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## EDUCATION

1995, *Ph.D. in Economics*, University of Warwick  
1993, *Lic. Sc. in Economics*, Turku School of Economics and Business Administration  
1990, *M.Sc. in Economics*, Turku School of Economics and Business Administration

## PROFESSIONAL EXPERIENCE

2018 – Present *Director*, Helsinki Graduate School of Economics.  
2017 – Present *Professor*, Dept. of Economics, Aalto University School of Business.  
2010 – 2016 *Professor*, Dept. of Managerial Economics, Strategy and Innovation, KU Leuven.  
2004 – 2010 *Director*, Helsinki Center of Economic Research (HECER), University of Helsinki, and Finnish Doctoral Programme in Economics (FDPE).  
2003 - 2004 *Professor of Technology Management and Policy*, Helsinki School of Economics (HSE).  
1999-2003 *Acting Professor of Technology Management and Policy*, HSE.  
1998-2003 *Assistant Professor of Economics*, HSE .  
1997-1999 *Senior Research Fellow*, Academy of Finland and HSE.  
1994-1997 *Research Fellow*, Warwick Business School

## VISITING POSITIONS

2016 – Present *Visiting Professor*, Dept. of Managerial Economics, Strategy and Innovation, KU Leuven.  
2015 – 2017 *Visiting Professor*, Dept. of Economics, Aalto University School of Business.  
2003 – 2004 *Visiting Scholar*, Dept. of Economics, University of Berkeley, California.  
1999 *Visiting Fellow*, National Bureau of Economic Research.  
1998 – 1999 *Visiting Scholar*, Massachusetts Institute of Technology, Dept. of Economics.

## OTHER ACADEMIC POSITIONS

- MaCCI Research Associate 2017-.
- ZEW Research Associate 2013 -.
- Bank of Finland Research Fellow 2011 -2016.
- CEPR Research Fellow 2009 - .
- Associate/Senior Research Fellow, Research Institute of the Finnish Economy (ETLA), 2002-.
- Docent, Turku School of Economics and Business Administration, 2001-.
- Research Fellow, Warwick Business School, University of Warwick, 1997-.

## TEACHING

- Ph.D.: Empirical Industrial Organization, Applied Microeconometrics, Microeconometrics.
- M.Sc.: Economics of Technological Innovation, Microeconomics of Banking, Economics of Network Industries, Network economics and digital markets.
- B.A.: Economics of Strategy/ Industrial Organization, Management of Technology, Managerial Economics, Econometrics.

## PUBLICATIONS AND RESEARCH

### Articles in Refereed Journals

- Ari Hyytinen, Frode Steen and O. Toivanen, 2019. Anatomy of cartel contracts. *Economic Journal*, forthcoming.
- A. Hyytinen, Frode Steen and O. Toivanen, 2018. Cartels uncovered. *American Economic Journal: Microeconomics*, 10, 4, 1-35.
- A. Hyytinen, Jaakko Meriläinen, Tuukka Saarimaa, O. Toivanen and Janne Tukiainen, 2018. When does Regression discontinuity design work? Evidence from random election outcomes. *Quantitative Economics*, 9, 2, July 2018.
- Ari Hyytinen and Sofia Lundberg and O. Toivanen, 2018. Design of public procurement auctions: Evidence from cleaning contracts, *RAND Journal of Economics*, 49, 2, 398-426.
- A. Hyytinen, J. Meriläinen, T. Saarimaa, O. Toivanen and J. Tukiainen, 2018. Public employees as politicians: Evidence from close elections. *American Political Science Review*, 112, 1, 68-81.
- O. Toivanen and Lotta Väänänen, 2016. Education and invention. *The Review of Economics and Statistics*, 98, 2, 382-396.
- Maija Gao, Ari Hyytinen and O. Toivanen, 2014. Problems in launching the mobile internet: Evidence from a pricing experiment. *Journal of Economics and Management Strategy*, 23, 3, 483-506.
- Tuomas Takalo, Tanja Tanayama and O. Toivanen, 2013. Market failures and the additional effects of public support to private R&D: Theory and empirical implications. *International Journal of Industrial Organization*, 2013, 31, 634-642.
- T. Takalo, T. Tanayama and O. Toivanen, 2013. Estimating the benefits of targeted R&D subsidies. *The Review of Economics and Statistics*, 95, 1, 255-272.
- A. Hyytinen, Pekka Ilmakunnas and O. Toivanen, 2013. The return-to-entrepreneurship puzzle. *Labour Economics*, 20, 57-67.
- O. Toivanen and L. Väänänen, 2012. Returns to inventors. *The Review of Economics and Statistics*, 94, 4, 1173-1190.
- T. Takalo and O. Toivanen, 2012. Entrepreneurship, financiership, and selection. *Scandinavian Journal of Economics*, 114, 2, 601-628.
- A. Hyytinen and O. Toivanen, 2011. Income inequality and technology diffusion: Evidence from developing countries. *Scandinavian Journal of Economics*, 113, 2, 364-387.
- A. Hyytinen and O. Toivanen, 2005. Do financial constraints hold back innovation and growth? Evidence on the role of public policy. *Research Policy*, 34, 9, 1385-1403.
- O. Toivanen and Michael Waterson, 2005. Market structure and entry: Where's the beef? *RAND Journal of Economics*, 36, 3, 680-699.

