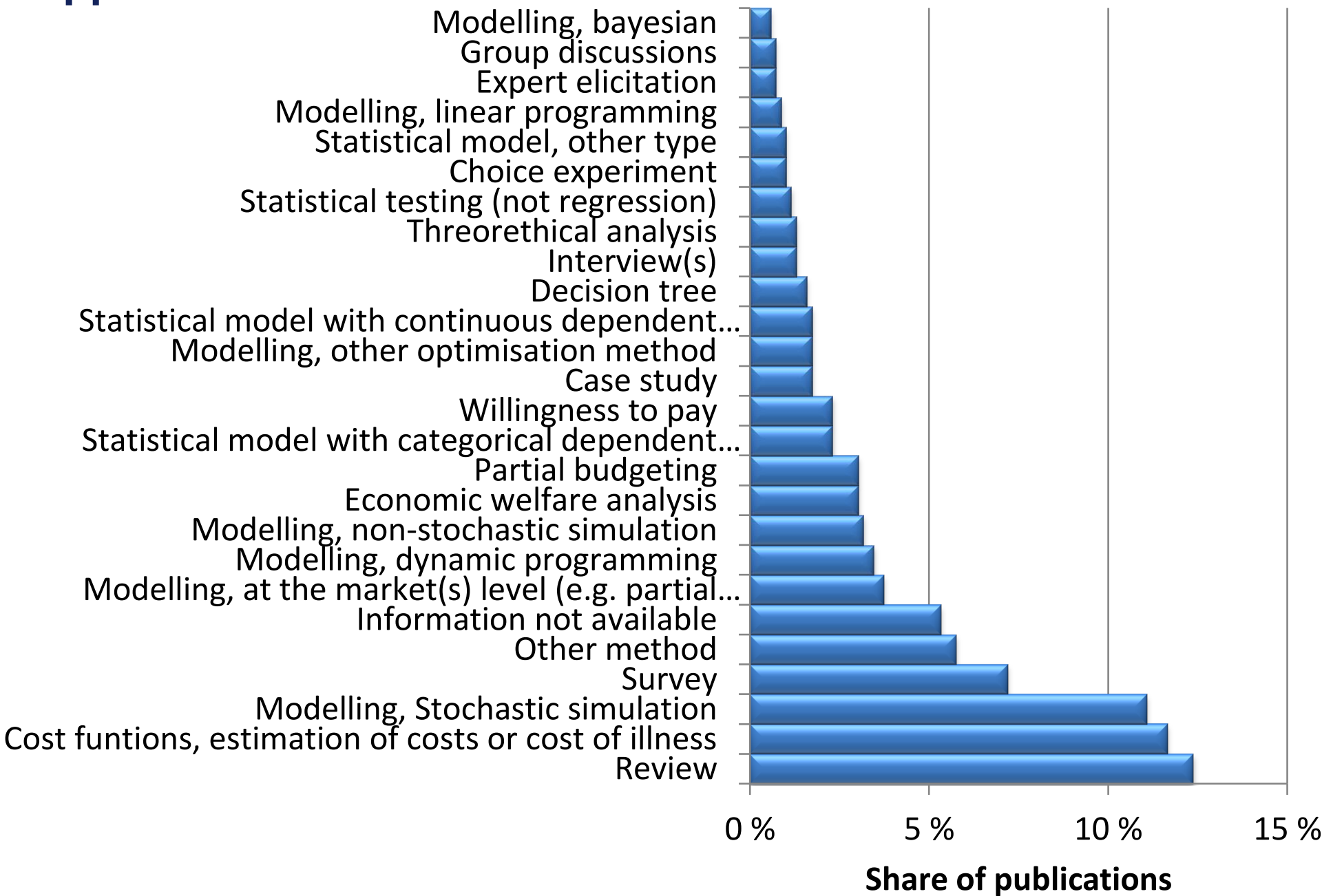
Coverage of approaches



Approaches used

- Simulation, review and discussion and survey are the most frequently used methodological approaches
- Limited number of publications use in-depth methods to improve the capacity to understand stakeholders' behavior
- In the recent years more emphasis on positive research methods which collect and analyze well-defined empirical data as opposed to normative analyses which often synthesize data from several sources
- Ex-post studies use various datasets of which size ranges from few animals to all animals in the region.

Approaches used



Merits and shortcomings

- Economics was often superficial, but in recent years several excellent publications has appeared
- Publications illustrate that empirical economic research can be challenging (e.g. estimating willingness-to-pay credibly).
- There is room for new literature developing the foundations of EAH – are rigorous works underused?
- Richer analytical contributions which improve our capacity to **understand** and **explain** how stakeholders behave and interact (e.g. agency theory, incentives) are needed to complement previous work (e.g. Hennessy, Gramig, ..)
- Utilisation of experimental methods (e.g. choice experiments) which have started to gain popularity

Merits and shortcomings

- Better understanding of the roles of institutions to complement previous work (e.g. NIE, political economics) is needed
- Little work on finance and competition issues
- Discussion papers benefit from that technical insight is not required
 - Accessible also by persons who are new in the field
 - Puts aspects into a wider context by elaborating factors such as preferences, foreign trade or impacts on national economy
 - Comprehensive examples to illustrate the methods!
 - Criticized for the lack quantitative of facts!

