



Atlanta Conference

On Science and Innovation Policy

SEPTEMBER 26-28, 2013 ATLANTA, GEORGIA USA

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Abstracts Booklet





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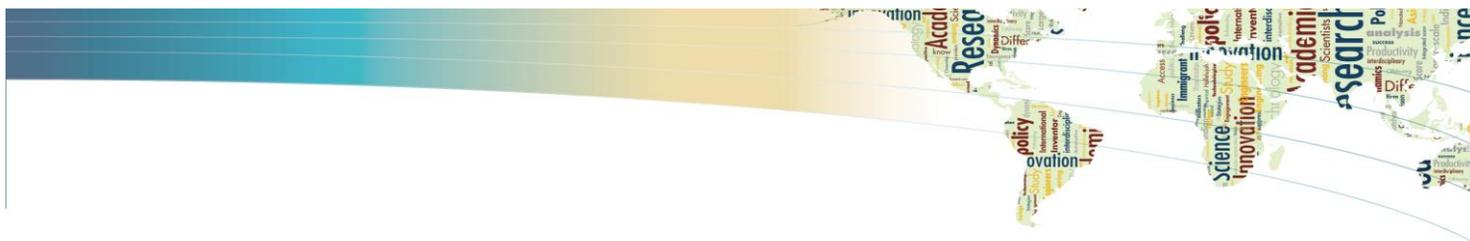


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Thursday, 26th September 2013

SESSION 1: Welcome Remarks

SESSION 2: Opening Plenary: Paula Stephan

“How Economics Shapes Science”

Paula Stephan

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SESSION 3

Session 3.a: Evaluation Frameworks in S&T

Using Netchain Analysis to Explore the Formation of Robust Supply Chains for Innovative Technologies.

Jonathon Mote, Gretchen Jordan, Rosalie Ruegg

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Track: S&T Policies

In this paper, we discuss our work with the DOE’s EERE to develop a framework for evaluating the program’s investments in building robust domestic supply chains in renewable energy technologies. The focus of this evaluation framework is on the *interim steps and conditions and early results* which are expected to be necessary in order for there to be accelerated commercialization and manufacturing in the United States.



The Governance of the Colombian System of Science, Technology and Innovation: Challenges, threats and opportunities.

Monica Salazar

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Track: Global S&T Environment

This paper describes the case of Colciencias and the National System of Science, Technology and Innovation. The objectives pursued are to identify the governance mechanisms that Colciencias has developed, and to evaluate if it can use them, taking into consideration recent changes enforced in institutions, policies, and funding of STI.

Session 3.b: Patents and Patenting in S&T

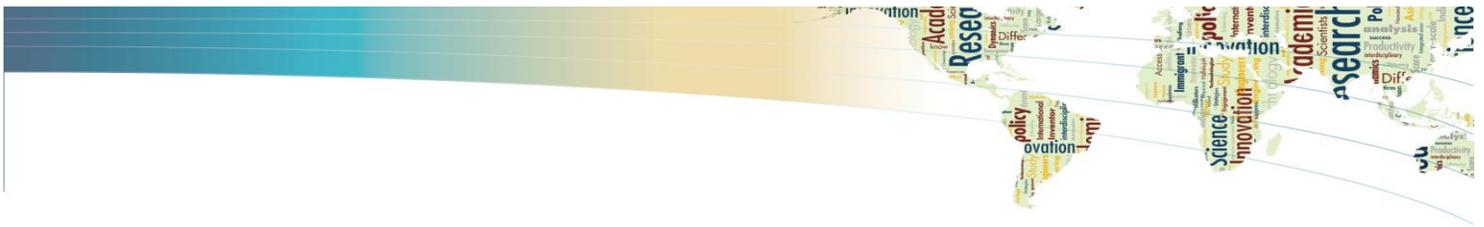
Patent Premium in Countries with Weak Intellectual Property Rights Protection.

Can Huang, Zhe Qu

Contact emails: can.huang@maastrichtuniversity.nl; quz@fudan.edu.cn

Track: Global S&T Environment

In this large-scale firm-level study we investigate whether the total factor productivity of multinational corporations and indigenous companies grew faster after they applied for patents in China than had they not done so, and also compare the increase of total factor productivity at various levels of market competition.



The impact of the patent attorney on the outcome of the filing process.

Rainer Frietsch

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Track: Changing Dynamics of Research and Innovation

Hardly any empirical literature exists on the impact of the patent attorney on the filing outcome. This paper uses PATSTAT to examine the attorney's experience. First results indicate, for example, that large enterprises employ the most experienced attorney, individual inventors the most inexperienced. SMEs and public research is in between.

Evaluating Patent Licensing Agreements for Technology Diffusion at the U.S. National Labs.

Gabriel Chan

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Track: Research Funding and Strategies

Under the Stevenson-Wydler Act, the U.S. National Laboratories are required to transfer inventions to the private sector. I evaluate one technology transfer mechanism, patent licensing, by (1) identifying technology areas that Labs are successful in licensing patents, and (2) quantifying the public benefits of licensing agreements, measured by increased citations.



Session 3.c: Issues in Technology and Development

When the High Road Becomes the Low Road: The Limits of High-Technology Competition in Finland.

Darius Ornston

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Track: S&T Policies

This paper questions the degree to which high-technology growth represents a “high road” to growth by highlighting the economic and political risks associated with technology-oriented innovation policies. More specifically, it uses the Finnish case, where such policies were most successful, to illustrate how they adversely impacted industry-labor and inter-firm relations.

STI Policy in Uruguay: Political Constraints for Developmental Project.

Melissa Ardanche, Carlos Bianchi

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Track: S&T Policies

A STI policy for inclusive development has been implemented in Uruguay since 2005. This paper analyzes the adequacy of its institutional and organizational design in order to achieve the proposed objectives. Conclusions show that there are institutional and political problems that could become barriers for the current STI policy agenda.



Russell Thomas

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Track: Research funding and strategies

This paper investigates whether the US Department of Energy (DOE) involvement in clean technology (CleanTech) venture capital has a distorting effect on private venture capital (VC) market. We performed empirical analysis on three types of indirect evidence: 1) the distribution of degrees in the co-investment network; 2) reputation effects for VC and ventures; and 3) community discourse. Results from analysis do not support any of the five hypotheses asserting that DOE has a distorting affect. The results suggest that government investment can complement private VC activity.

Renewable Energy Technology Policy: An Evaluation of Global Policy Drivers.

Sanya Carley, Elizabeth Baldwin, Jennifer N. Brass, Lauren M. MacLean

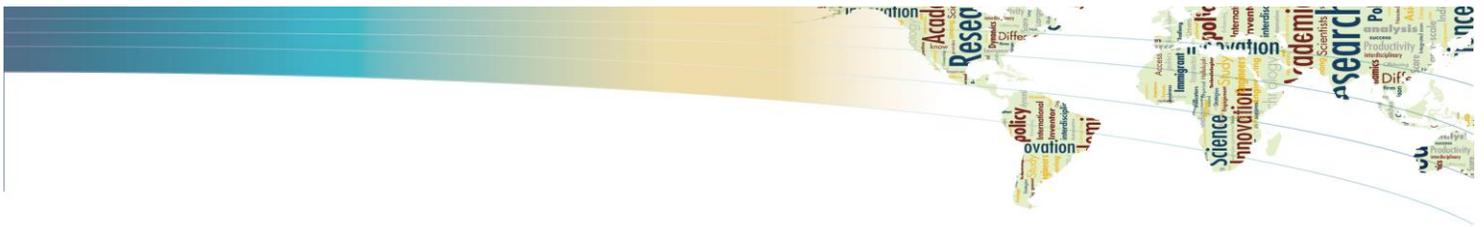
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Track: Policies for economic, social and environmental outcomes

Renewable energy development and deployment has increased rapidly in recent years. This analysis evaluates the effect of national renewable energy and climate change policies on annual renewable energy generation worldwide, controlling for international renewable energy funding streams, investment climate, and underlying economic and political conditions, among other variables.

