



UNITED NATIONS
UNIVERSITY

UNU-MERIT

Working Paper Series

#2019-053

**Measuring the creation and adoption of new technologies using
trade and patent data**

Neil Foster-McGregor, Önder Nomaler and Bart Verspagen

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)

email: info@merit.unu.edu | website: <http://www.merit.unu.edu>

Boschstraat 24, 6211 AX Maastricht, The Netherlands

Tel: (31) (43) 388 44 00

UNU-MERIT Working Papers

ISSN 1871-9872

Maastricht Economic and social Research Institute on Innovation and Technology

UNU-MERIT

UNU-MERIT Working Papers intend to disseminate preliminary results of research carried out at UNU-MERIT to stimulate discussion on the issues raised.

The UNU-MERIT WORKING Paper Series

- 2019-01 *From "destructive creation" to "creative destruction": Rethinking Science, Technology and innovation in a global context* by Luc Soete
- 2019-02 *Do young innovative companies create more jobs? Evidence from Pakistani textile firms* by Waqar Wadho, Micheline Goedhuys and Azam Chaudhry
- 2019-03 *What gains and distributional implications result from trade liberalization?* by Maria Bas and Caroline Paunov
- 2019-04 *FDI, multinationals and structural change in developing countries* by André Pineli, Rajneesh Narula and Rene Belderbos
- 2019-05 *The race against the robots and the fallacy of the giant cheesecake: Immediate and imagined impacts of artificial intelligence* Wim Naudé
- 2019-06 *The middle-technology trap: The case of the automotive industry in Turkey* by Ibrahim Semih Akçomak and Serkan Bürken
- 2019-07 *The impact of a mathematics computer-assisted learning platform on students' mathematics test scores* by Marcelo Perera and Diego Aboal
- 2019-08 *Health insurance and self-employment transitions in Vietnam* by Nga Le, Wim Groot, Sonila M. Tomini and Florian Tomini
- 2019-09 *Knowledge economy and economic development in the Arab region* by Samia Mohamed Nour
- 2019-10 *Migration of higher education students from the North Africa region* by Samia Mohamed Nour
- 2019-11 *Job automation risk, economic structure and trade: a European perspective* by Neil Foster-McGregor, Önder Nomaler and Bart Verspagen
- 2019-12 *The breadth of preferential trade agreements and the margins of exports* by Rod Falvey and Neil Foster-McGregor
- 2019-13 *What a firm produces matters: diversification, coherence and performance of Indian manufacturing firms* by Giovanni Dosi, Nanditha Mathew and Emanuele Pugliese
- 2019-14 *Brazilian exporters and the rise of Global Value Chains: an empirical assessment* by Caio Torres Mazzi
- 2019-15 *How has globalisation affected the economic growth, structural change and poverty reduction linkages? Insights from international comparisons* by Aradhna Aggarwal
- 2019-16 *R&D, innovation and productivity* by Pierre Mohnen
- 2019-17 *Domestic intellectual property rights protection and exports: Accessing the credit channel* by Gideon Ndubuisi
- 2019-18 *The role of early-career university prestige stratification on the future academic performance of scholars* by Mario Gonzalez-Sauri and Giulia Rossello
- 2019-19 *The employment impact of product innovations in sub-Saharan Africa: Firm-level evidence* by Elvis Korku Avenyo, Maty Konte and Pierre Mohnen
- 2019-20 *Embodied and disembodied technological change: the sectoral patterns of job-creation and job-destruction* by G. Dosi, M. Piva, M. E. Virgillito and M. Vivarelli
- 2019-21 *Can we have growth when population is stagnant? Testing linear growth rate formulas and their cross-unit cointegration of non-scale endogenous growth models* by Thomas H.W. Ziesemer

