

Research Profile

My portfolio of research activities and outputs, which can be grouped under the general heading "Science and the Knowledge-base Economy", is characterized by a range of interests focusing on statistical analyses and empirical studies of science and R&D performance within an economic frame of reference while focusing on quantitative measurements of inputs, processes, as well as outputs. The research activities during the last 10 years comprise the following four broad areas of interest:

(1) Science-innovation linkages, university-industry R&D networks, and science-based industry

Most of my studies are based on an analytical approach involving statistical models, R&D statistics and indicators, applications of the R&D output-oriented 'scientometric' methodology that derives its information mainly from research articles or patents. Occasionally, these data are supplemented by information gathered with dedicated surveys that were administered within the R&D community.

Selected publications

- Tijssen, R.J.W., *Corporate webs of science: measuring and mapping research partnership networks within the European pharmaceutical industry*. In: Malerba F. and N. Vonortas (Eds.), *Networks for innovation in industries: A multidimensional exploration*, Edgar Elgar Publishers (forthcoming, 2009).
- Calero, C., T.N. Van Leeuwen and Tijssen, R.J.W., Research cooperation within the bio-pharmaceutical industry: network analyses of co-publications within and between firms *Scientometrics*, 71, 87-99, 2007.
- Tijssen, R.J.W, Universities and industrially relevant science: towards measurement models and indicators of entrepreneurial universities, *Research Policy*, 35, 1569-1585, 2006.
- Van Looy, B., K. Debackere, J. Callaert, R.J.W. Tijssen, and T.N. Van Leeuwen, Scientific capabilities and technological performance of national innovation systems: an exploration of emerging industrial relevant research domains, *Scientometrics*, 66, 295-310, 2006.
- Tijssen, R.J.W and T.N. Van Leeuwen, Measuring impacts of academic science on industrial research: a citation-based approach, *Scientometrics*, 66, 55-69, 2006.
- Tijssen, R.J.W., *Commercialisation of corporate science and the production of research articles*, In: Green, K., Moizz, M. and P. Dewick (Eds.), *Technology, Knowledge and the firm: Implications for Strategy and Industrial Change*, pages 223-249, Edward Elgar Publishing, ISBN 1843768771, 2005.
- Tijssen, R.J.W., Is the commercialisation of scientific research affecting the production of public knowledge? Global trends in the output of corporate research articles, *Research Policy*, 33(5), 709-733, 2004.
- Tijssen, R.J.W., Science dependence of technologies: evidence of inventions and their inventors, *Research Policy*, 31 (4), 509-526, 2002.
- Tijssen, R.J.W., Global and domestic utilization of industrial relevant science: patent citation analysis of science-technology interactions and knowledge flows, *Research Policy*, 30, 35-54, 2001.
- Tijssen, R.J.W., R.K. Buter and Th.N. Van Leeuwen, Technological relevance of science: validation and analysis of citation linkages between patents and research papers, *Scientometrics*, 47, 389-412, 2000.
- Tijssen, R.J.W, Quantitative assessment of large heterogeneous R&D networks: the case of process engineering in the Netherlands, *Research Policy*, 26, 791-809, 1998.

Tijssen, R.J.W. en J.C. Korevaar, Unravelling the cognitive and institutional structure of public/private R&D networks: a case study of catalysis research in the Netherlands, *Research Policy*, 25, 1277-1293, 1997.

Tijssen, R.J.W., Th.N. Van Leeuwen en J.C. Korevaar, Scientific publication activity of industry in the Netherlands, *Research Evaluation*, 6, 1-15, 1996.

(2) Research assessment, monitoring and evaluation

These studies usually involve the quantitative measurements based on the scientometric methodology. The analytical focus is often on research outputs, identifying and analyzing patterns in research collaboration, or determining the scientific impact of research outputs and scientific excellence.

Selected publications

Jonkers K. and Tijssen, R.J.W., Chinese researchers returning home: impacts of international mobility on research cooperation and scientific productivity, *Scientometrics*, 77, 299-323, 2008.

Gillespie, I., M., Rosenmoller, R.J.W. Tijssen, C. Edquist and F. Sauer, *The Innovative Medicines Initiative: Assessment of Economical and Societal Impact*, Report by IMI Impact Assessment Expert Group to the European Commission/DG Research, Brussels, 2007.

Tijssen, R.J.W., Scoreboards of research excellence, *Research Evaluation*, 12 (2), 91-104, 2003.

Tijssen, R.J.W., M.S. Visser and T.N. van Leeuwen. Benchmarking international scientific excellence: are highly cited research papers an appropriate frame of reference? *Scientometrics*, 54 (3) 381-397, 2002.