Session 3.e: BioPharma Research and Innovation

Strengthening Health Research and Innovation Systems in Africa: A Critical Analysis of National Policy Regimes.



John Mugabe, Prince Bahati, Bonnie Bender

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Track: Other S&T Topics

This article will provide an analysis of the effectiveness of policies for health research and innovation. It will define what constitutes an effective NHIS and then give cases, using examples from Brazil, China and India, of how good or dynamic NHISs are developed and nurtured. The article will put emphasis on why and how African countries should engage in 'policy learning' from Brazil, China and India and through the African Union (AU) and their Regional Economic Communities (RECs).

The Strategic Role of Investors in the Financing of Innovation: The Case of Venture Capital in UK Bio-Pharma.

Jaime Sierra

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Track: Research funding and strategies

The explicative power of the literature on the financing of innovation can be broadened significantly by incorporating insights into the strategic role of prospective external funders and their contribution to the formation of ties in a particular milieu, beyond the preferences of companies looking for investment funds to support innovation.

Biotechnology agglomerations in emerging countries: "industry rejuvenation".

Julieta Flores Amador



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Track: Changing dynamics of research and innovation

Biotechnology enterprises tend to agglomerate given the positive externalities they can obtain within specific areas. I analyze biotechnology agglomeration dynamics in emerging countries like Mexico. I propose an “industry rejuvenation” stage in the agglomerations lifecycle involving an active participation of enterprises aiming to remain in the market.

The Coevolution of S&T and Institutions in the Biopharmaceutical Innovation Networks.

ShihHsin Chen

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Track: S&T policies

This paper applying social network analysis to analyzes the mediating roles of research institutes in the Taiwanese biopharmaceutical innovation system. The finding suggests that future policy should enhance the brokerage function of research institutes instead of expecting intermediaries acting as technology gatekeeper in the global innovation networks.

SESSION 4: Lunch and Working Session

SESSION 5

Session 5.a: STI Futures: Forecasting and Policy



Quantitative Analysis of Technology Futures: A conceptual framework for positioning FTA techniques in policy appraisal.

Tommaso Ciarli, Alex Coad, Ismael Rafols

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Track: Policies for economic, social and environmental outcomes

Quantitative techniques for exploring future developments in Science and Technology (FTA) are increasingly important in an era of big data. We position FTA quantitative techniques according to their representation of (the incompleteness) of knowledge --i.e. the extent to which they portray their knowledge on probabilities and outcomes as problematic.

Validation of Forecasts of Scientometric Indicators: The Case of National Leadership.

Robert Duane Shelton

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Track: Global S&T environment

National level S&T indicators provide a laboratory of alternate policies. Forecasts might motivate policy changes, particularly those from models tying indicators to policies. In 2009 forecasts were made for 12 indicators based on 2005 data, predicting that China would soon lead the world. Here validations are presented four years later.

Just how difficult can it be counting up R&D funding for emerging technologies? (and is tech mining with proxy measures any better?).

Michael M Hopkins, Josh Siepel



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Track: S&T policies

Emerging Institutions for Sustainability Innovation: University as a Platform for Multi-Stakeholder Collaboration.

Masaru Yarime

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Track: Emerging institutions and institutional forms

This paper examines the emerging attempts by leading research universities around the world to create innovations for sustainability by transforming the existing institutions of university-industry collaboration to establish a multi-stakeholder platform for jointly creating relevant knowledge and expertise and implementing social experimentation to tackle complex and uncertain issues.

Direct and Indirect Effects of Venture Capital and NIH Funding on Regional Employment.

Hyunsung D. Kang, David N. Ku

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Track: Research funding and strategies

This study provides empirical evidence that NIH and venture capital funding can cause a direct and indirect dual impact on the regional economy. We also find that governmental funding creates as many as three times the number of jobs compared to venture capital funding.

Session 5.c: Innovation Studies from Around the Globe

Competence Building: A Systemic Approach to Innovation Policy.

Susana Borrás, Charles Edquist



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Track: S&T policies

This paper discusses the role of competences and competence building in the innovation system, and how governments create, maintain and develop those competences.

The Global Inventor Gap 1990-2005: Measuring Catch-Up and Stagnation in Inventors Between World Regions.

Arho Suominen, Hannes Toivanen

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Track: Global S&T environment

We explore how the inventor gap between countries and major regions has evolved 1990-2005 and develop distance-to-frontier indicator to measure *it*. Based on fractional count of inventors from different countries, we estimate the inventor intensity for 50 countries with most patents and for the rest of major world regions.

Federalism and Innovation Support across Europe: an empiric comparison between federal and centralist countries.

Lasse Becker



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Track: Economic issues

Findings question the efficiency of a federal framework with regard to innovation support. The scope of the paper is to examine the differences of federal and centralist support frameworks in Europe econometrically. Therefore data of the Community Innovation Survey of EUROSTAT is analyzed for firm characteristics and efficiency of support.

Session 5.d: Bookends: The Highs and Lows of Research Productivity

Determinants of Publication Destination: Who Publishes in Low-impact Journals?

Sotaro Shibayama, Noriyuki Morichika, Yasunori Baba

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Track: S&T policies

This study examines the determinants of journal choice in terms of journal impact, drawing on survey and bibliometric data. The results suggest that the choice of journal impact is greatly affected by social factors (career and other duties), offering implications for policy design in scientific research.

Are Nobel Laureates More Internationally Collaborative than Their Peers?

Caroline Wagner, Katarina Nordqvist, Pauline Mattsson

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Track: Global S&T environment

This paper will use Nobel Laureates as a case for “elite scientists” to test the assertion that elite scientist are more likely to work within international collaborative projects and therefore have a larger global co-publication network.

The Entrepreneurial Laureates.

Pauline Mattsson, Katarina Nordqvist

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Track: S&T policies

Using the Nobel Prize as a proxy for excellent research and looking at the period after the Nobel Prize discovery, this study focus on the dissemination of knowledge and to what extent these discoveries have been commercialized.

Session 5.e: Triple Helix in the Global Environment

A Framework for Forming and Managing Successful Government-University-Industry R&D Collaborations.

Jeffrey Alexander, Elias G. Carayannis

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This paper analyzes the results of the monitoring of STI activities undertaken by the state-owned companies in relation to IDPs. It evaluates the preliminary results of government initiatives to foster innovation in the state-owned segment of the business enterprise sector, notes the negative effects of excessive «compulsion» to innovate, and provides recommendations for improving policy.

On The Speed and Acceleration of Learning and Innovation: Strategic Transformation and Integration of Multi-Modal Knowledge Production Systems in Russia and China.

