New Series 12 | November 2014

RSAI
THE REGIONAL SCIENCE ASSOCIATION INTERNATIONAL

Newsletter
November 2014

Regional Innovation Policies

IN THIS ISSUE

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1. Introduction

1.1 Welcome from the President

by Jean-Claude Thill

Regions have been under a lot of stress this year. On the one hand, we have experienced attempts at greater devolution in two countries of Western Europe, the United Kingdom and Spain. In the former case, a referendum has confirmed the desire of a majority of the local population to stay put with the current institutional framework, while continuing to enjoy considerable autonomy. The case of Catalonia within the context of the Spanish state is at odds with the British process since the referendum option is deemed unconstitutional, at least at the time of the writing of this note. At the other end of the European space, turbulence has brewed with the separation of Crimea from Ukraine, and its attachment to Russia. Nearby, some regions of Eastern Ukraine are clamoring loud and violently their right to be part of Russia. On the other hand, further afield to the southeast, civil war and violence fueled by certain interpretations of religious texts have rekindled old rivalries and new fanaticism aimed at creating new institutional frameworks spanning multiple regions. These events should not leave us indifferent. Early regional scientists were much concerned about the connections between regional development, balanced development, well-being, and peaceful living. Walter Isard was not only the father of Regional Science, but also worked actively for the creation of Peace Science, and of the Peace Science Society. Let us not forget this connection and this rich heritage. Political neutrality should not be construed to mean indifference, passivity, and disregard for the basic principle of humanity that makes us, human beings, different from other animals. Respect and enhancement of human well-being should be the guiding principle of our academic discourse and of our region-based interventions and policies.

Political instability forced us to cancel our World Congress last May in Bangkok/Ayutthaya, Thailand. Many of our scheduled participants were robbed of the opportunity to meet and exchange their ideas about their regions, our regions. We all feel a void as a result. The newsletter that was scheduled to be distributed at the World Congress and again at the European Congress in August never reached our members. We encourage you all to read the issue of May 2014 on the web site of the Regional Science Association International at http://regionalscience.org/images/PDF/Newsletter_2014_May_2.pdf or on our Facebook account. In fact, we hope you will "Like" us a lot and often!

As always, I welcome your comments and suggestions on all matters contributing to making RSAI a better community for us all. My inbox is waiting for you: Jean-Claude.Thill@uncc.edu.

1.2 Welcome to the 2014 NARSC Congress

by Neil Reid, *Executive Director, North American Regional Science Council*

Dear Colleagues:

On behalf of the North American Regional Science Council (NARSC) I extend to each of you a very warm welcome to the Washington, D.C. region. These are the 61st annual North American Meetings of the Regional Science Association International (RSAI). Based on registration numbers this will be the largest meeting of regional scientists ever to have been held in North America with over 800 in attendance. As such, this conference provides attendees with access to a wonderful diversity of individuals, ideas, and perspectives and I hope that you will use the

next few days to broaden your intellectual horizons. In addition to catching up with old friends and colleagues I also hope that you will use this conference to expand your professional network. The success of any conference is, to a large extent, the result of considerable behind-the-scenes work. A number of individuals, most notably our program chair, Rachel Franklin (Brown University) and local organizers John Carrurthers (George Washington University) and Meagan Cahill (The Urban Institute), have worked countless hours to ensure that the conference goes smoothly and is enjoyed by all. If you see Rachel, John, and Meagan during the conference please take a few seconds to thank them for all their hard work.

With my very best wishes for a very enjoyable and productive conference.

1.3 RSPP lecture at the 2014 NARSC congress

by Henry Yeung

Regional development in the global economy: a dynamic perspective of strategic coupling in global production networks

A *Regional Science: Policy & Practice* lecture to be presented at the Annual North American Meeting of the Regional Science Association International, Washington, DC, 12-15 November 2014.

Henry Wai-chung Yeung
(henryyeung@nus.edu.sg)
Professor of Economic Geography; Department of Geography, National University of Singapore

In this lecture, Prof. Yeung presents a rethinking of the trajectories of regional development in an era of economic globalization. He argues for a more dynamic perspective on regional development that incorporates both endogenous regional assets and strategic imperatives in global industries. Premised on theoretical advances in research into global production networks (GPNs) and global value chains (GVCs), a dynamic perspective of strategic coupling is further developed and reconstructed to demonstrate how regional development can result from the interaction effects of these regional assets and GPN logics. This perspective also points to different modes of strategic coupling for understanding the changing pathways of regional development. Several key issues for regional policy and practice are outlined to substantiate this call for a shift towards a dynamic and multi-scalar view of regional development in today's global economy.

1.4 Welcome from the Editors

by Andrea Caragliu and Graham Clarke

Andrea Caragliu

Graham Clarke

Welcome to another RSAI newsletter. This issue revolves mainly around regional innovation policies. The changing nature of globalization and the prolonged economic slump are responsible for exposing the weaknesses of advanced countries in terms of innovation and knowledge generation capacity. While the US and the EU have been increasing their R&D expenditure (even during the 'crisis' years), challenges to their established position are coming from developing countries whose R&D has been growing even faster. Limited public resources, also because of the prolonged economic contraction, call for sound allocation methods.

To this aim, Roger Stough (George Mason University) discusses recent evolutions in US innovation policies. Several examples of the

increasing complexity of these policies are provided and the territorial microfoundations of regional innovation systems (and the associated place-specific elements) are discussed in his article.

An additional article on the issue of regional innovation policies discusses the EU's Smart Specialisation Strategies (S3). Riccardo Crescenzi (London School of Economics) guides us through the history of this concept and the way it has actually been deployed in the EU context. Because of the large amount of money being disbursed on the basis of this policy, a thorough discussion of S3 and its merits and limitations may well start from Riccardo's synthesis.

A final article by Patricio Aroca (Universidad Adolfo Ibáñez, Chile) discusses the recent developments in regional innovation policies in Chile, as a case study for the diversified picture of the Latin American continent. After the inception of democracy, the growth pace of the Country has been fast and relatively steady. Patricio summarizes the main steps made by the Chilean government to further stimulate growth by enhancing a world-class innovation system and sketches a set of possible bottlenecks these policies should be facing if policymakers want to maximize the returns to this investment.