- Jukka Liikanen, Paul Stoneman, and O. Toivanen, 2004. Intergenerational effects in the diffusion of new technology: The case of mobile phones. *International Journal of Industrial Organization*, 22, 8-9, 1137-1154.
- A. Hyytinen and O. Toivanen, 2004. Monitoring and market power in credit markets. *International Journal of Industrial Organization*, 22, 2, 269-288.
- A. Hyytinen and O. Toivanen, 2004. Vertical differentiation, asymmetric information and endogenous bank screening. *B.E Journals in Economics: Topics in Theoretical Economics*, 4, 1, Article 5.  
<http://www.bepress.com/bejte/topics/vol4/iss1/art5>
- A. Hyytinen and O. Toivanen, 2003. Asymmetric information and the market structure in the venture capital industry. *Journal of Financial Services Research*, 23, 3, 241-249.
- O. Toivanen, P. Stoneman, and Derek Bosworth, 2002. Innovation and the market value of UK firms, 1989-1995. *Oxford Bulletin of Economics and Statistics*, 64, 1, 39-62.
- Robert Cressy and O. Toivanen, 2001. Is there adverse selection in the credit market? *Venture Capital: An International Journal of Entrepreneurial Finance*, 3, 3, 215-238.
- P. Stoneman and O. Toivanen, 2001. The impact of revised recommended accounting practices on R&D reporting by UK firms. *International Journal of the Economics of Business*, 8, 1, 123-136.
- O. Toivanen and M. Waterson, 2000. Empirical research on discrete choice game-theoretic models of entry: an illustration. *European Economic Review, Papers and Proceedings*, 44, 4-6, 985-992. Reprinted in Joskow, P. and Waterson, M. (eds.) *Empirical industrial organization*. Volume 1, 2004, 107-14, Elgar Reference Collection. *International Library of Critical Writings in Economics*, vol. 172. Cheltenham, U.K. and Northampton, Mass. Edgar Elgar.
- O. Toivanen and P. Stoneman, 1998. Dynamics of R & D and investment: UK evidence. *Economics Letters*, 58, 119-126.
- O. Toivanen, 1997. Economies of scale and scope in the Finnish non-life insurance industry. *Journal of Banking and Finance*, 21, 759-779.
- P. Stoneman and O. Toivanen, 1997. Diffusion of multiple technologies: an empirical study. *Economics of Innovation and New Technology*, 5, 1-17.

#### Books

- Paul Diederer, P. Stoneman, O. Toivanen and Arjan Wolters, 1999. *Innovation and Research Policies: An International Comparative Analysis*. Edward Elgar Publishing Ltd.

#### Chapters in Books

- O. Toivanen, 2011. Innovation Policy, Entrepreneurship, and Development: A Finnish View. In M. Goedhuys, W. Naudé and E. Szirmai (eds.), *Innovation, Entrepreneurship and Development*, Oxford University Press.
- P. Stoneman and O. Toivanen, 2007. Technological diffusion under Uncertainty: A Real Options Model Applied to the International Diffusion of Robot Technology. In C. Antonelli, D. Foray, E. Steinmuller, P. Swann (eds.), *New Frontiers in the Economics of Innovation: Essays in Honour of Paul David*, Edward Elgar.
- O. Toivanen, P. Stoneman and P. Diederer, 1999. Uncertainty, macroeconomic volatility and investment in new technology. In C. Driver and P. Temple (eds.), *Investment, Growth and Employment: Perspectives for Policy*, Routledge.