Elias G Carayannis, Evgeny Klochikin

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Track: Changing dynamics of research and innovation

This new emerging divide between global/local, state/democratic capitalism regimes, represents both a challenge and an opportunity regarding learning and innovation speed and acceleration policies and practices such as the quadruple innovation helix model.

SESSION 6

Session 6.a: The Quest for Better Metrics in STI

Measures for the STEM Enterprise.

Martin Michael Sokoloski



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Track: S&T policies

Science Metrics and Science Policy.

Julia Lane, Rebecca Rosen

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Track: S&T policies

Science metrics have many uses. In this presentation we discuss their uses for science policy, particularly focusing on how they can be used to inform policy makers understanding about the way in which science investments affect the conduct of science.

Towards indicators for ‘opening up’ science and technology policy.

Ismael Rafols, Tommaso Ciarli, Patrick van Zwanenberg, Andy Stirling

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Track: Other S&T topics

This paper discusses the extent to which the use of Science and Technology indicators ‘open up’ contrasting conceptualisations of the phenomena under scrutiny and consequently allow for more considered and rigorous attention to alternative policy options, both by decision makers and within wider policy debate.

Session 6.b Collaboration and Cooperation in Science

Emerging Structures for Science, Technology, and Innovation (STI) Problem Solving in the Collaboration Era: Designing Africa-Focused STI Networks.

Sara E. Farley, Amanda L Rose, Andrew M Gerard

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Track: Emerging institutions and institutional forms

Solving development challenges increasingly requires collaboration across fields and geographies. This paper reviews the literature on network design, then supplements the insights of the academic literature with practical, ground-tested strategies derived from the Global Knowledge Initiative's work in building purpose-driven networks in Rwanda and Kenya.

A New Phase in the Globalization of R&D: China, India, and the Rise of International Co-invention.

Lee Branstetter, Guangwei Li, Francisco Veloso

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Track: Changing dynamics of research and innovation

Using U.S. patent data, we examine the recent innovative growth in China and India. We found that the surges in U.S. patents in China and India are driven, to a great extent, by MNCs from advanced industrial economies and are highly dependent on collaborations with inventors in advanced economies.

Understanding the Effects of Researcher-Stakeholder Collaboration in Climate Science: What Makes Science-Society Interactions Productive?

Stefan de Jong, Tjerk Wardenaar, Dr. Edwin Horlings, Peter van den Besselaar

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Track: Changing dynamics of research and innovation



In this paper we study projects in two Dutch climate research programmes to answer two questions: (1) What characteristics of projects are related to their success in having societal impact? (2) What underlying factors can be related to the presence of these characteristics?

Session 6.c Innovation and Markets

Factors Affecting the Development of Green Technology Sector Enterprises: A Case Study of Innovative SMEs in China and the United Kingdom.

Jie Ren, Philip Shapira

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Track: Economic Issues

This paper examines the development of small green technology enterprises in China and the UK, focusing on how their technologies evolve and change over time and what can be discerned from that in terms of business strategies and the influence of policy.

Gauging System Transformation and Innovation Pathway for an Emerging Technology – Solid Lipid Nanoparticles (SLNs).

Min Suk Shim, Douglas K.R. Robinson, Alan Porter, Xiao Zhou

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Track: Changing Dynamics of Research and Innovation



SLNs which are promising sub-area for NEDD, developed rapidly recently. In this paper, we address ways to treat the information gleaned from an SLN literature search. We try to figure out the potential subsystems and capture and investigate a variety of potential technology innovation pathways and commercial prospects of SLN.

From Loss to Gain: Exploiting Diaspora in Cyberinfrastructure Enterprises.

James Howison, Nicholas Berente, John Leslie King

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Track: Cyber-Infrastructure and Collaborative Forms

From our research into nine cyberinfrastructure enterprises, we explore the benefits of three forms of diaspora: (1) diaspora of science-trained employees to industry; (2) diaspora of science-trained employees to other CI-enterprises; (3) diaspora as "graduation" of science-trained users.

Session 6.d Career Trajectories in STI

Educational Mismatches and Entry into Entrepreneurship among Scientists and Engineers.

Briana Christine Sell

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Track: Workforce Issues in the S&T/STEM Community

In this study educational mismatches among scientists and engineers are examined. I use the NSF's longitudinal Scientists and Engineers Statistical Data System (SESTAT) to analyze the consequences of voluntary and



Looking for the Technological Match Between Industry and Knowledge Institutes in the Netherlands.

Edwin Horlings, Thomas Gurney

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Track: Economic Issues

Does science have something to offer industry? In this paper we use patents to determine the degree and precise location of the overlap in technological research interests between science and industry as well as the economic value, technical potential, and distance to market of academic patents in 1980-2009.

Coordination games in public-private research: comparing eight industrial sectors.

Laurens Hessels, Barend van der Meulen

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Track: Emerging Institutions and Institutional Forms

This paper contributes to the understanding of coordination mechanisms between industry and universities and the coordinative effect of public private partnerships. We analyze the emergence of partnerships and explain the willingness of firms to join. Our empirical focus is on eight economic sectors in the Netherlands.



SESSION 7: Poster Sessions and Dinner/Dessert Reception

Friday Sept. 27th 2013

SESSION 8

Session 8.a: Networks in STI

Collaboration and Creativity: Effects of Tie Strength.

Jian Wang

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Track: Other S&T Topics

This study integrates literature on small groups and social networks to explain network effects on creativity at the individual level.

Network Size and Location of Connections.



Mollie Taylor

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Track: Changing dynamics of research and innovation

I hypothesize that for networks of a certain size or structure, nonlocal collaborations will provide critical connections by effectively making the local largest component larger. This research finds that medium-sized networks see the largest change due to nonlocal collaborations. As networks within cities grow, they move through three distinct phases.

Science in Space: Comparing the Dynamics of Team Science Conducted in Microgravity Between and Among Four Scientific Disciplines.

Margaret M. Clements, Molly Macauley, Timothy Brennan, Winston Harrington, Patrick Phillips

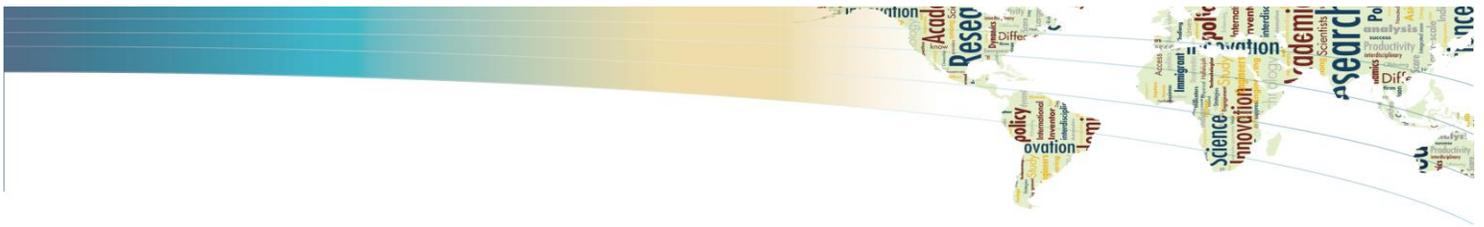
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pataphil@gmail.com

Track: Changing dynamics of research and innovation

The purpose of this study is to examine dynamic processes of knowledge diffusion, provide multiple measures of scientific impact, and illustrate interdisciplinary exchange that has occurred among twenty academic scientists who have conducted research on the ISS pertaining to four disciplinary domains (physical science, biological/biotechnology, human research and Earth science).