In the second part of the Newsletter we fly to Kyoto. For the 'Meet the Fellows' column, Prof. Masahisa Fujita (Kyoto University) talks about his lifetime career – from his childhood spent in a village in Western Honshu, through his first encounter with Walter Isard at UPenn, to his research achievements. We found his tale fascinating and we are sure you will share our opinion!

Finally, Prof. Carlos Azzoni (University of São Paulo) describes the research and teaching environment of the University of São Paulo Regional Urban Economics Lab (NEREUS) in our 'Centres of Regional Science' regular feature. NEREUS is the largest group of scholars dealing with regional issues at the University of São Paulo. Regional science represents a crucial asset for the university, especially because of the frantic development pattern of Brazil and the large (and persistent) economic disparities across different areas of the Country. Within this framework, NEREUS members strive to offer regional policymakers scientifically sound advice.

An innovation in the format of the Newsletter starts from this issue. Elisabete Martins takes over as person in charge of formatting the newsletter. She proposed a new format which, we hope, will increase the newsletter readability.

Once again, we would like to thank all authors, who continuously feed interesting articles and we are confident our readers, by going through the Newsletter, will find pleasure in maintaining a close relationship with the Association, irrespective of their location. If you believe a regional policy may be of interest and hasn't been covered yet on the Newsletter, please let us know by writing us (andrea.caragliu@polimi.it and G.P.Clarke@leeds.ac.uk).

As finally for the Association's News, Section 3 reports some new developments and discusses a few recent RSAI events.

We both hope you will enjoy the read!

2. Regional Innovation Policies I: US Regional Innovation Policies and Cluster Dynamics: Some Thoughts

by Roger R. Stough, *George Mason University, School of Policy, Government and International Affairs*

Innovation is the process of converting knowledge (new and known) into economically and socially useful products and services. The thinking about Regional innovation systems, i.e., innovation driven regional systems, has been heavily influenced by a focus on new science and

technologies and their conversion into useful outcomes as described above. This is of course one way of looking at innovation but with this approach the underlying thinking tends to begin with a technology or new scientific concept that in turn "goes looking" for a use or market rather than a problem that "goes looking" for a solution that may find technologies and scientific knowledge useful.

Much of U.S. science and technology policy since the 1940s followed the thinking of Vannevar Bush (1945) who argued that producing new science or technology in an unbiased way was critical, i.e., science for science sake, and in turn that this policy would maximize scientific/technical discovery and sustained competitiveness via innovation. But the level of innovation is not just a linear function that begins with scientific and technical input; it also requires considerable entrepreneurial effort that coordinates complex relationships among such elements of innovation as applied research, prototyping, and testing and market analysis to discover and engage the market. As a consequence, thinking in the U.S. has in the recent past begun to move away from the linear or pipeline frame to one that recognizes that innovation involves science and technological inputs (research) but at the same time that the innovation conversion process is complicated and convoluted with multiple feedback loops between research and its products science/technology/knowledge initial inputs and economically and socially useful product and service outputs (see Figure 1).

The concept of regional innovation system bears considerable similarity to the industrial cluster concept, including the notion that these systems are both spatial and territorial in nature. Figure 2 provides a depiction of such a system. The literature on industrial clusters and thus on regional innovation systems (as a special case) are organized around one or more industries and attract investment and related companies and organizations because they enable the capture of benefits from Marshallian positive externalities such as reduced procurement costs, strong knowledge spillovers, lower transaction costs, improved market knowledge and information, which are amplified as strong internal and later external networks evolve (Porter, 1998 and Rocha, 2004).

Recent thinking about industrial clusters and regional innovation systems has begun to move from a static

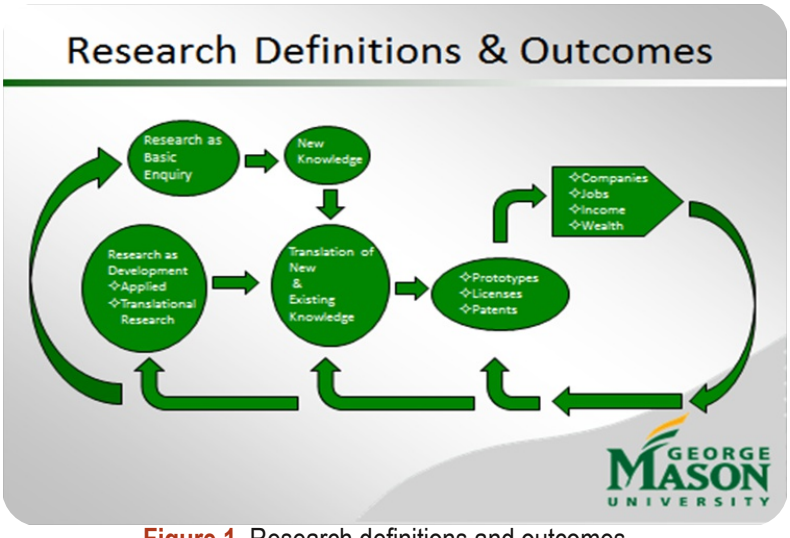

Figure 1. Research definitions and outcomes
Source: The Author

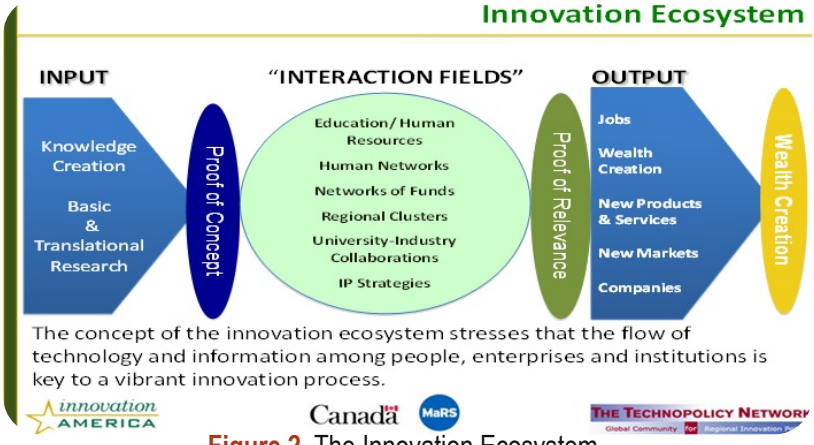

Figure 2. The Innovation Ecosystem

Source: Presentation at the Innovation Across Borders Conference in Toronto Canada, Richard Bennis, February 25, 2011. Conference sponsored by Innovation America, Canada Mars and the Technopolicy Network.