## Other Selected Publications

- Philippe Aghion, Ufuk Akcigit, A. Hyttinen and O. Toivanen, 2018. On the returns to invention within firms: evidence from Finland, *American Economic Association Papers and Proceedings*, 108, 208-212.
- T. Takalo and O. Toivanen, 2015. Economics of innovation policy. *Nordic Economic Policy Review*, 2, 65-90.
- A. Hyttinen and O. Toivanen, 2011. Kartellivahinkojen arviointi. *Kilpailuoikeudellinen vuosikirja*.
- A. Hyttinen and O. Toivanen, 2010. Kilpailunrajoitukset Suomessa 1958-1992. *Kansantaloudellinen aikakauskirja*, 2, 127-140.
- O. Toivanen, Reinhilde Veugelers, T. Tanayama, Education, 2009. Research and the Economy. In *Evaluation of the Finnish National Innovation System – Full Report*. Taloustieto/ Ministry of Education and Ministry of Employment and Industry.
- O. Toivanen, 2008. National innovation policy in an international world – perspectives from Finland. In M. Squicciarini and T. Loikkanen (eds.), *Going Global: The challenges for knowledge-based economies*, Publications of the Ministry of Employment and the Economy, Innovation 20/2008.
- Luke Georghiou, Keith Smith, O. Toivanen and Pekka Ylä-Anttila, 2003. Evaluation of the Finnish innovation support system. Ministry of Trade and Industry publications 5/2003.

## Recent and On-Going Research

- Welfare effects of R&D support policies (with Tuomas Takalo and Tanja Tanayama).
- Innovation policy reform (with Dirk Czarnitzki, Elena Huergo, Mila Köhler, Pierre Mohnen and Tuomas Takalo).
- Social origins of inventors (with Ufuk Akcigit, Philippe Aghion and Ari Hyttinen).

## Other Academic Activities

### Positions of Trust:

- Member, Research Council of European University Institute, 2018-.
- Member, Steering Committee, Nordic Initiative for Corporate Economics, 2017-.
- Chair, Scientific Council of VATT Institute for Economic Research, 2016-.
- Member, Scientific Committee, TILEC conference on Competition, Standardization and Innovation, 2015-.
- Member, Organization Committee, CEPR conference on Moving to the Innovation Frontier, 2015.
- Member, Scientific Committee, ZEW/Mannheim Conference on Economics of Innovation and Patenting 2015-.
- Member, European Research Council, panel for consolidator grants 2014, 2016.
- Member, Organization Committee, CEPR and Bank of Finland conference on Entrepreneurial Finance, Innovation and Growth, 2014.
- Member, Expert Group for Programme Monitoring and Evaluation, European Research Council 2014-2015.
- Member, Economic Advisory Group on Competition Policy, EU Commission, DG Competition 2013-.
- Member, evaluation group for economics research proposals, Yrjö Jahansson Foundation, 2010-2015.
- Chair, Scientific Committee, EARIE 2010.
- Member, Scientific Council of the Government (VATT) Institute for Economic Research, 2010-2012.
- Member, Scientific Council of Statistics Finland 2007-2011.
- Member, Economic Council of the Finnish Ministry of Finance, 2005-2010.
- Member, Scientific Council of the Research Institute of the Finnish Economy (Etlä), 2005-2010.
- Member, Organization Committee, CEPR Conference on Industrial Economics, 2005-2016.
- Member, Scientific Committee of EARIE, 2004-2018, ESEM 2008, 2009, EEA 2001.
- Member, Executive Committee of EARIE, 2003-2009.
- Member, Local Organization Committee, EARIE 2003, Helsinki.

### Editorial Service:

- Associate editor, *International Journal of Industrial Organization*, 2017-.
- Editor, *Kansantaloudellinen Aikakauskirja* (Finnish Economic Journal), 2005-2010.
- Associate editor, *Journal of Industrial Economics*, 2004-2009.
- Editor, *Finnish Economic Papers*, 2005-2006.
- Associate editor, *Finnish Economic Papers*, 2002-2005.
- Evaluation of research proposals: NSF, EU FP7, ESRC, ERC, Riksbank Foundation.