Session 8.b: Internationalization of Science

The Role of Basic Research Funding Agencies' International Offices in Advancing International Engagement.



Norwegian science policy has recently been to open its scientific programmes and funding to research organisations in other countries. The paper reports the reasons for this development, the early results of this policy change, and considers some likely consequences with the help of a model of scientific internationalization.

The International Partnership Program Between Portugal and Three World-Class Research Universities in the United States: New Models in Emergence.

Teresa Patricio, Hugo Horta

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Track: S&T policies

This paper looks at a strategic, innovative and planned international partnership program (IPP) between Portugal and three world-class research universities in the US – the Massachusetts Institute of Technology (MIT), Carnegie Mellon University (CMU) and the University of Texas at Austin (UTA) - and examines the model within the context of globalization.

Session 8.c: Security Issues in STI Room 233

A Game Theory-Based Analytical Framework for Adoption of Cybersecurity Technologies with the Case Study of DNSSEC

Cong Wei, Jing Wang



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Track: Cyber-infrastructure and collaborative forms

Admittedly as one of the most successful engineering artifacts in human history, the Internet was designed without security in mind. This paper argues that the major stakeholders who are responsible for the security and reliability of the digital infrastructure, such as governments, organizations and the Internet industry have not worked seamlessly to fix the existing flaws. Any security-related Internet infrastructure design or improvement should be done in a highly collaborative manner for technical and more importantly, non-technical challenges to be tackled.

Strategy, Technology Innovation and Governance: Shift of Responsibility from Nation-States to Individuals

Margaret E. Kosal

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Track: Ethical issues in research

This paper explores a previously unaddressed underlying challenge of technology innovation and efforts to limit proliferation in the 21st Century – the tacit shifts in responsibility for limiting the malicious application of science and technology innovation (nonproliferation) from the international community and nation-states to individual researchers.

The Place of the Security Research and Development in the National Systems of Innovation: Some Tentative Results on the European Level

Nikolaos Karampekios

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Track: S&T policies



Security in FP7 became a European research priority marking a shift from the civilian R&D themes. Yet, how this priority fits into the wider EU innovation policy has not been touched upon. This paper is one of the first attempts to offer a tentative proposal for such a positioning.

Session 8.d: Rationales and Relevance of STI Policies in Developing Countries: Part I Room 235

A Look at the STI Policies from the Inclusive Development Perspective: The Experience of Mexico

Gabriela Dutrénit, Juan Manuel Corona, Martin Puchet

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Track: S&T policies

This document discusses the experience of STI policymaking in Mexico, considering some issues associated with: Initial Conditions, Strategic National Objectives, The articulation of the STI policy with the national development strategy, Different governance problems, bias of BERD Structure towards sectors with low diffusion power of S&T, and A specific set of relevant actors.

STI Policy and the Dilemma of Implementation: Experience from a Developing Country.

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Track: S&T policies



National S&T policy formulation was introduced to Developing Countries in the 1960s. Nigeria formulated her first S&T Policy in 1986 but has not achieved envisaged development because of inadequate implementation. This paper explores the policy landscape of Nigeria and Asian Tiger countries, in order to propose effective S&T policy implementation.

Tinkering Around Tea: Science, Technology and Innovation Policies in Tanzania's Agricultural Research System.

Allison Marie Loconto, Emmanuel Frank Simbua

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Track: S&T policies

We mobilize the concept of a ‘theoretical failure’ of STI policy by exploring the case of the Tea Research Institute of Tanzania. We argue that national STI policies that shape their institutional elements remain discursive while ‘tinkering’ is far more important for the practical applications and success of STI.

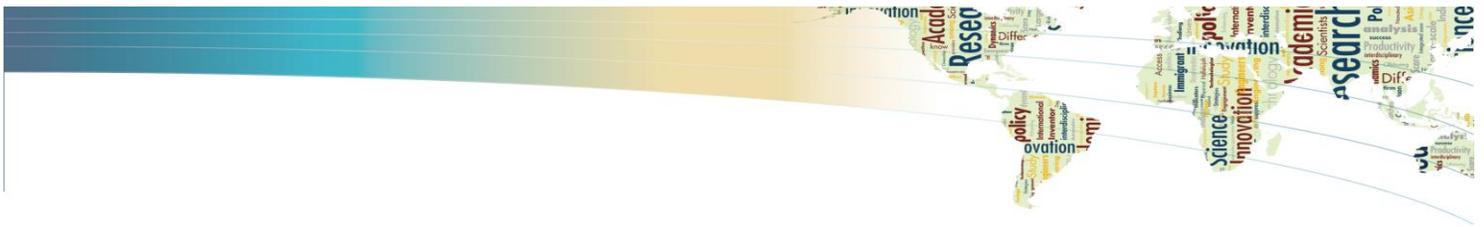
Innovation and Inclusive Growth in the Small Scale Fishing Sector of the Fonseca Gulf, Central America.

Jeffrey Orozco

Contact email: jeffrey.orozco@gmail.com

Track: Policies for economic, social and environmental outcomes

The location of companies within the global commodity chains can promote innovation processes through the transfer of knowledge and resources from other links in the chain, but may also limit the potential for innovation. In this paper, we study the fishing sector in the Gulf of Fonseca in Central America.



Session 8.e: Issues in Nanoscience Room 344/335

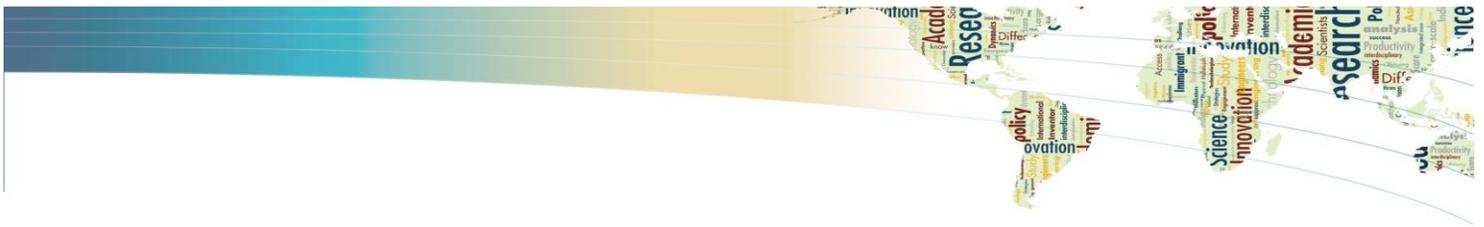
SBIR and STTR Funding Influences on Nascent Technology Venture Survival.

Jennifer Woolley

Contact email: jwoolley@scu.edu

Track: S&T policies

The U.S. government supports innovation and new product commercialization in firms through funding programs that target promising technologies. Two examples are the Small Business Innovation Research (SBIR) program and the Small Business Technology Transfer (STTR) program. The SBIR program started in 1982 to support innovation in small, often nascent organizations. The STTR program was started in 1992 and focuses on supporting innovation collaborations between firms and public organizations such as universities and government labs. Despite the lengthy tenure of the SBIR and STTR programs, fairly limited work has sought to examine the influence of these programs on nascent venture survival. Work has shown the positive impact of these programs, but long-term studies are rare. Given that the US government spends over a billion dollars each year on these programs, more insight is warranted. This study looks at the influence of SBIR and STTR grants on the survival of nascent nanotechnology firms to provide insight into the long-term impact of such programs.