view, in the case of clusters and in the case of regional innovation systems, toward problem solving-driven innovation as opposed to science and technology-driven. In fact, a body of the cluster literature has been evolving for the past decade or so that argues that they are dynamic and as a consequence the level of benefits varies depending on the stage of development (see Stough, 2014 for a recap and extension of this concept). The dynamic view of clusters considers them to evolve in stages (either evolutionarily or by design as has occurred in many emerging economies such as China), whereby the benefits are greatest as the cluster reaches what is called "maturity", i.e. when industries, organizations and government are all (internally or externally) highly interdependent. At the same time, however, the innovative/entrepreneurial forces that drove the development of the cluster have weakened due to standardization that goes along with maturation. The seeds of decline are thus sown, unless significant policy and investment changes are made leading to renewed innovation and entrepreneurship and thus rejuvenation. In short, both thinking and policy on the operational side for cluster sustainability is evolving toward this stage of development, as state and local governments increasingly face problems of slowing cluster growth and innovation.

A dynamic view of regional innovation systems is also called for as these systems may be viewed as cluster- like in their nature. But, more importantly, a structural aspect of these territorial innovation systems is increasingly questioned, namely that scientific and technological input has tended to be viewed as the driver of territorial innovation systems. The problem with this is that it puts these inputs in a position where they are seeking a market or a use rather than having the market driving the process. A contrarian view is that this approach should be "stood on its head" so that problems are the drivers of innovation. This, it can be argued, has been the model that has driven much of innovation historically, e.g., the work of Edison or Tesla. So is their evidence to support the contrarian claim?

The U.S. military, that has long been known for its technological superiority, has learned from its involvement in various military engagements over the past decade that the battlefield has offered up new problems, e.g., IUDs and humans being used to deliver explosives, that demand rapid solutions where none existed. This led to the formation of what the U.S. Army calls Rapid Equipping Forces (REFs).

The REFs receive problem statements from the field that may or may not have a technical solution. The REFs have a long list of experts on retainer who can be asked to review the problem to assess if there is a potential technical solution; if yes, then the REF can contract with various pre-qualified organizations to develop a technical solution and a trial ready field prototype rapidly (weeks in the case of software; months in the case of a mechanical solution). The REFs represent a sea change in technology development as in the past the military wished to have proprietary control and thus would enter into long term contracts to invent a new approach from the bottom up. Today, as a consequence of the need for rapid outcomes, speed has turned the more traditional science/technology driven military innovation process on its head. Today innovation in this context seems to be more problem than technology driven.

Many corporation CEOs argue that they are no longer able to protect their technology and intellectual property because it can be "taken" via IT hacking or by compromising an employee who just "takes" it for another client, government or corporation. In short, critical technical property for product and services production cannot in most cases be protected and, consequently, competitiveness is in many cases under challenge. The solution many corporations are adopting is one of not only continuous innovation but high speed continuous innovation. By innovating rapidly and continuously (even if a competitor has one's most recent production technology) it does not enable its successful competitive response by the time the technology is adopted and applied the product of the owner has evolved to a new version with more value. For example, think of the continuous innovation in the mobile phone industry. In a world where new information and technology becomes broadly and rapidly available, by whatever means (legal or illegal), effort must focus on solving problems rapidly in both the public and military and the private sectors.

In conclusion, several things seem important for policy makers and implementers in the arenas of cluster and regional innovation systems. First, it is important to understand that clusters and regional innovation systems are dynamic. This means that the benefits they offer can and do change over time, which in turn require policies that are informed by, and adaptable to, change. Second, speed is a fundamental requirement for successful regional innovation policy and thus policy must include sensitivity to the evolution of the need for rapid response capabilities in regional innovation. There is another issue that needs to be mentioned here but there is insufficient space to elaborate on it. An emerging view on clusters and regional innovation systems is that clusters and regional innovation systems as territorial or spatial entities are changing in that they are becoming quasi-virtual and global in nature. While one should not conclude distance (space and proximity) is dying with respect to these traditional spatial organizations, they are in the process of morphing into more than spatial and territorial organizations. As such, policy makers and implementers need to ensure that global linkages are built and maintained in future clusters and regional innovation systems.

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3. News and recent events

3.1 RSAI is increasing its members!

by Tomaz Dentinho, *RSAI Executive Director*

The number of enrolled RSAI members is steadily expanding: 3450 in 2011, 3888 in 2012, 4081 in 2013 and 4368 in 2014. The sections with the highest number of members are North America, Japan and Spain. The sections that have more than 10 members per 1 million inhabitants are Japan, Spain, the Netherlands and Portugal. Europe has 43% of the members, the Americas 31% and Asia/Pacific 24%; individual members and RSAI Life Time members represent 2% of the members (rsai@apdr.pt).

RSAI Sections	Number of Members
NARSC Section	1031
Japanese Section	773
Spanish Section	426
German Section	250
Italian Section	175
French Section	171
Dutch Section	150
Portuguese Section	146
Mexican Section	125
Brazil Section	122
ARSC Section	120
Turkish Section	107
Taiwan Section	102
British & Irish Section	83
Slovak Section	75
Romanian Section	67
Chilean Section	52
Greek Section	48
Polish Section	47
Australia/New Zealand Section	43
Croatian Section	39
Colombian Section	34
Nordic Section	33
Indonesian Section	25
Israel Section	24
Hungarian Section	17
Individual	66
RSAI Life Time Members	17
TOTAL	**4368**

3.2 13th Summer Institute and the creation of a new RSAI section in Ecuador

by Ronny Correa Quezada, *Official Coordinator for the Creation of the Ecuadorian Chapter of Regional Science*

From July 23-25, 2014, the 13th Summer Institute of the PRSCO 2014 was held in the city of Loja, Ecuador. On this particular occasion, the theme of the Summer Institute was: "Economy, Society and the Environment: Territorial and Regional Development". The event was attended by 300 people and attracted speakers from a broad spectrum of countries, including Bangladesh, Malaysia, Chile, Colombia, Ecuador, Spain, the United States, Japan, Indonesia, and Mexico.

Geography, cultural heritage, regional disparities, regional development policies, regional science methodologies, urban-regional planning, and Asia-Pacific relations were the core thematic axes of the conference. In total, 148 abstracts were submitted -128 of which were approved by the Scientific Committee of the event.