### Referee for:

American Economic J.: Applied Economics, AEJ: Microeconomics, American Economic Review, Applied Economics, BE J. of Economic Analysis and Policy, Cambridge University Press, Econometrica, Economics of Innovation and New Technology, Economic J., European Economic Rev., Finnish Economic Papers, Industrial and Corporate Change, Information Economics and Policy, Intl. Economic Rev., Intl. J. of Industrial Organization, Intl. J. of Technology Management, Intl. Rev. of Economics and Finance, J. of Banking and Finance, J. of Business and Economics, J. of Business Venturing, J. of Economic Behavior and Organization, J. of Economic Surveys, J. of Economics and Management Strategy, J. of European Economic Association, J. of Industrial Economics, J. of Media Economics, J. of Regulatory Economics, J. for the Scientific Study of Religion, Management Science, Metroeconomica, Quarterly J. of Economics, RAND J. of Economics, Regional Studies, Reinvention, Research Policy, Rev. of Economics and Statistics, Rev. of Economic Studies, Rev. of Industrial Organization, Scientometrics, Small Business Economics.

### Invited Presentations at Conferences:

- Nordic Health Economics Study Group 2017, EARIE 2012, DRUID 2012, EEA 1999.

### Invited Seminar Presentations at:

- Warwick, Bergen, Boston U., Stockholm SSE, WZB Berlin, Barcelona, Princeton, Michigan, Yale, MIT, Stanford, Stanford SITE, UC Berkeley, UC Davis, LSE, Leuven, Umeå, NBER IO, Productivity & IEP programs, Bern, Toulouse, Tel Aviv, Hebrew U., U. of Cyprus, Bocconi, Oxford, Alicante, Zürich, Antwerp, Mannheim/MACCI, Helsinki, Stockholm U., Aachen, EIEF Rome, Toronto, IFN, LMU München, DIW, Maastricht, CEPR IO Meetings in Toulouse, Bergen, München and Mannheim.

### Congress Presentations at:

- EARIE 1993, 1994, 2002, 2004 - 2009, 2013, 2015, EEA 1994, 1996, 1999, 2002, ESEM, 1996, 1997, Econometric Society Summer Meetings 1997, Royal Economic Society 1994-97, Econometric Society World Meeting 1995, 2000, Economic Society Winter Meeting 2016, International Industrial Organization Conference, 2004, 2005, and others.

### Other Professional Service:

- Examiner and/or pre-examiner on >10 Ph.D. theses (Helsinki U. Tech., Uppsala U., NHH Bergen, HSE, Åbo Akademi U., U. of Helsinki, KU Leuven, U. of Vaasa, Tor Vergata).

## NON-ACADEMIC ACTIVITIES

### Public Sector Consulting

Finnish Technology Agency (Tekes), Ministry of Trade and Industry/Ministry of Employment and Industry, Ministry of Social Affairs and Health, European Commission, DG Industry and Enterprise, DG Economics and Finance, DG Competition, European Investment Bank.

Private sector consulting on competition cases, pricing.

## MAJOR RESEARCH GRANTS SINCE 2005

- 2017 – 200,000€ Pharmaceutical prices, entry into pharmaceutical markets, and regulation (joint with Oskari Nokso-Koivisto, Mika Kortelainen, Tanja Saxell), the Social Insurance Foundation of Finland (Kela).
- 2012 - 1.7M€ SIMPATIC “Social Impact Policy Analysis of Technological Innovation Challenges “ (joint with Reinhilde Veugelers, Paul Zagame), EUFP7.
- 2008 – 400,000€ “Economic studies using twin data” (joint with Ari Hyytinen and Pekka Ilmakunnas) Academy of Finland.
- 200,000€ “Economics of public procurement” (joint with Ari Hyytinen and Janne Tukiainen) Eemil Aaltonen Foundation.
- 2007 – 300,000€ “Structural modeling of the R&D subsidy process II” (joint with Tuomas Takalo and Tanja Tanayama) National Technology Agency of Finland (Tekes).
- 2005 – 280,000€ “Structural modeling of the R&D subsidy process” (joint with Tuomas Takalo and Tanja Tanayama), Tekes.
- 2005 – 256,020€ “Cartel organization” (joint with Ari Hyytinen and Susanna Fellman) Academy of Finland. Total value of major research grants prior to 2005 circa 1,000,000€. Several smaller grants since 2005.