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Track: S&T policies

Nanotechnology is one of the most important emerging technologies of the last decades. This emerging technology is likely to affect the characteristics and levels of employment. Therefore, the analysis of nanotechnology and employment is an area that requires more attention. In this paper, we develop some indicators of the potential employment effects of nanotechnology, using three illustrative areas of application: water, energy and agri-food.

Inequality and Public Private Partnerships in Nanomedicine

Thomas Woodson

Contact email: tswoodson@gatech.edu

Track: Emerging institutions and institutional forms

This paper studies how nanomedicine is addressing diseases of poverty and how this research is being supported and conducted by public-private partnerships.

Session 9.a: Research and Evaluation of Innovation Systems Room 222

Eric Welch Innovation and Multidisciplinary Dynamics in SMEs: A Publicly Funded Pilot Experience in Chile

Pablo Catalan, Jimena Alarcon, Marcela Cabello, Pedro Villar

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Track: Changing dynamics of research and innovation

This article explores the rise of innovation capacity building at individual and firm level in regard to the single case of a policy pilot experience in the Bio Bio Region, Chile, whereby 40 students from two different disciplines,



Industrial Engineering and Industrial Design, work together in addressing 15 SMEs cases, following an innovation methodology.

Efficiency as a Measure of Knowledge Production of Research Universities

Amy W. Apon, Linh B. Ngo, Michael E. Payne, Paul W. Wilson

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Track: Policies for economic, social and environmental outcomes

The paper addresses the gap in science policy in the area of measures of productivity for institutions of higher education. The paper identifies the role of efficiency as a measure of knowledge production that extends traditional metrics and demonstrates the usage of efficiency-based non-parametric statistical studies.

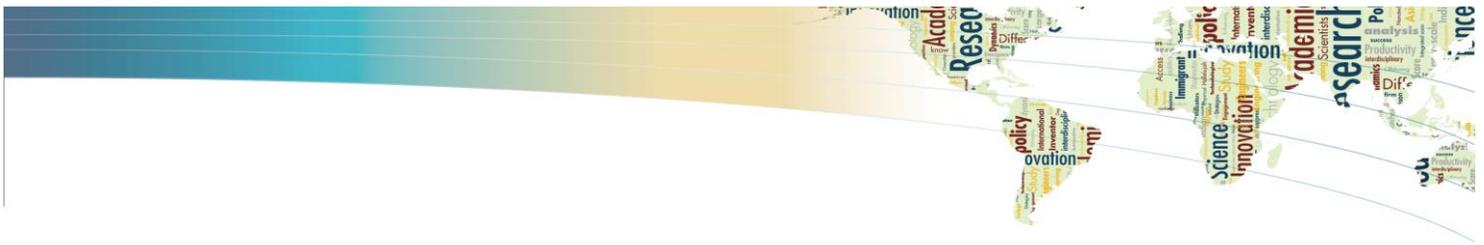
Knowledge Production and Dissemination of Universities Versus Companies - A Focus on Academic Knowledge as a Driver for Technological Innovation

Peter Neuhäusler, Friedrich Dornbusch

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Track: Changing dynamics of research and innovation

This study aims to disentangle determining factors in production and diffusion of technological knowledge by universities compared to large and small enterprises. It is focused on local and non-local search processes (geographically, technologically and organizationally) as explanatory factors for the roles universities, MNEs and SMEs fulfill within innovation systems.



of policy fads and compounded growth and investigate, in particular, if these non-incremental changes are in line with public values.

Challenges for Technology Diffusion Policy to Achieve Socio-Economic Goals

Sven Wydra

Contact email: sven.wydra@isi.fraunhofer.de

Track: Policies for economic, social and environmental outcomes

The aim of this contribution is to analyze the challenges for technology diffusion policies to achieve expected socio-economic goals and to deduce conclusions for an adequate design of policy. We formulate hypotheses on basis of current theoretical research and check these in two case studies in the fields of biobased products and health technology.

Session 9.c: Rationales and Relevance of STI Policies in Developing Countries: Part II

Theoretical and Policy Failures in Technologies and Innovation for Social inclusion: The Cases of Social Housing, Renewal Energy and Food Production in Argentina

Hernan Thomas, Lucas Dardo Becerra, Paula Juárez, Santiago Garrido

Contact email:

Track: Changing dynamics of research and innovation



This paper focus on two kinds of common failures related to technologies for social inclusion (using experiences and policies in the areas of social housing, renewal energy and food production from Argentina): a) the reduction of social exclusion phenomena to a technical problem and the lack of human resources, discontinuity of funding and b) the inability of social development institutions to conceive or sustain long term strategies based on learning improvements.

Nurturing Innovation in Informal Settings: Implications for Innovation Systems and Policy

Erika Kraemer-Mbula

Contact email: erika@ieri.org.za

Track: Other S&T Topics

The purpose of this paper is twofold. Firstly, it outlines how innovation systems' thinking relates to informal activities, explaining why it is useful to think of informal settings when trying to formulate innovation policies in developing countries. Secondly, it reviews policy trends in developing countries discussing their implications for innovation in informal settings, especially in relation to their connection to formal activities, social inclusion and institutional development.

In Search of the Spaces of Exclusion Within Innovation System: The Case of Plantation Agriculture in India

K. J. Joseph

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Track: Policies for economic, social and environmental outcomes

Analysis of innovation system in India's plantation agriculture from the perspective of social exclusion observes active exclusion in the organization of commodity boards, subordinated inclusion in innovations in the sphere of marketing and illusive inclusion and subordinated inclusion in the institutional arrangements for knowledge generation and diffusion.



Agricultural innovation will continue to play a major role in the future of both China and India, as it did in the past. What were the mechanisms that were used by the two nation states to engage with agricultural production knowledge – its generation, access and use? How did the state assess the performance and legitimization of the public investment in agricultural S&T, extension and related support systems (input subsidies, price support, etc.)?

Study on the Foreign R&D Investments in China

Xiaoyang Xu, Xiaoxuan Li

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Track: S&T policies

In this study, the trends of the foreign R&D investments were concluded, the reasons why China is the most popular target place of foreign R&D investments, what the effects on Chinese national innovation system were also analyzed. Then some policy suggestions were proposed.