The overarching aim of the conference papers was to contribute to the international scientific community by producing studies, proposals and initiatives that were directly related to the field of regional science. With the aim of promoting the study of regional science as well as developing networks, facilitating exchanges among young researchers and jointly disseminating research, a special institute was subsequently established, namely 'The Summer Institute for New Researchers in Regional Development'. This second event was attended by undergraduate students as well as recent graduates-namely those who had graduated within the last five years.

During the event, there were important keynote speeches by renowned international academics and

researchers: Geoffrey Hewings (from the Regional Economics Laboratory at the University of Illinois Urbana-Champaign), Michael Piore (from the Department of Economics at Massachusetts Institute of Technology- MIT), Coro Chasco Irigoyen (from the Department of Applied Economics-Universidad Autónoma de Madrid), Jean Claude Thill (President of the Regional Science Association International), and Luis Riffo (from the Latin American Institute for Economic and Social Planning- ILPES-CEPAL).

During one of the parallel conferences, members of the Department of Economics at the Universidad Técnica Particular de Loja, under the guidance of the Regional Science Association International (RSAI) and two of its sections, The Pacific Regional Science Conference Organization (PRSCO) and the Regional Science Association of the Americas (RSAMERICAS), coordinated together to approve the creation of the Ecuadorian Association of Regional Science (AECR).

In a subsequent meeting that was attended by Jean Claude Thill (RSAI President), Budy Resosudarmo (PRSCO President) and Jose Barbosa (Rector of the Universidad Técnica Particular de Loja), as well as other professors, researchers, and representatives from the field of public policy, a Letter of Intent was signed. In this letter, 72 signatories (people and institutions) officially declared their interest to form part of the said association and agreed to implement the activities that would be necessary for the consolidation of the Ecuadorian Chapter of Regional Science.

3.3 Benefits from being an RSAI member

RSAI membership has its benefits and privileges, including:

- Right to vote for representation of the Council of the Regional Science Association International;
- Eligibility for awards of RSAI;
- Discounted registration fees at conferences organized by RSAI, NARSC, ERSA, PRSCO, and RSAmericas;
- RSAI newsletter;
- Participation in and access to a worldwide network of over 4000 regional scientists;

Complimentary electronic access to the two journals of RSAI, Papers in Regional Science, and Regional Science Policy and Practice. Access to these journals is possible through your RSAI member access portal;

- Complimentary electronic access to the following journals, Journal of Regional Science, Growth and Change, Geographical Analysis and International Journal of Urban and regional Research. Access to these journals is possible through your RSAI member access portal.

3.4 The Hirotada Kohno Award for Outstanding Service to the RSAI

Congratulations to Yoshiro Higano who is the winner of the 2014 Kohno Prize. Higano is Professor of Environmental Policy, Doctoral Program in Sustainable Environmental Studies, Graduate School of Life and Environmental Sciences, University of Tsukuba. Japan. He specializes in Comprehensive Environmental Evaluation, Environmental Remediation Technology Assessment and Environmental Policy. Yoshiro Higano is a former President of the Regional Science Association International.

3.5 The Martin Beckmann RSAI Annual Award

The 2014 Martin Beckmann Award for the best article published in 2013 in *Papers in Regional Science* was awarded to Guido Pellegrini, Flavia Terribile, Ornella Tarola, Teo Muccigrosso and Federica Busillo for their article "*Measuring the effects of European*

Regional Policy on economic growth: A regression discontinuity approach" published in Volume 92, Issue 1, March 2013, Pages: 217-233. The jury included Masahisa Fujita, Antoine Bailly, Roberta Capello and Erik Verhoef.

Motivation: Based on the originality of the methodology used to develop a very important topic, and the important results achieved, the jury concluded unanimously that the paper was the best published one in 2013. It deals with the the assessment of the Regional Policy effects through a non-experimental comparison group method, the regression discontinuity design, and a novel regional dataset for the 1994–2006 period. The paper is an innovative piece of work in the complex field of regional policy evaluation.

3.6 RSAI Councilors-at-large Elected for the Period of 2015-2017

RSAI is pleased to announce the election of the following Councilors-at-large:

DANIEL A. GRIFFITH
School of Economic, Political and Policy Sciences
University of Texas at Dallas
United States

EMMANOUIL TRANOS
School of Geography, Earth and Environmental Sciences
University of Birmingham
United Kingdom

JACQUES POOT
National Institute of Demographic and Economic Analysis
University of Waikato
New Zealand

TUZIN BAYCAN
Department of Urban and Regional Planning
Istanbul Technical University
Istanbul, Turkey

4. Meet the Fellows: Masahisa Fujita

by Masahisa Fujita, University of Kyoto

It is my great honor and pleasure to write about my 50-year academic journey in the field of Regional Science. Without my encounter with Professor Walter Isard and Regional Science in the late 1960s, my life would never have been the same. Before talking about how such an encounter happened, let me briefly explain how I grew up in Japan. I was born in 1943 in a small coastal village at the western end of the main island of Japan. Since the end of the WWII in 1945, my village had housed a small unit of the American occupation army (until 1951). I grew up there, chasing American soldiers on jeeps for chocolate candies. Given that Japan was so poor at that time, I did not even dream of going to the USA someday. Japan, however, started growing very rapidly in the mid-1950s, initiating the construction of major public infrastructures such as a super express railway system, called the Shinkansen, and a turnpike system. As a young boy, I was fascinated by such big construction projects, and naturally chose to study in the Civil Engineering Department at Kyoto University. At college, however, my interest shifted gradually from the construction work itself to the planning and social evaluation of these major infrastructure projects. Until my graduation from college in 1966, however, I had never heard of Regional Science.

My association with Regional Science started soon after becoming a research assistant of Professor Kozo Amano in the Civil Engineering Department. One day, Professor Amano, a former engineer at the

Japan National Railway, told me that he had a big job for me. He said, "*As you know, a super express railway, the Shinkansen, has just been completed between Tokyo and Osaka. The Ministry of Transportation wants to extend it all over Japan. However, the Ministry of Construction wants to develop instead a turnpike system all over Japan. So, you should develop an econometric model of the Japanese regional economy, and compare the economic impact of the nationwide development of the Shinkansen network with that of a turnpike network*." At that time, my knowledge of economics and econometric models was absolutely zero. So, I asked Professor Amano, how I should go about it? Then, my boss brought two books from his bookshelf, saying that, they might be of some help. The two books were 'Location and Space Economy' and 'Methods of Regional Analysis'.

