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## Curriculum Vitae

**Jens Leth Hougaard** (born Dec. 20, 1966)  
Professor in Applied Microeconomics

## Contact Information

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University of Copenhagen  
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## Education

Ph.D. in Economics, University of Copenhagen, 1994.  
Cand polit (M.Sc. Economics), University of Copenhagen, 1990

## Regular Positions

Professor (Chair in Applied Microeconomics), Department of Food and Resource Economics, University of Copenhagen, Sep. 2008 – present.  
Associate Professor, Department of Economics, University of Copenhagen, 2000 to Sep. 2008.  
Associate Professor, Department of Operations Management, Copenhagen Business School, 1997-2000.  
Associate Professor, Department of Economics, Royal Agricultural University, 1996-1997.  
Assistent Professor, Department of Management Science, Copenhagen Business School, 1994-1996.

## External Visits

Department of Finance, South China University of Technology, Guangzhou, China, Oct. 2017.  
Department of Economics, National University of Singapore, visit under the Isaac Manasseh Meyer Fellowship (IMMF), Feb. 2017.  
Department of Economics, National University of Singapore. Nov, 2015.  
Department of Economics, Rice University, Houston, Texas, US. Aug.-Dec. 2011.  
CORE, Universite Catholique de Louvain, Belgium, Sep. 1996- Sep. 1997.  
European University Institute, Firenze, Italy, Jan. – Sep., 1992

## Miscellaneous

### Awards and Administration

Danish Business Economists Research Prize (Civiløkonomernes Forskningspris), 2001.

Member of The Health Insurance Foundations research evaluation committee (“Helsefondens forskningsudvalg”), 2010 - present

Member of the study board, (Business Administration and Management Science), Copenhagen Business School, 1998-2000.

Member of the study board, (Economics), University of Copenhagen, 2003-2007.

Chairman of the board for PhD study program AECON at University of Copenhagen (see [www.aecon.life.ku.dk](http://www.aecon.life.ku.dk)), 2009 – 2011.

Director, Centre of Management Science and Production Economics, IFRO, University of Copenhagen (see <http://ifro.ku.dk/english/research/centres/msap/>), 2009 – present.

## **Recent External Seminars and Invitations**

University of Vigo, Spain, Apr. 2010; University of Southern Denmark, May 2010; Rice University, US, June 2010; Wuhan University, Centre of Social Security, China, Sep. 2010; Universidad Pablo Olavide, Spain, April 2011; Texas A&M University, US, Oct. 2011; University of Newcastle, UK, March 2012; Universidad Pablo Olavide, Spain, May 2012; Lithuanian Institute of Agrarian Economics, Lithuania, Oct. 2012; Royal Danish Embassy, Beijing, China, Dec. 2012; Universidad Pablo Olavide, Spain, Apr. 2013; Tsinghua University, CTIC, Beijing, China, Sep. 2013; Jinan University, Guangzhou, China, Nov. 2013; University of Newcastle, UK, Feb. 2014; Queens University, Belfast, May 2014; Singapore Management University, Singapore, Nov. 2015; Nanjing Technical University, Singapore, Nov. 2015. Plenary talk at SING12, University of Southern Denmark, July 2016, University of Glasgow, Sep. 2016, National University of Singapore, Oct. 2016. Tinbergen Institute, Amsterdam, Dec. 2016. Higher School of Economics, Skt. Petersburg, Aug. 2017. Universidad Pablo Olavide, Spain, Sep. 2017 and Nov. 2017.

## **Recent Funded Research**

Partner of CFEM “Centre for Research in the Foundations of Electronic Markets“, funded by the Danish Council for Strategic Research (26.5 mill DKK), 2009.

Partner of COBE “Confidential Benchmarking”, funded by the Danish Council for Independent Research, Technology and Production Sciences (4.8 mill DKK), 2009.

PI of the project “Allocation in Networks”, funded by the Danish Research Council for Independent Research, Social Sciences (100.000 DKK), 2011.