Winkel-Schwarz, A., Schwarz, S. en R.J.W. Tijssen, Research and research impact of a technical university: a bibliometric study, *Scientometrics*, 41, 371-388, 1998.

Tijssen, R.J.W. en A.F.J. Van Raan, Mapping changes in science and technology: Bibliometric co-occurrence analysis of the R&D literature, *Evaluation Review*, 18, 98-115, 1994.

Luukkonen, T., R.J.W. Tijssen, O. Persson en G. Sivertsen, The measurement of international scientific collaboration, *Scientometrics*, 28, 15-36, 1993.

Tijssen, R.J.W., A quantitative assessment of interdisciplinary structures in science and technology: co-classification analysis of energy research. *Research Policy*, 21, 27-44, 1992.

Moed, R.E. De Bruin, A.J. Nederhof en R.J.W. Tijssen. International scientific co-operation and awareness within the European Community: problems and perspectives *Scientometrics*, 21, 291-311, 1991.

(3) Science and Technology Indicators

As coordinator of the Netherlands Observatory of Science and Technology I have been responsible for a continuing series of Science and Technology Indicators Reports for Netherlands government. Other published contributions involve the development and application of R&D statistics and performance indicators to address specific policy issues of domestic or international relevance.

Selected publications

Tijssen, R.J.W., H. Hollanders, Th.N. Van Leeuwen, and A.J Nederhof, *Science and Technology Indicators 2008*. Netherlands Observatory of Science and Technology, 2008.

- Tijssen, R.J.W. and H. Hollanders, *Using Science and Technology Indicators to support knowledge-based economies*, United Nations University Policy Brief, Number 11, ISBN-13 978-92-808-3030-9, 2006.
- Tijssen, R.J.W., H. Hollanders, Th.N. Van Leeuwen, and A.J Nederhof, *Science and Technology Indicators 2005*. Netherlands Observatory of Science and Technology, 2005.
- Tijssen, R.J.W., *Measuring and evaluating science-technology interactions: towards international statistics*. In: H. Moed, W. Glänzel and U. Schmoch (Eds.), *Handbook of Quantitative Science and Technology Research: The use of publication and patent statistics in studies on S&T Systems*. pp. 695-716, Dordrecht: Kluwer Academic Publishers, 2004.
- Tijssen, R.J.W., H. Hollanders, Th.N. Van Leeuwen, and A.J Nederhof, *Science and Technology Indicators 2003*. Netherlands Observatory of Science and Technology, 2003.
- Tijssen, R.J.W., Th.N. Van Leeuwen and A.F.J. van Raan, *Mapping the scientific performance of German medical research: an international comparative bibliometric study*, Stuttgart: Schattauer Verlag, ISBN 3-7945-2161-7, 2002.
- Tijssen, R.J.W., H. Hollanders, Th.N. Van Leeuwen, and B. Verspagen, *Science and Technology Indicators 2000*. Netherlands Observatory of Science and Technology, 2000.
- Tijssen, R.J.W. and E. van Wijk, In search of the European Paradox: an international comparison of Europe's scientific performance and knowledge flows in ICT research, *Research Policy*, 28, 519-543, 1999.
- Tijssen, R.J.W., H. Hollanders, Th.N. Van Leeuwen, and B. Verspagen, *Science and Technology Indicators 1998*. Netherlands Observatory of Science and Technology. ISBN 90-75023-06-5, 1998.
- Tijssen, R.J.W., Th.N. Van Leeuwen, M. Van Essen and B. Verspagen, *Science and Technology Indicators 1996*, Netherlands Observatory of Science and Technology. ISBN 90-75023-04-9, 1996.
- Tijssen, R.J.W., Th.N. Van Leeuwen, B. Verspagen and M. Slabbers, *Science and Technology Indicators 1994*, Netherlands Observatory of Science and Technology, ISBN 90-75023-01-4, 1994.

(4) Studies of science systems and research performance in Africa

My visiting Professorship at Stellenbosch University (South Africa) enables me to study and assess the structural characteristics of science systems and research performance in Africa.

Selected publications

- Tijssen, R.J.W., Research rankings, a wake-up call for Africa? *Research Africa*, no 21, 19-21, 26 February 2008.
- Tijssen, R.J.W, Africa's contribution to the worldwide research literature: new analytical perspectives, trends, and performance indicators, *Scientometrics*, 71, 2007.
- Tijssen, R.J.W, J.M. Mouton, T. Van Leeuwen and N. Boshoff, How relevant are local scholarly journals in global science? A case study of South Africa, *Research Evaluation*, 15, 163-174, 2006.