I first skimmed over *Location and Space Economy*. I felt something quite interesting with the book, but decided that it was too theoretical for my immediate job. So, I browsed the other thick book, *Methods of Regional Analysis*, and immediately found that this was exactly what nI needed. Using various methods nnexplained in the book, I developed an interregional econometric model of Japan. It was a huge interregional econometric model, estimating recursively the nationwide impact of developing the Shinkansen network over a 25-year period, compared to that of building a turnpike network. With the help of three professional computer programmers, I finished the computer calculations on time, and managed to report the results successfully at the joint meeting of the Ministry of Transportation and the Ministry of Construction in Tokyo (part of the work was subsequently published in the *Journal of Regional Science* in 1970).

As such, my first serious association with Professor Isard's work was through *Methods of Regional Analysis*. After finishing my first job, however, I became very hungry for theories, which made me remember the other book, *Location and Space-Economy*. So, this time, I read the book more carefully. Somehow, I was quite fascinated with the book. But, to tell the truth, I was able to understand very little of it. I wanted to study more seriously the foundations of spatial economics, and confessed this desire to Professor Amano. He told me: *"if you are interested in learning such things, you should go to the Regional Science Department at the University of Pennsylvania*". I had never heard of this university, but it did not matter, and I asked, *"how can I go there?*" Then, he brought me a copy of the Journal of Regional Science from his bookshelf, and showed me its backcover, saying, "*Look!, the Department of Regional Science is offering a scholarship grant. Why don't you apply for it?*" Although I had little hope, I applied for the grant. One month later, to my great surprise, I got a letter from Professor Isard informing me that I got the grant. That marked the end of **Phase 1** of my research career and the beginning of my 25-year association with Penn.

Figure 3. From right to left: Professor Yang at Peking U., Masa, Walter, Caroline Isard, Yuko (Masa's wife), Mrs. Yang at Masa's home in 1993

In the early summer of 1968, I headed for Penn brimming with

renewed enthusiasm and high expectations of learning more about *Location and Space-Economy* from Professor Isard. Upon arriving at Penn, I found that the entire curriculum of the Regional Science Department in the graduate school was well organized beyond Methods of Regional Science and Location and Space Economy. The department, however, was rather small, with about two dozen students. It was almost like a big family with Professor Isard as the godfather. I also took many economics courses in the Department of Economics that shared the same building with the Regional Science Department. I was also fortunate to be included as a member of the location theory seminar group headed by Professors Benjamin Stevens, John Parr, Tony Smith and Colin Gannon. The seminar was an informal one with about ten regular members, taking place once a week throughout the year. Every Friday, we took a dinner together, and started the seminar at 7 o'clock, in which a member presented his recent research work. The informal seminar continued for about three hours, followed by further discussion in the bar!

My Ph.D. dissertation on multi-regional economic growth models was completed in 1972. I was quite fortunate to be supervised by Professor Tony Smith who taught me most of the advanced mathematics that I needed throughout my subsequent academic career. Furthermore, the seed of my long research-collaboration and friendship with Tony was nurtured during this period. The revised version of my dissertation was published in 1978 as *Spatial Development Planning: A Dynamic Convex Programming Approach* by North-Holland.

Following this **Phase 2** of my research career as a Ph.D. student at Penn, **Phase 3** started when I went back to the Department of Civil Engineering at Kyoto University in 1972. There, I began my research on urban economics. One of my dissatisfactions with the then prevailing urban land use theory was that no consideration was given to the high adjustment costs of land use. Thus, my main research topic in **Phase 3** was the development of dynamic urban land use models with explicit consideration of such adjustment costs. Meanwhile, one day, I got a letter from Walter Isard, to my surprise, inviting me to come back to Penn to teach at the Regional Science Department. In the fall of 1976, I started teaching location theory courses at Penn, using *Location and Space Economy* as the main textbook. I continued my research on dynamic urban models, publishing eventually a dozen papers on this topic in various journals. In 1983, based on my research work in **Phases 2 and 3**, I was awarded The First Erik Kempe Prize in Memory of Tord Palander from the University of Umea, Sweden.

In the early 1980, my research career entered into **Phase 4** in which I studied the general equilibrium and self-organization of urban spatial economy. This topic reflected another dissatisfaction I had with the then prevailing urban economics models based on the traditional assumption of monocentricity, inherited from the classic work of von Thünen (1826). It was rather obvious to me that most large cities were not monocentric; furthermore, a complete urban model should determine endogenously whether a city was monocentric or took on another form. I developed three types of non-monocentric urban models. First, together with several Ph.D. students at Penn, including Hideaki Ogawa and Mitsuru Ota, we developed the general spatial equilibrium models of cities under communication externalities. Second, Jacques Thisse and I started our research work on the spatial competition approach to urban modeling. Our friendship and research collaboration, still continuing today, was nurtured during this period. Third, I initiated my research work on monopolistic completion models of urban spatial organization, that was further developed with a then Ph.D. student, Hesham Abdel-Rahman. In this period, I also worked with Tony Smith, Marcus Berliant and Yasushi Asami on the discrete foundations of continuous land use

theory. In the late 1980s, I intended to write a two-volume book on urban economic theory. Actually, however, I completed only the first volume on the static theory of monocentric cities (Cambridge University Press, 1989). Then, before writing the second volume on dynamic and non-monocentric cities, my interest changed.

Phase 5 is marked by the research collaboration with Paul Krugman and Anthony Venables on the development of the monopolistic competition theory of the spatial economy. As is well known, Paul Krugman published a pioneering paper, "Increasing Returns and Economic Geography", in 1991 (JPE). I met Paul for the first time in November 1991 in New Orleans , surprisingly, at the North American Meeting of Regional Science Association. Confirming that our research interests were very close, we agreed to initiate our research collaboration. In the spring of 1992, Paul visited Penn to present his recent work, and we started our joint work. The first paper was completed in 1993 in the form of a Working Paper in the RS Department at Penn, and a part of it was published in 1995 ("When is the Economy Monocentric?: von Thünen and Chamberlin Unified", 'Regional Science and Urban Economics'). While continuing my joint work with Paul and several Ph.D. students at Penn (among others Tomoya Mori and Nobuaki Hamaguchi) on the same topic, I moved back again to Kyoto University in the spring of 1995. Paul also continued his joint work with Anthony Venables (then at LSE). When Paul, Anthony and I met in Tokyo at a conference in 1996, we agreed to write a book together on a unified theory of spatial economy based on our joint works. For a month in the summer of 1996, the three of us confined ourselves to a small room at the LSE, and developed the skeleton of the book. Then, after several more face-to-face meetings and frequent e-mails, *The Spatial Economy: Cities, Regions and International Trade* was published in 1999 by MIT Press. The World Regional Science Council awarded Paul and me in 2002 the First William Alonso Prize for our contributions to spatial economics.