Partner of the project “Efficiency in Dynamic Production Processes“, funded by the Carlsberg Foundation (250.000 DKK), 2012.

PI of the project “Lithuanian Family Farm Efficiency after Accession to the European Union: Empirical Analysis by the Means of the Frontier Methods and Proposals for the Agricultural Policy” funded by the Lithuanian Research Council. (2 mill. DKK), 2013.

Partner of the project “Big Data by Security”, funded by The Danish Industry Foundation (7.6 mill. DKK), 2015.

Partner of the project “NORMA”, funded by the Danish Research Council for Independent Research, Social Sciences (5.6 mill DKK), 2016.

## **Workshop Organization**

Co-organizer of the workshop ‘Internet Economics’, Department of Economics, University of Copenhagen, April 25-26, 2003.

Co-organizer of the workshop ‘Health Economic Theory’, Department of Economics, University of Copenhagen, November 26-27, 2004.

Co-organizer of the 12’th meeting of the Danish Health Economists, Department of Economics, University of Copenhagen, April 26, 2006.

Co-organizer of the 50 years anniversary workshop in Economic Theory, Department of Economics, University of Copenhagen, Dec. 5-6, 2008.

Co-organizer of MSAP kick-off seminar, Department of Food and Resource Economics, University of Copenhagen, Nov. 27, 2009.

Co-organizer of CFEM workshop “New Trends in Mechanism Design I”, Copenhagen Business School, June 2011.

Co-organizer of CFEM workshop “New Trends in Mechanism Design II”, Aarhus University, June 2013.

Organizer of CFEM workshop “New Trends in Mechanism Design III”, University of Copenhagen, August 2015.

## **Reviewer, Editorial Work**

Journal of Economic Theory, Economic Theory, Economic Journal, Operations Research, European Journal of Operational Research, Social Choice and Welfare, Mathematical Social Sciences, Economica, Scandinavian Journal of Economics, International Journal of Game Theory, Journal of Public Economic Theory, Journal of Productivity Analysis, Omega, Fuzzy Sets and Systems, Health Care Management Science, Annals of Operations Research, Theory and Decision, Transportation, International Game Theory Review, Games, Mathematical Methods of Operations Research, 4OR, DEA-Journal.

Several book reviews for various publishing houses.

External Reviewer for the Norwegian Research Council

Associate Editor: TOP, Springer. (<http://link.springer.com/journal/11750>), 2017-

Associate Editor: Mathematical Social Sciences, Elsevier  
(<https://www.journals.elsevier.com/mathematical-social-sciences>), 2018 -

Advisory Editor: Technological and Economic Developments of Economy, Routledge  
(<http://www.tandfonline.com/toc/tted21/current>), 2015 -

## **PhD Students:**

Mikkel Bojesen: Spatial Decision Support Systems in Connection with Optimal Location of Biogas Production in Denmark. (graduated 2014).

Juliet Biira: Analysing incentive and cost sharing issues in livestock disease insurance. (graduated August 2016)

Aleksandrs Smilgins: Allocation Problems and Market Design. (graduated April 2016)

Ning Zhu (liason): Efficiency in the Chinese banking industry. (graduated from Jinan University, 2016)

## **Teaching**

Since 1994, I have regularly developed and taught courses in:

- Applied Microeconomics (graduate level)
- Microeconomics (under graduate level)
- Health Economics (under graduate and graduate level)
- Internet Economics (graduate level)
- Game Theory (under graduate level)
- Decision Theory (under graduate level)
- Productivity Analysis (graduate level)
- Cost Sharing (graduate level)

## **Research**

Since 1991 my research has been focussed on Applied Microeconomics. Main interests:

- Fair Allocation (cost and surplus sharing, one-sided matching)
- Efficiency Analysis (DEA and related methodologies)
- Health Economics (health measurement, hospital efficiency)
- Network Economics (Network externalities and allocation)
- Cooperative Game Theory (TU games)
- Axiomatic Bargaining
- Decision Theory (MCDM, non-additive expected utility)

# **Jens Leth Hougaard**

## **Publication list:**

### **Articles (Total of 67)**

#### **Game Theory and Fair Allocation**

J.L. Hougaard, D. Kronborg and A. Smilgins, Fair division of costs in green energy markets, *Energy*, 139, 220-230, 2017.