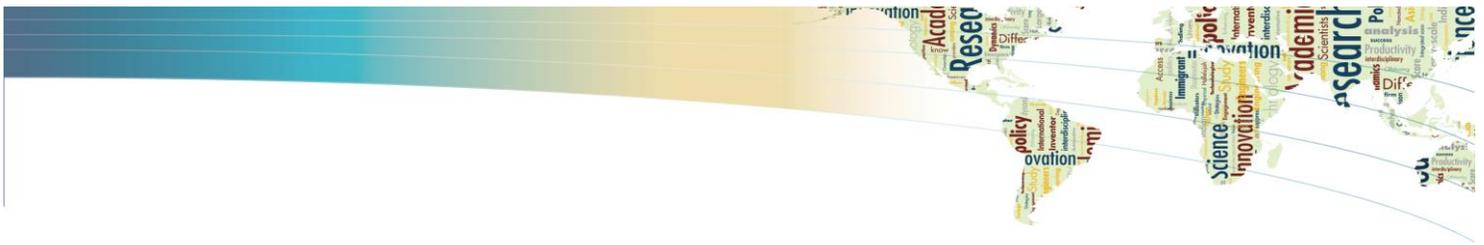
Public Policy and Catch-Up: Lessons from China's Biopharmaceutical Sector

Hepeng Jia, Caroline Wagner

Contact emails: jiahepeng@yahoo.cn, wagner.911@osu.edu

Track: S&T policies

This paper explores a series of catch-up case studies in China's biopharmaceutical sector to reveal that positive science and innovation policies can be significantly negated by unfavorable public policies. Further analyses indicate that innovation policy research must be embedded into a public policy framework to have more explanatory power.



Session 9.e: Mobilizing Undergraduate STEM Education for a Sustainable Future

Undergraduate STEM Education and Global Sustainability: Bringing the Communities Together for the Benefit of Students

Cathy Middlecamp, Jay Labov, Mel George

Contact emails: chmiddle@wisc.edu, jlabov@nas.edu

Track: STEM education

The deliberate and strategic improvement of STEM education is vital to national and state-level economies and the long-term well-being of the planet, of individual citizens, of business and industry, and indeed, of government itself. Considerable educational research has demonstrated that synthesizing real-world applications and problems into STEM education can not only motivate students to continue in STEM but can enhance learning and deeper understanding of basic STEM content and processes.

Learning the Realities of the Research Process: Vertically Integrated Projects in Undergraduate STEM Education

Ed Coyle, Randy Abler, Julia Melkers, Jenna Howard

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Track:



Creation of Novelty and Project-Based Funding Mechanisms of University Research.

Terttu Luukkonen, Juha Tuunainen, Duncan Thomas, Antti Pelkonen, Antti Tahvanainen

Contact email: terttu.luukkonen@etla.fi

Track: Changing dynamics of research and innovation

The paper studies the relationship between external project funding mechanisms and research line selection in universities, paying special attention to the novelty aspect of research. Research organisations are seen as intermediaries between researchers and research funding, e.g. they determine performance expectations, rewards and sanctions. The study is by nature explorative.

Crowd Science: The Organization of Scientific Research in Open Collaborative Projects

Chiara Franzoni, Henry Sauermann

Contact emails: chiara.franzoni@polimi.it, henry.sauermann@scheller.gatech.edu

Track: Emerging institutions and institutional forms

"Crowd science" projects are open to the participation of many contributors and openly disclose intermediate research results and data. We discuss three illustrative cases (Zooniverse, Foldit, Polymath), distinguish crowd science from other knowledge production regimes, discuss potential benefits and challenges crowd science faces, and consider implications for funding agencies and policy makers.

Retractions in Biomedical Research.

Jeff Furman, Pierre Azoulay, Joshua Krieger and Fiona Murray.

Contact emails: pazoulay@mit.edu, furman@bu.edu, jkrieger@mit.edu, fmurray@mit.edu

Track: Economic issues

To what extent does "false science" impact the rate and direction of scientific change? We examine the impact of more than 1,100 scientific retractions on the citation trajectories of articles that are close neighbors of retracted articles in intellectual space but were published prior to the retraction event.



Session 11.b: Who Makes Science Policy?

Grand Challenges: The Dynamics of Agenda Setting in 21st Century Science Policy.

Diana Hicks

Contact email: diana.hicks@pubpolicy.gatech.edu

Track:

The paper explained the evolution of the Grand Challenges model and compared the model with others proposed to frame post-Bush linear model science. Grand Challenges seems to be having more success than these other models in eclipsing basic research as a framing for science policy discourse in the United States. The reasons for this were explored, as well as some of the consequences and the limitations of the Grand Challenges model.

From Big Problems to Grand Challenges: Grand Challenge Discourse in Finnish STI Policy Documents

Mika Nieminen, Maria Lima-Toivanen, Juha Oksanen

Contact emails: mika.nieminen@vtt.fi; maria.limatoivanen@vtt.fi; juha.oksanen@vtt.fi

Track: S&T policies

We show how the "grand challenges" discourse, as present in EU STI policy discourse, which was formalized with the Lund Declaration (2009), is approached by the major STI policy-making and implementing agencies of Finland, namely Research and Innovation Council, The Innovation Funding Agency Tekes and the Finnish Academy.

The Missing Link Between Science, Engineering and Society in Parliamentary Affairs in Canada.

Marie Lavoie, Emilia Barbu

Contact emails: Lavoie@glendon.yorku.ca, Ebarbu@yorku.ca

Track: Emerging institutions and institutional forms

Problems involving science and technology expertise have been particularly acute and pervaded the agenda of the House of Commons in Canada. The absence of scientists and engineers in parliamentary debate is a worrying trend that directly affects the quality of the decision and policy-making.



Track: Other S&T Topics

In the northern city of Juárez, Mexico, there is an important segment of SME suppliers of subsidiaries of MNC. The objective of this paper is to identify the different organizational and innovation strategies followed by these SME in order to comply with the ever increasing demands of the MNC.

The Impact of Innovation Off-Shoring on the Effectiveness of Organizational Innovation.

Elisabeth Baier, Christian Rammer, Torben Schubert

Contact emails: elisabeth.baier@ptvgroup.com, rammer@zew.de, torben.schubert@isi.fraunhofer.de

Track: Global S&T environment

We analyze the effects of off-shoring of innovation activities on the ability of firms to introduce organizational innovation. Using a comprehensive dataset for German firms, we find an inverted u-shape, implying a threshold value for innovation off-shoring. This effect depends on the firm's R&D-intensity, on its R&D-collaborations, and the geographical dispersion of off-shore innovation activities.

KIBS as Innovation Catalysts in Regional Triple Helix Spaces: Some Evidence and Insights from the Border, Midland and Western Region of Ireland

James Cunningham, Adrian O'Donoghue, Orlagh Reynolds

Contact emails: james.cunningham@nuigalway.ie, aodonoghue@bmwassembly.ie

Track: S&T policies

Knowledge Intensive Business Services (KIBS) are increasingly recognised as representing an important conduit and catalyst for generating and enhancing the shift towards knowledge-based economies while enhancing competitiveness and building innovation capacity through the exchange of expertise. KIBS are integral to supporting and sustaining innovation among stakeholders in regional triple helix spaces. KIBS in peripheral



regions triple helix spaces has not been the focus of much empirical investigation. Our study of peripheral KIBS is set in Ireland's Border, Midland and West Region (BMW) region one of the most peripheral regions in Western Europe, with low population density (37 persons per/km²).

Session 11.d: Exploring Mechanisms for Facilitating the Dialogue Between Research and Policy: The Experience of Latin America

Exploring Mechanisms for Facilitating the Dialogue Between Research and Policy: Lessons from a Comparative Analysis of Some Latin America Countries

Juan Manuel Corona, Gabriela Dutrénit

Contact email: juanmanuel.corona@gmail.com, gabrieladutrenit@gmail.com

Track: S&T policies

This paper takes a different perspective by setting another two research questions. To what extent has the knowledge resulting from scientific research influenced the policy making process of STI, and what have been the best practices and mechanisms in facilitating the dialogue between research and STI policy in the Latin American Context.