In **Phase 6** since the early 2000s, I worked with Jacques Thisse on the unification of urban economics and the so-called New Economic Geography, resulting in the publication of Economics of Agglomeration in 2002 from the Cambridge University Press (the second edition, 2014). Then, while teaching at Konan University in Kobe and serving as the president at the Institute of Developing Economies (and more recently at the Research Institute of Economy, Trade and Industry in Tokyo), I started working with Marcus Berliant on the development of dynamic models of knowledge creation by heterogeneous people, leading to the endogenous formation of regional cultures. On this topic, we have so far published six papers in various journals (among others, IER in 2008 and RS&UE in 2012). We are now investigating the possibility of creating a robot economist!!

Thus far, I have supervised 48 Ph.D. dissertations (37 at Penn, and 11 at Kyoto University). I am also quite grateful for The Walter Isard Award in 1998, and the Fellow Award of the RSAI in 2003. Although Professor Walter Isard passed away in 2010, my journey with regional science will continue.

5. Regional Innovation Policies II: Smart specialisation and the Regional Policy of the European Union

by Riccardo Crescenzi, *London School of Economics* (r.crescenzi@lse.ac.uk)

How the European Union became 'smart'

The productivity and innovation gap between Europe and the United States has attracted significant academic and policy attention over past two decades. While the US aim to maintain its world-wide

technological leadership, on the other side of the Atlantic, the European Union (EU) has constantly looked for tools in order close the productivity gap. In the 2000s the 'Lisbon Agenda' (European Parliament, 2000) aimed at addressing this challenge by making the EU "*the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion*" (European Parliament 2000, par. 5). The Lisbon Agenda presented the generation of new (technological) knowledge as key to productivity and economic growth and pursued the objective of boosting EU-wide R&D expenditure to 3% of Gross Domestic Product (GDP) by 2010. However, both the 2003 Sapir Report (Aghion et al. 2003) and the 2005 Lisbon Agenda Mid-term review (European Commission 2005) highlighted a number of potential risks of such an unbalanced strategy with a strong focus on R&D, re-opening the search for appropriate policy tools to address the productivity gap. The 'Knowledge for growth Expert Group' (advising the European Commissioner for Research) provided a new answer: 'smart specialisation' as a means to 'address the grand challenge' of closing the transatlantic productivity gap (Foray et al. 2009).

"*The question is whether there is a better alternative to a policy that spreads [R&D investment] thinly cross several frontier technology research fields, some in biotechnology, some in information technology, some in the several branches of nanotechnology, and, as a consequence, not making much of an impact in any one area. A more promising strategy appears to be to encourage investment in programs that will complement the country's other productive assets to create future domestic capability and interregional comparative advantage. We have termed this strategy 'smart specialisation'.*" (Foray et al. 2009, p.20)

'Smart specialisation' strategies still place a substantial emphasis on R&D investmnts but they suggest that entrepreneurs should be supported in their search for the most promising technological sectors in order to better target their investments. This should not be a top-down process: public policies should not 'select the right areas for specialisation' but should provide entrepreneurs with the most favourable framework conditions for their own autonomous entrepreneurial search.

The 'Smart specialisation' concept has been extremely successful in the EU 'policy market' and it has become one of the key pillars of the EU2020 Strategy (European Commission 2010a). EU2020 is the European Union's ten-year growth and jobs strategy: it was launched in 2010 and aims to promote a "*smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion*" (European Commission 2010a, p.5). In particular the EU2020 'smart specialisation pillar' includes three 'flagship initiatives' largely reflecting the priorities of the 'smart specialisation strategy' discussed above: 'Innovation Europe' (focused on R&D), 'Youth on the move' (focusing on Human Capital) and 'A digital Agenda for Europe' (targeting ICT). All EU policies should be designed in order to contribute to the achievement of these EU2020 strategy targets.

Smart Regional Policies in a Smart Union

The document 'Regional Policy Contributing to Smart Growth in Europe' (European Commission, 2010b) introduced 'smart specialisation' into the Regional Policy debate assigning the EU Regional Policy the task to identify the optimal regional-level matching between innovation efforts, human capital and local industrial and technological advantages. The European Commission acknowledged that: "*The [EU] geography of innovation is (…) very diverse with certain regions competing worldwide on the technological frontier, and other struggling to move closer to that frontier (…)*" (European Commission, 2010b p. 3). However, the architecture of the 'new'

2014-2020 EU Regional Policy rests on the assumption that the 'smart specialisation' principles are applicable to all regions: *"Innovation is important for all regions; for advanced ones to remain ahead and lagging ones to catch up*" (EC, 2010b p.3). Following this line of reasoning, the European Commission presented all EU regions with a portfolio of tools inspired by the smart specialisation approach to be selected, combined and coordinated in line with local needs: innovation clusters, innovation-friendly environment for Small and Medium-sized Enterprises (SMEs), life-long learning in research and innovation, regional research infrastructure and centres of competence, creativity and cultural industries, fast internet applications and easy access to on-line contents, and the use of public procurement to support demand for innovative products and services.

The translation of these concepts and principles into practical local policies is still an ongoing process. EU Member States submitted the final version of their Partnership Agreements to the Commission at the end of April 2014 with the allocation of resources among various 'Thematic Objectives'. The 455 National and Regional Operational Programs were due in July 2014 and will be adopted by the Commission no later than six months after their submission. In light of these draft documents the 6th Cohesion Report (European Commission, 2014) concludes that: "*Most Member States and regions have prepared innovation strategies for smart specialisation to accelerate economic development and to narrow the knowledge gap. It is important that these strategies focus on investments which reach a critical mass and best reflect regional potential*" (p.265).

Do ALL regions need to be smart?

Smart specialisation is now a concrete and practical component of the EU Cohesion policy. The key questions that remain (for now) unanswered are: Will this strategy really work in ALL regions? Will smart specialisation support social and territorial cohesion? We can identify at least three key challenges to the implementation of truly 'pro-cohesion' smart regional innovation policies.