J.L. Hougaard, and H. Moulin, Sharing the cost a risky projects, *Economic Theory*, In Press.

H. Aziz, J.L. Hougaard, J.D. Moreno-Ternero, and Lars Peter Østerdal, Computational aspects of assigning agents to a line, *Mathematical Social Sciences*, 90, 93-99, 2017. (Special Issue in honor of Herve Moulin)

J.L. Hougaard, J.D. Moreno-Ternero, M. Tvede and L.P. Østerdal, Sharing the proceeds from a hierarchical venture, *Games and Economic Behavior*, 102, 98-110, 2017.

J.L. Hougaard, P. Bogetoft and A. Smilgins, Applied cost allocation: The DEA-Aumann-Shapley approach, *European Journal of Operational Research*, 254, 667-678, 2016.

J.L. Hougaard and M. Tvede, Minimum cost connection networks: truth-telling and implementation, *Journal of Economic Theory*, 157,76-99, 2015.

J.L. Hougaard and H. Moulin, Sharing the cost of redundant items, *Games and Economic Behavior*, 87, 339-352, 2014.

J.L. Hougaard, J.D. Moreno-Ternero and L.P. Østerdal, Assigning agents to a line, *Games and Economic Behavior*, 87, 539-553, 2014.

J.L. Hougaard, J.D. Moreno-Ternero and L.P. Østerdal, Rationing with baselines: The composition extension operator, *Annals of Operations Research*, 211, 179-191, 2013.

J.L. Hougaard and M Tvede, Truth-telling and Nash equilibria in minimum cost spanning tree models, *European Journal of Operational Research*, 222, 566-570, 2012.

J.L.Hougaard, J.D. Moreno-Ternero, L.P. Østerdal, Rationing in the presence of baselines, *Social Choice and Welfare*, 40, 1047-1066, 2013.

J.L Hougaard, J.D. Moreno-Ternero, L.P. Østerdal, A unifying framework for the problem of adjudicating conflicting claims, *Journal of Mathematical Economics*, 48, 107-114, 2012.

J.L. Hougaard and M. Tvede, n-Person nonconvex bargaining: efficient proportional solutions, *Operations Research Letters*, 38, 536-538, 2010.

J.L.Hougaard and L.P. Østerdal, Monotonicity of social welfare optima, *Games and Economic Behavior*, 70, 392-402, 2010.

J.L. Hougaard, H. Moulin and L.P. Østerdal, Decentralized pricing in minimum cost spanning trees, *Economic Theory*, 44, 293-306, 2010.

J.L. Hougaard and M. Tvede, Selling digital music: business models for public goods, *Netnomics*, 11, 85-102, 2010.

J.L. Hougaard and L.P. Østerdal, Decreasing serial cost sharing: an axiomatic characterization, *International Journal of Game Theory*, 38, 469-479, 2009.

J.L. Hougaard and J. Tind, Cost allocation and convex data envelopment, *European Journal of Operational Research*, 194, 939-947, 2009.

J.L. Hougaard and L.P. Østerdal, Inequality preserving rationing, *Economics Letters*, 87, p. 355-360, 2005.

J.L. Hougaard, B. Peleg and L.P. Østerdal, The Dutta-Ray solution on the class of convex games: A generalization and monotonicity properties, *International Game Theory Review*, 7, 1-12, 2005.

J.L. Hougaard and M Tvede, Nonconvex n-person bargaining: Efficient maxmin solutions, *Economic Theory*, 21, p. 81-95, 2003.

J.L. Hougaard and M Tvede, The existence of maximal elements: Generalized lexicographic relations, *Journal of Mathematical Economics*, 36, p. 111-115, 2001.