Points to be improved

- Financial losses estimated instead of economic losses - miss the indirect costs, which can be substantial proportion of the overall costs.
- The behavioral assumptions/preferences - stakeholders may not behave strictly according to the optimization approach or rational expectations
- A holistic view about the “system” and dynamics related to it
- Feedback loops between epidemiology and economics. For instance, is there a scope to adjust choices as new information arrives?
- Pareto improvement, the compensation principle, market power and price margin issues in the event of an animal disease crisis new topics.

Reporting of economic results is not uniform!

- Variation in the quality and clarity of publications & abstracts (including the description of data and methods)
- Units used and costs included in the studies vary
- ➔ Results between studies are only partly comparable (if at all)
- ➔ Infeasible to assess the total cost burden of animal diseases

- Also time periods of studies vary and price parameters vary over time

For an example on extensive literature review with the goal to assess the costs of diseases, please see PROHEALTH newsletter

<http://www.fp7-prohealth.eu/news-index/newsletter-november-2015/production-diseases-cost-pig-producers/>



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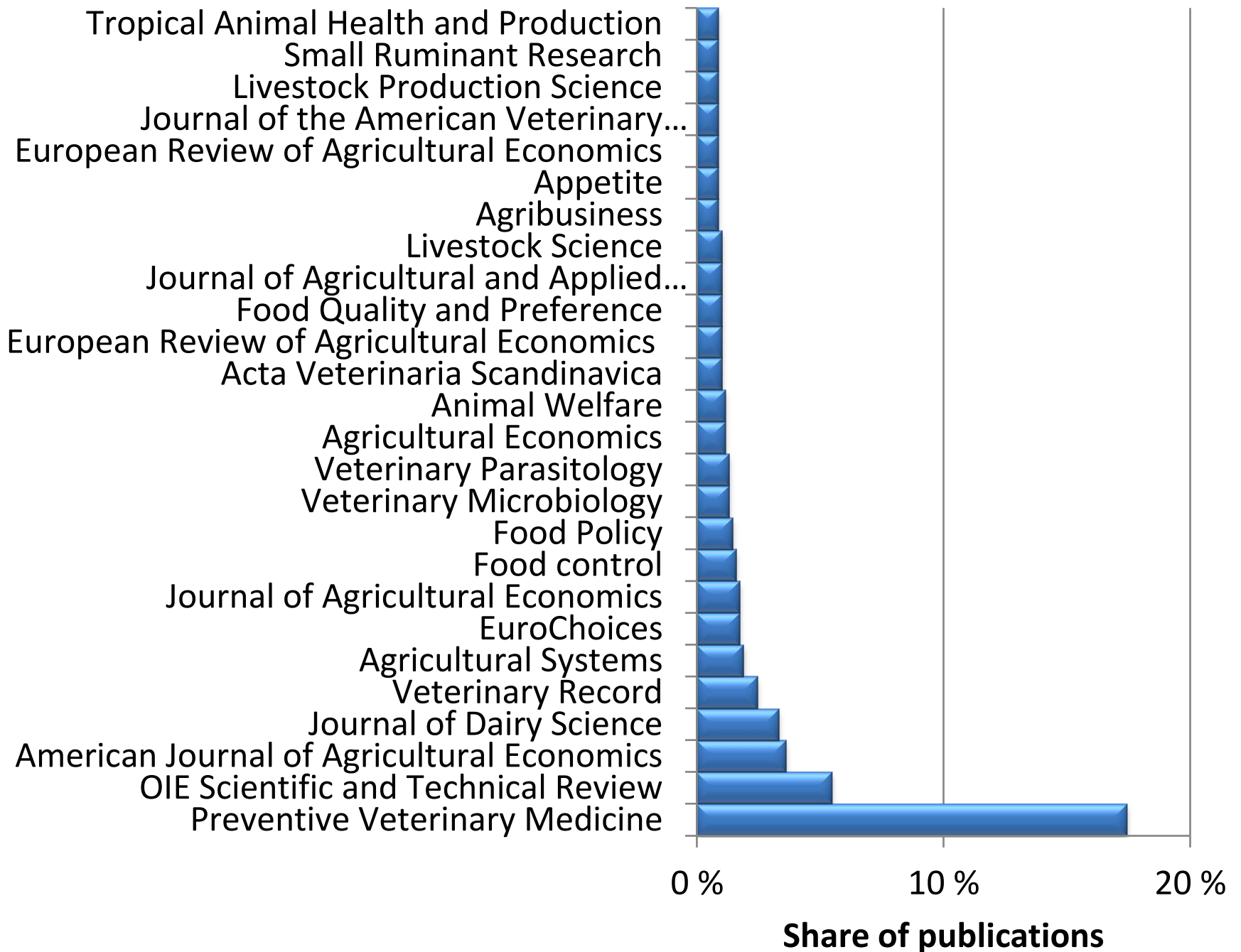
Search



Production diseases: The cost to pig producers

Where to look for publications?

- Journals (and conference proceedings) in the field of veterinary medicine
- Other animal science-focused journals
- Agricultural economics and other applied economics journals
- Other journals
- Journal type and the content of publication are related to each others
- American Journal of Agricultural Economics has published several theoretical contributions
- The topics in non-peer-reviewed publications follow those of peer-reviewed publications



Conclusions

- A large proportion of EAH publications focus on highly contagious animal diseases in Europe – should there be more attention on endemic diseases, poultry and pigs, Eastern Europe and Asia?
- Useful to focus on economic consequences of disease and policy
- Need both structured empirical illustrations and rigorous analytical contributions – they both can improve our capacity to understand stakeholders' behaviour
- Multidisciplinary nature of EAH from the field's development point of view?
- Lack of consistency of approach reduces the ability to compare studies

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