First, the smart specialisation strategy is based on an inherently sectoral approach to the genesis of innovation and competitiveness (McCann and Ortega-Argiles, 2013). ICT and R&D intensive sectors are seen as natural policy targets in order to reduce the transatlantic productivity gap. However, comparative analysis reveals that territorial innovation processes are fundamentally different in Europe vs. the United States (Crescenzi, Rodriguez-Pose and Storper 2007). While regional socio-economic conditions and 'social filters' matter for innovation in both continents, the geographical processes underlying the genesis of innovation are fundamentally different. In the US, the combination (and re-combination) of ideas, R&D investments and skills can benefit from stronger agglomeration economies in larger multi-specialised clusters supported by higher factor mobility. Conversely, EU regions are more reliant on inter-regional spillovers with a significant influence of national-level differences that constraint the mobility of innovation drivers and their specialisation. As a consequence, the possibility to catch-up with the US by following similar specialisation trajectories – as advocated by the 'smart growth' approach – has to deal with very different local-level innovation dynamics.

Second, knowledge generation processes at the regional level might be far more diverse than envisaged by the European Commission: the way in which regional innovation inputs and outputs are linked at the regional level is fundamentally different in 'core' and 'peripheral' regions with strong non-linearities and complex shadow effects (Charlot, Crescenzi and Musolesi, 2014). While it is true that in 'core' regions a minimum critical mass of R&D Expenditure is needed to achieve innovation, in

peripheral regions Human Capital is the only key driver of innovation. As a consequence the set of policy tools proposed by the smart specialisation approach might be too narrow and still too focused on R&D and ICT to address the diversity of local conditions in the EU.

Third, a smart regional innovation policy faces a double coordination challenge. The top-down pre-selection of 'smart' tools needs to be effectively coordinated with the bottom-up identification of local needs (Crescenzi and Rodriguez-Pose, 2011) and place-based implementation (Barca, 2009). At the same time, 'smart' regional innovation policies should be carefully coordinated with other EU policies that absorb equally relevant shares of the total EU expenditure (Crescenzi et al., 2014): while the EU regional policy has been strongly shaped by smart specialisation concepts, the same is not true for other policy areas (e.g. the Common Agricultural Policy) that exert their influence on the same territories.

The almost exclusive focus on infrastructure investment of pre-2000 EU Regional Policy was superseded by the emphasis on R&D in the Lisbon Agenda. The smart specialisation approach has further extended the regional policy toolkit. While this is certainly good news, it remains to be seen if this will be enough to accommodate the diversity of needs of the EU regions and effectively address the transatlantic innovation gap.

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6. Centres of Regional Science: University of São Paulo, Brazil

by Carlos R. Azzoni, *Professor of Economics, University of São Paulo, Brazil*

Even though other colleges and departments cover Regional Science and related themes, the main centre at USP is NEREUS (Núcleo de Economia Regional e Urbana da USP - The University of Sao

Paulo Regional Urban Economics Lab[1]). NEREUS is part of USP's Department of Economics (FEA) located at the Sao Paulo campus. FEA is the best Brazilian economics department[2] and is amongst the top 100 worldwide[3]. USP is ranked the best university in Latin America[4]. With students studying for free, the competition for places results in an excellent group of high-quality students. At the Department of Economics only one out of 18 applicants is admitted. At the graduate level it is even more competitive, as students not only do not pay tuition fees, but also receive scholarships.

Brazilian researchers are generally interested in regional questions, due to the size and variety of regions in Brazil, especially the long north-south distance, the diversity of climate conditions, and the varied historical backgrounds, amongst others. Regional disparities are pronounced and persistent: Brazil's northeast region, encompassing 25% of the population, is responsible for less than 13% of national GDP; its per capita income levels have never reached half those seen at the national level; and the region has been the target of many governmental programs, both place-based and people-based. After many decades of either stable or increasing disparities, there are signs of changes. This is increasingly interesting, as testified by the fact that many researchers, also outside of the Regional Science community, have been turning their attention towards regional disparities. Another important dimension is the rapid urbanization of the country, which has shifted from a 70%/30% rural/urban ratio in 1940, to 15%/85% in just seven decades, with an absolute increase of over 160 million urban inhabitants in the period. The population census of 2010 shows that 24 metropolitan regions have a

population of over 1 million inhabitants.

This sets the stage for an interesting set of research questions for NEREUS's research team. The roots of NEREUS date back to the 1960s, when a national government funded program established the foundations for the formation of the first group of scholars in this field. In the 1970s and 1980s, the Inter-American Development Bank supported (for over 12 years) a graduate program for students from Latin American countries. These developments created the opportunity for the establishment of a new generation of regional scientists and culminated in the creation of NEREUS in the last decade of the 20th century.

Presently, the leading NEREUS faculty members are

Carlos R. Azzoni
Former Head of Regional Planning, Sao Paulo State. He is interested in regional disparities in general and regional planning (Ph.D. USP)

Eduardo A. Haddad
Large-scale modelling of multi-regional economic systems, with special interest in modelling integration applied to transportation, climate change and spatial interaction (Ph.D. Illinois)

Joaquim J. M. Guilhoto
Guilhoto´s research is centered on multi-regional Input-Output applications (Ph.D. Illinois)

NEREUS members and visitors

Carlos Azzoni, Joaquim Guilhoto, Eduardo Haddad, Danilo Igliori, André Chagas and Paula Pereda. New recent additions include Ariaster Chimeli (Environmental Economics, formerly at Ohio University) and Tatiana Rotondaro (Sociology, formerly at Universidade Federal Fluminense).

Regional disparities, as a general topic, is central to NEREUS's research agenda, involving both concentration and inequality. Industrial location used to be a key issue with many studies having been developed. With the growth in the importance of the tertiary sector the focus has shifted. A strong area of research is in the field of Input-Output and Computable General Equilibrium (CGE) Models. NEREUS researchers have assembled a multiregional input-output system and plugged it into a multiregional CGE. This has been used as a tool for many areas of planning, such as energy, transportation, and the environment. The National Transportation and Logistic Plan, as well as similar plans for five different states, have been developed with support from this set of tools. A São Paulo Metropolitan Area passenger strategic plan also benefited from the models developed by NEREUS.