J.L. Hougaard and L. Thorlund-Petersen, Mixed serial cost sharing, *Mathematical Social Sciences*, 41, p. 51-68, 2001.

J.L. Hougaard, B. Peleg and L. Thorlund-Petersen, On the set of Lorenz maximal imputations in the core of a balanced game; *International Journal of Game Theory*, 30, p. 147-165, 2001.

J.L. Hougaard and L. Thorlund-Petersen, The stand-alone test and decreasing serial cost sharing; *Economic Theory*, 16, p. 355-362, 2000.

## **Efficiency Measurement and Benchmarking**

Hatami-Marbini, A., Z.G. Beigi, J.L. Hougaard and K. Gholami, Measurement of returns to scale using Data Envelopment Analysis, *Computers and Industrial Engineering*, In Press.

M. Asmild, T. Balezentis, and J.L. Hougaard, Multi-directional productivity change: MEA-Malmquist, *Journal of Productivity Analysis*, In Press.

- H. Fukuyama, J.L. Hougaard, K. Sekitani and J. Shi, Efficiency measurement with nonconvex free disposal hull technology, *Journal of the Operational Research Society*, 67, 9-19, 2016.
- M. Asmild, T. Balezentis and J.L. Hougaard, Multi-Directional Program Efficiency: The case of Lithuanian family farms, *Journal of Productivity Analysis*; 45, 23-33, 2016.
- J.L. Hougaard and T. Balezentis, Fuzzy efficiency without convexity, *Fuzzy Sets and Systems*, 225, 17-29, 2014.
- M. Asmild, J.L. Hougaard and D. Kronborg, Do efficiency scores depend on input mix? A statistical test and empirical illustration, *Annals of Operations Research*, 211, 37-48, 2013.
- M. Asmild, J.L. Hougaard and O.B. Olesen, Testing over-representation of observations in subsets of a DEA technology, *European Journal of Operational Research*, 230, 88-96, 2013.
- M. Asmild, P. Bogetoft and J.L. Hougaard, Rationalising inefficiency: Staff utilization in branches of a large Canadian bank, *OMEGA: The International Journal of Management Science*, 41, 80-87, 2013.
- M. Asmild, T. Holvad, J.L. Hougaard and D. Kronborg, Railway reforms: Do they influence operating efficiency? *Transportation*, 36, 617-638, 2009.
- M. Asmild, P. Bogetoft and J.L. Hougaard, Rationalising DEA estimated inefficiencies, *Zeitschrift für Betriebswirtschaft*, Special Issue 4, 2009.
- M. Asmild and J.L. Hougaard, Economic vs. environmental improvement potentials of Danish pig farms, *Agricultural Economics*, 35, 171-181, 2006.
- J.L. Hougaard, A simple approximation of productivity scores of fuzzy production plans, *Fuzzy Sets and Systems*, 152, p. 455-465, 2005.
- T. Holvad, J.L. Hougaard, D. Kronborg and H.K. Kvist, Measuring inefficiency in the Norwegian Bus industry using Multi-directional Efficiency Analysis, *Transportation*, 31, p. 349-369, 2004
- J.L. Hougaard and H. Keiding, Continuous Benchmark Selections, *Operations Research Letters*, 32, p. 94-98, 2004.
- P. Bogetoft and J.L. Hougaard, Super efficiency evaluations based on potential slack, *European Journal of Operational Research*, 152, p. 14-21, 2004.
- M. Asmild, J.L. Hougaard, D. Kronborg and H.K. Kvist, Measuring inefficiency via potential improvements, *Journal of Productivity Analysis*, 19, p. 59-76, 2003.
- P Bogetoft and J.L. Hougaard, Rational inefficiencies, *Journal of Productivity Analysis*, 20, 243-271, 2003.

J.L. Hougaard and M. Tvede, Benchmark selection: An axiomatic approach, *European Journal of Operational Research*, 137, p. 218-228, 2002.