Study on the Knowledge Transfer Mechanisms from Academia to Policy Making: How Science, Technology and Innovation Policy Scholars Interact with Public Officers in Mexico

Juan Manuel Corona-Alcantar, Marco Aurelio Jaso-Sánchez

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Track: S&T policies



Saturday Sept. 28th 2013

Session 13: Plenary: David Goldston

"S&T Research: What do Policymakers Need to Know and When Do They Need to Know It?"

David Goldston

Session 14

Session 14.a: Competitiveness and Innovation

Lessons Learned for Federal Government Sponsored R&D: The Role of the National Science Foundation in the Origin and Evolution of Additive Manufacturing in the United States

Vanessa Peña, Christopher L. Weber, Maxwell K. Micali, Elmer Yglesias, Sally A. Rood, Justin A. Scott, Bhavya Lal

Contact email: mmicali@ida.org

Track:

An Empirical Analysis on Determinant Factors and Results of Open Innovation in Korean Manufacturing

Sangyun Han, Myounghwa Kwon

Contact email: syhan9@gmail.com



Track: Changing dynamics of research and innovation

Chesbrough(2003) stated that different from closed innovation, in open innovation, the idea from inside the firm could be exported and ideas from outside could be introduced. This study attempted the empirical analysis to investigate the cause of open innovation that Chesbrough(2006) proposed. In this study, the empirical analysis on the determinant factor and impact on the result of the open innovation was conducted. In particular, the survey on R&D activities in S&T from 2002 to 2007 and the financial data were integrated to improve the reliability of analyses.

Firms Innovate Here and Produce There: U.S. Manufacturing as a “Legacy Sector”

William B. Bonvillian, Charles Weiss

Contact email:

Track: Other S&T Topics

Session 14.b: University-Industry Ties in STI

Does Exposure to University Research Matter for Setting Up an Entrepreneurial Venture? Evidence from Europe

Yannis Caloghirou, Protogerou, Vonortas

Contact emails: y.caloghirou@ntua.gr, protoger@chemeng.ntua.gr, vonortas@gwu.edu

Track: Changing dynamics of research and innovation

This paper empirically explores the formation of new entrepreneurial ventures in Europe created by persons who have been previously exposed to academic research during the preparation of their Ph.D. This is a form of academic-related entrepreneurship- defined rather broadly- which can be both a source of knowledge-intensive entrepreneurship and a promising career path for Ph.D holders

Access to Specialist Knowledge: Linkages Between Pharmaceutical Firms and Universities in South Africa

Sechaba Andries Bareetseng, Gillian Marcelle

Contact emails: sbareetseng@csir.co.za, gillian.marcelle@wits.ac.za



Track: Changing dynamics of research and innovation

The study investigates the decision-making process within pharmaceutical companies operating in South Africa regarding the formation of linkages with universities and theorising different knowledge flows.

Commercial Exploitation of Knowledge from Collaborative Research Between University and Industry in Japan: Findings from Large-Scale Questionnaire Survey on University/industry Research Collaboration

Mitsuaki Hosono, Shinichi Akaike, Junichi Nishimura, Sadao Nagaoka

Contact emails: hosono@nistep.go.jp, akaike@iir.hit-u.ac.jp, junichi.nishimura@gakushuin.ac.jp, snagaoka@iir.hit-u.ac.jp

Track: Economic issues

This paper reports findings from questionnaire survey of university and industry researchers on the knowledge created by university-industry collaborative research in Japan. The commercial exploitation rate of the invention created in the collaborative research at private enterprises is 16%, and the rate is significantly different by the size of enterprises.

Competing Models for ‘Intermediary R&D Organisations’: Do University-Based ‘Competence Centres’ Make Traditional Research and Technology Organisations Superfluous?

Erik Arnold, Katherine Elizabeth Barker

Contact emails: erik.arnold@technopolis-group.com, kate.barker@mbs.ac.uk

Track: Research funding and strategies

In this paper, we explore the roles and impacts of competence centres (CCs) and RTOs and argue that these are not only distinct forms of organisation but also have significantly different effects in the innovations system. Our sources are a number of studies and evaluations of CCs and RTOs conducted (many of them by ourselves) across a range of countries over the last ten years.



Session 14.c: Addressing New and Old Technologies

Impacts of Direct Public Support on the Progress of Li-Ion Battery Technology

Xin Yue

Contact email: yuexin82@gmail.com

Track: S&T policies

Direct public support is an often-used instrument to foster technology innovation. There is debate on its effectiveness, however. I present a case study on the impacts of public supports on Li-ion battery progress. Patent analysis, learning curve, and expert interview are used to measure the impacts and understand the mechanism.

The Art and the Problem of Purposeful Ending: The Governance of the Discontinuation of Incandescent Light Bulbs in the Netherlands

Peter Stegmaier, Stefan Kuhlmann

Contact emails: p.stegmaier@utwente.nl, s.kuhlmann@utwente.nl

Track: Other S&T Topics

The governance of socio-technical systems has preferentially been associated with advancement and innovation. Discontinuation of socio-technical systems is, at most, discussed as regime change, innovation setback or failure—as if advancement and innovation was the only direction in which socio-technical development and its governance would go. This research aims at a better understanding of the governance of the abandonment of socio-technical systems.



The Social Organization of Nanoscience

Scott Cunningham, Claudia Werker, Jan H. Kwakkel

Contact email: s.cunningham@tudelft.nl

Track: Changing dynamics of research and innovation

Policy concerns in nanoscience immediately lead to questions which are both sociological and epistemological in character. This paper argues that the best approach to these questions requires a closer look at the social structure of research in nanotechnology. Based on the indexed data of nanoscience, we derived the social network structure as expressed by collaboration. Instead, nanotechnology is structured with varied knowledge bases arrayed around a socially distant hub. Three implications of these findings are discussed.

Innovation in Nanotechnology for Renewable Energy Applications: A Comparative Analysis of South Africa and the USA

Ogundiran Soumonni, Susan Cozzens

Contact email: diran.soumonni@gatech.edu, scozzens@gatech.edu

Track: Global S&T environment

This paper analyzes the innovation system around nanotechnology for renewable energy applications in South Africa and in the U.S. in a comparative perspective. We present an overview of the NSI in both countries, carry out a bibliometric analysis of publication and patent data, and analyze interview data with relevant stakeholders.



Session 14.e: STEM Education and STI

Connections: Patterns of Links Between STEM Education Research and Other Disciplines

James S. Dietz, Heena Lakhani, John I. O'Brien, Gregg E. Solomon, David I. Schoeneck, Alan L. Porter

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daves@searchtech.com, alan.porter@isye.gatech.edu

Track: STEM education

This study examines publications by researchers funded by an NSF education program (REESE) to understand knowledge transfer patterns between STEM Education research and related fields. Measures of interdisciplinarity and mapping of citation patterns help elucidate connections among research communities.

Wage Premium to Ph.D. Qualification in the Business Sector

Heidi Skovgaard Pedersen

Contact email: hsp@cfa.au.dk

Track: Workforce issues in the S&T/STEM Community

Monetary incentives to undertake PhD studies and aiming at a career in the private sector is considered, by assessment of wage differentials between matched PhDs and master's graduates. I find a negative wage premium of 2 per cent on income increase and no differential on income increase.