NEREUS students and faculty have received many academic prizes, such as best Ph. D. Dissertation in Brazil (Weslem Faria, now teaching at UFJF, dealing changes in agricultural land use; Gervásio Santos, now teaching at UFBA, dealing with the regional impacts of electricity pricing; Sérgio Castelani, dealing with land use in the Amazon region).

NEREUS alumni are spread over almost all Brazilian states, most of them being university professors. As a spinoff of this large network, the Brazilian branch of RSAI (Regional Science Association International) was founded in 2000 with the first Brazilian Conference of Regional Science (ABER). In some way all the presidents and directors of ABER were (and are) related to NEREUS. The Brazilian meetings attract at least 300 participants every year.

Notes:

[1]http://www.usp.br/nereus/en/;
[2]http://ruf.folha.uol.com.br/2014/rankingdecursos/economia/;
[3]http://www.topuniversities.com/qs-world-university-rankings;
[4]http://www.timeshighereducation.co.uk/world-university-rankings/2014-15/world-ranking

7. Regional Innovation Policies III: Promoting Innovation in Chile

by Patricio Aroca, *Universidad Adolfo Ibáñez*

From 1985 to 1997, Chile enjoyed one of the most prosperous times of its life. In addition to regain democracy in 1990, the annual rate of growth in the period was higher than 7 per cent. However, following the Asian crisis, the Country never recovered that pace of growth and over the next decade the rate has oscillated between 4 and 5 per cent.

Research on the causes that influenced the political agenda the most suggest that total factor productivity (TFP) growth has been slowing down over this period, if not decreasing. On the other hand, in 2005, a specific tax on the mining industry was levied and the huge rise in copper prices in 2006 brought a significant amount of money to the fiscal budget. The Chilean government decided to spend most of this tax income on promoting initiatives to increase TFP.

In those years, a new national innovation policy was established promoting clusters with high potential, taking account of the competitive advantage of the territories, known as the *Fund for Innovation and competitiveness*. Three programs to support the innovation system were financed:

1. Advanced Human Capital for Innovation

Twenty five thousand scholarship to attend a graduate program abroad (master or Ph.D.), following the scheme of the Fulbright scholarship, were financed, in a program that should last for 10 years. Two thousand five hundred graduate students

are sent abroad each year, and the first generations are returning to the country with their degree.

2. R&D for the Cluster

The initial diagnostic showed that economic and scientific productivity were not directly linked, and that the interaction among firms and researchers or research institutions were not sufficiently developed.

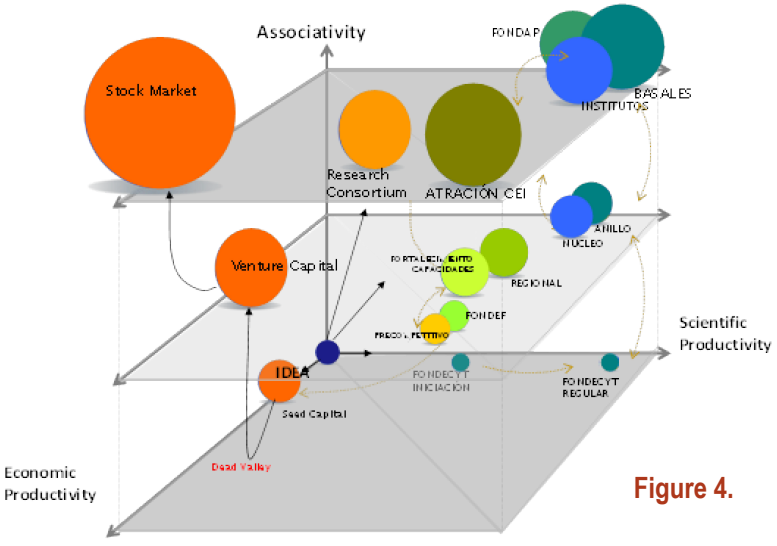

Figure 4.

As Figure 4 shows, there were three levels of promotion for these two processes. In the first level, the program promotes individual research (FONDECYT: regular and initiation) for beginners and seniors. A second level encourages group formation (ANILLO, NUCLEO). While the first level finances research projects of an average of eighty thousand dollars (for three years), the second level of funds supports projects of up to one million dollars (for three to six years). The third level (FONDAP, BASALES and INSTITUTOS) involves programs promoting large and well established research groups with a level of aid that can reach ten million dollars over a period of five to ten years.

The new policy brings programs that are focused on promoting links between economic and scientific productivity, principally focusing on the second (PRECOMPETITIVO, FONDEF, REGIONAL and FORTALECIMIENTO DE CAPACIDADES) and the third levels (Research Consortium, ATRACION CEI). The projects that have been supported by these programs have been related more with the high potential cluster defined in the diagnostic.

3. Promoting entrepreneurship and technology adoption/adaptation

In the first stage of the program application, the competitive process to get a grant from the agencies that managing the funds, resulted in a high concentration of research groups around the metropolitan region, where more than forty per cent of the Country inhabitants lived. Later, part of the money was separated from the national competition and specifically dedicated to other regions. Despite this attempt, the allocation of the resources is still highly concentrated around the capital city.

On the other hand, in 2010, the change of government saw the replacement of a coalition that had ruled for seventeen years. The new government proved to be more market-oriented, and the third pillar of the national innovation policy became the most important one in terms of the allocations of funds for innovation and competitiveness. This government lasted until this year, and has been again replaced by the previously ruling coalition.

Even though there seems to be some significant improvement, especially in terms of human capital formation, Chile still needs to improve its innovation system along the following axes. First, innovation policies must be conceived over a long-run horizon; in fact, frequent changes to its principles could undermine the achievement of satisfactory results

(we could summarize this first point saying "*There is no fast track to a developed innovation system*"). Second, recent research shows that some of the key issues in the innovation process are around the existence of trust among stakeholders, and especially among firms, institutions, and governmental agencies. Policies are designed so as to reach the largest possible group of firms and institutions; however, government agents usually have not enough time to spend with innovators, who usually complain about the insufficient time spent together with government officials to finalize their proposals. As a consequence, innovators do not trust agencies because the programs do not take into account their needs.

Finally, some improvements can be detected in terms of the link between economic and scientific productivity. However, there still is a long way to go to reach the full development of a world-class innovation system. The lack of scientific brokers that smooth the relations between firms and research centers and take advantage of the programs that were created with this purpose is in this respect one of the main weaknesses of this program.

Contents