P.Bogetoft and J.L. Hougaard, Efficiency evaluations based on potential (non-proportional) improvements; *Journal of Productivity Analysis*, 12 , p. 233-247, 1999.

F.Christensen, J.L. Hougaard and H. Keiding, An axiomatic characterization of efficiency indices; *Economics Letters*, 63, p. 33-37, 1999.

J.L. Hougaard, Fuzzy efficiency scores, *European Journal of Operational Research*, 115, p. 529-541, 1999.

J.L. Hougaard and H.Keiding, On the functional form of an efficiency index; *Journal of Productivity Analysis*, 9 p. 103-111, 1998.

## **Decision Making and Decision Support**

C. Franco, J.L. Hougaard and K. Nielsen, Learning preferences and attitudes by multi-criteria overlap dominance and relevance functions, *Applied Soft Computing*, In Press

J.L. Hougaard and A. Smilgins, Risk capital allocation with autonomous subunits: The Lorenz set, *Insurance: Mathematics and Economics*, 67, 151-157, 2016.

J.L. Hougaard, K. Nielsen and A. Papakonstantinou, A sealed bid two-attribute yardstick auction without prior scoring, *Group Decision and Negotiation*, 25, 827-843, 2016.

C. Franco, M. Bojesen, J.L. Hougaard and K. Nielsen, A fuzzy approach to multiple criteria and geographical information system for decision support on suitable locations for biogas plants, *Applied Energy*, 140, 304-315, 2015.

J.L.Hougaard and K. Nielsen, Weighted Overlap Dominance – A procedure for interactive selection on multidimensional interval data, *Applied Mathematical Modelling*, 35, 3958-3969, 2011.

J.L. Hougaard and H. Keiding, Rawlsian maximin, Dutch books, and non-additive expected utility, *Mathematical Social Sciences*, 50, 239-251, 2005.

J.L. Hougaard and H. Keiding, Rawls og moderne beslutningsteori, *Nationaløkonomisk Tidsskrift*, 141, p. 387-399, 2003 (in Danish).

J.L. Hougaard, L. Thorlund-Petersen and L.P. Østerdal, Mængderabatter, *Ledelse og Erhvervsøkonomi*, 2/2001, p. 109-121, 2001 (in Danish).

J.L. Hougaard and H. Keiding, Representation of preferences on fuzzy measures by a fuzzy integral, *Mathematical Social Sciences*, 31, p. 1-17, 1996.

J.L. Hougaard and L. Møller, På Kant med Rawls, *Nationaløkonomisk Tidsskrift*, 130, p. 370-378, 1992 (in Danish).

## **Health Economics**

J.L. Hougaard, J.D. Moreno-Ternero and L.P. Østerdal, On the measurement of the (multidimensional) inequality of health distributions, *Research on Economic Inequality*, Vol. 21, 111-131, 2013

J.L.Hougaard, J.D. Moreno-Ternero and L.P. Østerdal, A new approach to the evaluation of population health, *Journal of Health Economics*, 32, 515-523, 2013.

J.L. Hougaard, T. Tjur and L.P. Østerdal, On the meaningfulness of testing preference axioms in stated preference discrete choice experiments, *European Journal of Health Economics*, 13, 409-417, 2012.

J.L.Hougaard, L.P. Østerdal and Y. Yu, The Chinese health care system: Structure, problems and challenges, *Applied Health Economics and Health Policy*, 9, 1-13, 2011.

J.L. Hougaard, J.M. Kolind and L.P. Østerdal, Danske lægers turnusordning, *Nationaløkonomisk Tidsskrift*, 145, 2007. (in Danish)

J.L. Hougaard and C. Overgård, Frontier estimation methods as management tools in health care production: a case of staff utilization in Danish Orthopaedic surgery units, *Nationaløkonomisk Tidsskrift*, 144, 377-392. 2006

J.L. Hougaard and C. Overgård, A note on health care productivity with uncertain data, *Health Care Management Science*, 9, 93-100, 2006.