Facets of Identity Crystallization as a Research Scientist Among Talented Undergraduates

Susan Carol Losh, Brandon Nzekwe

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Participation in Standardisation of a Public Research Organisation in Germany: Relation to Scientific Publishing and Patenting Activities

Aikaterini Zi, Knut Blind

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Track: S&T policies

We examine the participation of more than 600 researchers from the German Federal Institute of Material Science BAM in standardisation bodies. We run multivariate regression analyses and find a difference between basic and applied research scientists regarding their probability of participating in standardisation committees and a significant influence of career position in terms of academic title.

Session 16.d: Strategic Aspects of Innovation Policy

Evolutionary and Adaptive Policy Targeting: A Strategic Innovation Policy Perspective

Morris Teubal

Contact email: msmorris@mscc.huji.ac.il

Track: S&T policies

The paper focuses on describing the policy targeting process associated with Type 2 new priorities like a new cluster, infant industry or entrepreneurial system, and comparing them with Type 1 priorities. Type 2 are priorities involve radical uncertainty, unexpected events and/or chaotic dynamics, characteristics which distinguish them from Type 1 priorities (which involve only moderate uncertainty or risk). The paper analyzes the considerable differences in the policy process and in Adaptive policy making of both types of priorities, a fact with considerable implications on the nature of policy targeting.



The Role of Institutions in Scientific Collaboration

Bryn Lander

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Track: Emerging institutions and institutional forms

Intersectoral collaborations are important in innovation systems. I qualitatively investigate collaborations between individuals affiliated with universities, government, hospitals, firms and NGOs, involved in infection and immunity research and development within Vancouver, Canada and explore how institutions affect individual activities and collaborations within and between sectors.

Session 17.c: Emerging Technologies and Innovation Systems Evolution

The Influence of European Union Research Funding on Science Outputs: Accelerator, Brake or Anchor?

Abdullah Gok, John Rigby, Philip Shapira

Contact emails: abdullah.gok@manchester.ac.uk, ohn.rigby@mbs.ac.uk, pshapira@mbs.ac.uk

Track: Research funding and strategies

In this research, we study the impact of EU funding on the quantity and quality of publications, collaboration patterns of researchers with national, intra-EU and extra-EU co-authors and finally likelihood on receiving subsequent EU and non-EU funding. We aim to unfold the dynamics of this impact on its own and when coupled by co-funders.



Russian Nanoscientists Abroad and National Innovation Systems: Initial Mapping

Maria Karaulova

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Track: Changing dynamics of research and innovation

Orthodox ways of studying scientific mobility usually fail to competently explain such migratory movements, and innovation system approach can be used to facilitate discussion. The paper explores the non-linear patterns of scientific migration of Russian-origin nanoscientists, and discusses theoretical debate around these issues.

Why Do High-Tech SMEs Publish, and Does It Matter for Innovation?

Yin Li, Jan Youtie, Philip Shapira

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Track: Changing dynamics of research and innovation

Recent data on corporate R&D in nanotechnology shows that many US firms, including both large firms and small- and medium-sized enterprises (SMEs), are active in openly publishing their nanotechnology research. Why do high-technology SMEs publish, and how does it matter for innovation? In this paper, we answer the question of why small firms in emerging technology publish by analysing the publishing and patenting strategies of nanotechnology SMEs in the US.



University Spillovers in Japan: Channels, Geography and Policy

Nobuya Fukugawa

Contact email: nfukugawa@gmail.com

Track: S&T policies

This study examines four research questions: whether university research affects industrial innovations; whether its impact is geographically constrained; whether joint research acts as an effective conduit of university knowledge; and whether policy instruments to promote regional joint research networks are conducive to localized university spillovers.

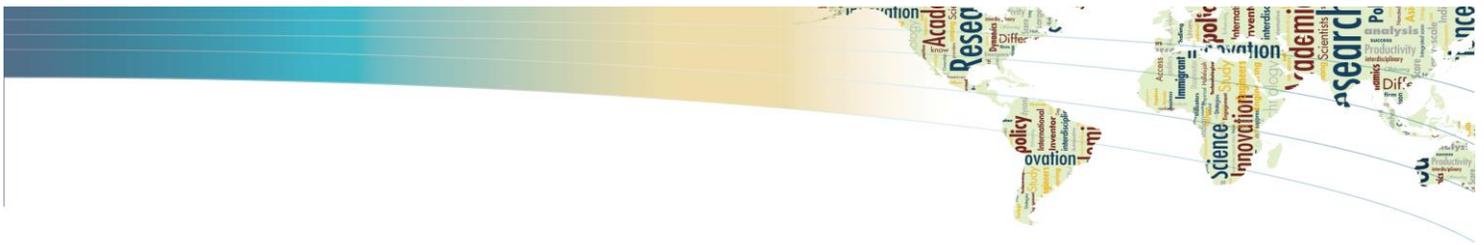
The comparison of the new government in Korea and Japan

Min-ki Kim

Contact email: mk@kistep.re.kr

Track: S&T policies

This study analyzes and draws comparison between the new government's future direction regarding S&T Policy in Korea and Japan; both countries undergoing the political transition period in 2013 and also share similar social, cultural background.



How Do Scientists Understand Ethics and Social Responsibility in Science Research?

Ashok Kumbamu, Jennifer B McCormick

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Track: Ethical issues in research

Our paper describes how dynamic interactions among structural, institutional, and individual factors influence scientists' understanding of ethics in knowledge production in the contemporary culture of science. Our findings help to highlight the importance of understanding how politico-economic, social and policy transformations impact ethics and social responsibility in science production.

What Difference Does It Make? Public Value Failures in Scholarly Research and Their Impact on Global Science

Thema Monroe-White, Thomas Woodson

Contact emails: tmwhite@gatech.edu; tswoodson@gmail.com

Track: Global S&T environment

The publication patterns of developing countries are increasingly well studied, few however, have empirically assessed the impact that these trends have had on global scientific knowledge production. This paper analyzes the co-authorship patterns of the "least" innovative countries in Africa and applies the public-value failure mapping tool to flush out the public value failures incurred by the scholarly community as a result of these exclusionary patterns.

Social, Organizational and Ethical Factors in Decisions about Contribution, Credit Sharing and Authorship

Barry Bozeman, Jan Youtie



Contact emails: bbozeman@uga.edu, jan.youtie@innovate.gatech.edu

Track: Ethical issues in research

Collaborative research has increased dramatically and along with it, ethical issues in contributorship. This research develops a systematic, large-scale dataset based on an Internet survey of 650 faculty in Research I universities. The study seeks to address authorship and crediting practices, including factors that underlie bad collaborations.

Policy Uncertainty, Ethical Controversy and Emerging Technologies: Lessons from the Funding of Stem Cell Science

Aaron D. Levine

Contact email: aaron.levine@pubpolicy.gatech.edu

Track: S&T policies

This paper examines the impact of policy uncertainty on the development of stem cell science in the United States. It finds that policy uncertainty associated with federal funding has a broad negative impact on stem cell scientists (including those working with less controversial stem cells) and that this effect is mitigated, in part, by state support for stem cell research.

Session 18: Closing Remarks and Awards Ceremony