- 2019-22 *Technical progress and structural change: a long-term view* by Alessandro Nuvolari and Emanuele Russo
- 2019-23 *No evidence of an oil curse: Natural resource abundance, capital formation and productivity* by Mueid al Raee, Denis Crombrughe and Jo Ritzen
- 2019-24 *Far from random? The role of homophily in student supervision* by Giulia Rossello and Robin Cowan
- 2019-25 *Semi-endogenous growth models with domestic and foreign private and public R&D linked to VECMs* by Thomas H. W. Ziesemer
- 2019-26 *Characterizing growth instability: new evidence on unit roots and structural breaks in long run time series* by Emanuele Russo, Neil Foster-McGregor and Bart Verspagen
- 2019-27 *Measuring attitudes on gender equality and domestic violence in the Arab context: The role of framing, priming and interviewer effects* by Ann-Kristin Reitmann, Micheline Goedhuys, Michael Grimm and Eleonora E. M. Nillesen
- 2019-28 *Imported intermediates, technological capabilities and exports: Evidence from Brazilian firm-level data* by Caio Torres Mazzi and Neil Foster-McGregor
- 2019-29 *Japan's productivity and GDP growth: The role of GBAORD, public and foreign R&D* by Thomas Ziesemer
- 2019-30 *The decline in entrepreneurship in the West: Is complexity ossifying the economy?* by Wim Naudé
- 2019-31 *Modern industrial policy in Latin America: Lessons from cluster development policies* by Carlo Pietrobelli
- 2019-32 *Testing the employment and skill impact of new technologies: A survey and some methodological issues* by Laura Barbieri, Chiara Mussida, Mariacristina Piva and Marco Vivarelli
- 2019-33 *The Potential for innovation in mining value chains. Evidence from Latin America* by Michiko Iizuka, Carlo Pietrobelli and Fernando Vargas
- 2019-34 *Enforcing higher labour standards within developing country value chains: Consequences for MNEs and informal actors in a dual economy* by Rajneesh Narula
- 2019-35 *A comment on the multifaceted relationship between multinational enterprises and within-country inequality* by Rajneesh Narula and Khadija van der Straaten
- 2019-36 *The effects of R&D subsidies and publicly performed R&D on business R&D: A survey* by Thomas H.W. Ziesemer
- 2019-37 *Does it pay to do novel science? The selectivity patterns in science funding* by Charles Ayoubi, Michele Pezzoni and Fabiana Visentin
- 2019-38 *Regulation and innovation under Industry 4.0: Case of medical/healthcare robot, HAL by Cyberdyne* by Michiko Iizuka and Yoko Ikeda
- 2019-39 *The future of work and its implications for social protection and the welfare state* by Franziska Gassmann and Bruno Martorano
- 2019-40 *Return, circular, and onward migration decisions in a knowledge society* by Amelie F. Constant
- 2019-41 *Mining and quality of public services: The role of local governance and decentralisation* by Maty Konte and Rose Camille Vincent
- 2019-42 *Corruption and tax morale in Africa* by Amadou Boly, Maty Konte and Abebe Shimeles
- 2019-43 *Remittances and Bribery in Africa* by Maty Konte and Gideon Ndubuisi

- 2019-44 *Women's Political and Reproductive Health Empowerment in Africa: A literature review* by Maty Konte, Victor Osei Kwadwo and Tatenda Zinyemba
- 2019-45 *The effect of public funding on scientific performance: A comparison between China and the EU* by Lili Wang, Xianwen Wang, Fredrik Niclas Piro and Niels J. Philipsen
- 2019-46 *Credit constraints and trade performance: Does trust-based social capital matter?* By Gideon Ndubuisi and Maty Konte
- 2019-47 *The impact of mission-oriented R&D on domestic and foreign private and public R&D, total factor productivity and GDP* by Thomas H.W. Ziesemer
- 2019-48 *Confronting the challenge of immigrant and refugee student underachievement: Policies and practices from Canada, New Zealand and the European Union* by Özge Bilgili, Louis Volante, Don A. Klinger and Melissa Siegel
- 2019-49 *Structural transformation in general equilibrium* by Alessio Moro and Carlo Valdes
- 2019-50 *Systemising social innovation initiatives and their regional context in Europe* by René Wintjes, Nordine Es-sadki and Ad Notten
- 2019-51 *Greentech homophily and path dependence in a large patent citation network* by Önder Nomaler & Bart Verspagen
- 2019-52 *Climate shocks, coping responses and gender gap in human development* by Kaleab K. Haile, Nyasha Tirivayi and Eleonora Nillesen
- 2019-53 *Measuring the creation and adoption of new technologies using trade and patent data* by Neil Foster-McGregor, Önder Nomaler and Bart Verspagen