J.L. Hougaard and H. Keiding, On the aggregation of health status measures, *Journal of Health Economics*, 24, 1154-1173, 2005.

J.L. Hougaard, C. Overgaard and D. Kronborg, Improvement potential in Danish elderly care, *Health Care Management Science*, 7, p. 225-235, 2004.

B. Hansen, J.L. Hougaard, H. Keiding and L.P. Østerdal, On the possibility of a link between CBA and CEA: Comments on a paper by Dolan and Edlin, *Journal of Health Economics*, 23 p. 887-898, 2004.

## **Books (Total of 3)**

J.L. Hougaard, Allocation in Networks, MIT Press (to appear)

J.L. Hougaard, An Introduction to Allocation Rules, Springer, 2009.

F. Christensen, P. Fristrup and J.L. Hougaard, Produktivitetsanalyser; DJØF-forlag 1991 (in Danish).

## Other Publications (Total of 14)

L.G. Hansen and J.L. Hougaard, Omkostningseffektiv miljøpolitik på affaldsområdet - papir- og glasaffald til genanvendelse; Miljø & Teknik, 8, p.251-256, 1993 (in Danish).

L.G. Hansen and J.L. Hougaard, Efficient recycling of household waste, Nordic Journal of Environmental Economics, 1993.

L.G. Hansen and J.L. Hougaard, Efficient indsamling af papir og glasaffald til genanvendelse, SØM-rapport, 1993 (in Danish)

J.L. Hougaard, Produktivitetsanalyse af dansk el-distribution, AKF-rapport, 1994 (in Danish)

J.L. Hougaard, Six Essays on Performance Evaluation, Ph.D. thesis, Department of Economics, University of Copenhagen, 1994.

M. Asmild, J.L. Hougaard and D. Kronborg, A method for comparison of efficiency scores: A case study of Danish dairy farms; in Helles et al. (Eds): Multiple use of forests and other natural resources, Kluwer, 1999.

J.L. Hougaard and C. Overgård, Ressourcerne kan udnyttes bedre på ældreområdet, Social Forskning, Temanummer marts 2003, Social Forsknings Institutet (in Danish).

J.L. Hougaard, Neoklassisk produktionsteori, Kapitel 3 i Lorenzen, Friis & Vamosi (red.) "Erhvervsøkonomisk teori", Forlaget Samfundslitteratur, 2004 (in Danish)

J.L. Hougaard, Nobelprisen i økonomi 2012: To matematikere guider den usynlige hånd, Samfundsøkonomen, nr. 2, 2013. (in Danish).

C. Franco, J.L. Hougaard and K. Nielsen, Handling risk attitudes for preference learning and intelligent decision support. Modeling Decisions for Artificial Intelligence: 12th International Conference, MDAI 2015. Proceedings. red. Torra, Narukawa. Springer, 2015. s. 78-89 (Lecture Notes in Computer Science, Vol. 9321).

C. Franco, J.L. Hougaard and K. Nielsen, A procurement decision support mechanism on multi-attribute fuzzy-interval auctions. Proceedings 2016 IEEE World Congress on Computational Intelligence: 2016 IEEE Congress on Evolutionary Computation. 2016. s. 1336-1342.

M. Asmild and J.L. Hougaard, On measuring technological possibilities by hypervolumes; in Pastor et al. (eds), Advances in Efficiency and Productivity, Springer, 2017.

J.L. Hougaard, Sharing the cost of access to a set of public goods; in D. Muller and R. Trost (eds.), Game Theory in Management Accounting, Springer, In Press.

C. Franco, J.L. Hougaard and K. Nielsen, Clustering alternatives and learning preferences based on decision attitudes and weighted overlap dominance. In V. Torra, A. Dahlbom, Y. Narukawa, Fuzzy

sets, rough sets, multisets and clustering, Studies in Computational Intelligence, Vol 671, Springer 2017.