



United Nations
Educational, Scientific and
Cultural Organization

**The UNESCO Forum on Higher Education,
Research and Knowledge**



2009 WORLD CONFERENCE ON HIGHER EDUCATION
**The New Dynamics of Higher Education and Research for
Societal Change and Development**
5-8 July 2009 (UNESCO, Paris)

THEMATIC SESSION: LEARNING, RESEARCH AND INNOVATION

**PANEL II: The Contribution of Higher Education, Research
and Innovation Systems (HERIS) to a Sustainable Future**

Tuesday 7 July (11h30 – 13h), Room IX

COORDINATION:

The UNESCO Forum on Higher Education, Research and Knowledge

CHAIR

• Karen MacGREGOR (South Africa)
Co-editor of University World News
Director of the Africa Edition, UWN

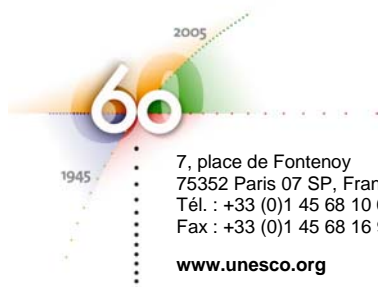
PANELISTS

• Merle JACOB (Trinidad and Tobago /Sweden)
Professor of Research Policy
University of Lund, Sweden

• V. Lynn MEEK (Australia)
Director,
L.H. Martin Institute for Educational Management,
University of Melbourne

• Miguel NUSSBAUM (Chile)
Professor Computing and Engineering,
Pontificia Universidad Católica,
Santiago de Chile

• Jaana PUUKKA (Finland)
International Management of Higher Education (IMHE) Programme
OECD, Paris



7, place de Fontenoy
75352 Paris 07 SP, France
Tél. : +33 (0)1 45 68 10 00
Fax : +33 (0)1 45 68 16 90

www.unesco.org

• Mala SINGH (South Africa)
*2009 Fulbright Fellow,
Former CEO,
Council for Higher Education*

• Ulrich TEICHLER (Germany)
*Director,
International Centre for Higher Education Research,
University of Kassel*

RAPPORTEUR

• Heather EGGINS (United Kingdom)
*Professor and International Consultant in Higher Education,
Fulbright New Century Scholar (2005-6)
Editor, Higher Education Quarterly
Immediate Past Director, Society for Research into Higher Education*

NOTE: The **UNESCO Forum Research Report**, entitled *Systems of Higher Education, Research and Innovation: Changing Dynamics* will be presented at this session by the editors, Lynn Meek, Ulrich Teichler and Mary-Louise Kearney.

1. INTRODUCTION

Within this WCHE thematic session, certain panels will address the close linkages between systems of higher education, research, science and technology and innovation (known as HERI). These integrated entities play a major role in knowledge management which drives the development agenda at global, regional and national/local levels. They concern high, middle and low income countries and are essential for the construction of a sound knowledge base for sustainable progress. The panel entitled *The Contribution of Higher Education, Research and Innovation Systems (HERI) to a Sustainable Future* will discuss the emergence of integrated HERI systems over the past decade as main drivers of socio-economic progress and comment on the challenges posed *both for and by* this phenomenon with regard to equitable and sustainable human development.

2. THE CONTRIBUTION OF HIGHER EDUCATION, RESEARCH AND INNOVATION SYSTEMS (HERI) TO A SUSTAINABLE FUTURE

In recent years, new dynamics have emerged in each of the key domains of higher education, research and innovation which are the integrated base for the UNESCO Forum's activities. In higher education, these include: (i) Demand. (ii) Diversification of provision. (iii) Changing lifelong learning needs, and (iv) Growing Communication and Information Technology (CIT) usage and enhanced networking and social engagement both with the economic sector and with the community at large. In scientific research, the tension between basic and applied research is the core issue, thus linking to the *'think global, act local'* challenge. This necessitates more flexibly organized research systems and pragmatic approaches which promote "Big Science" while also nurturing science which serves society in the widest sense. In the innovation field, the dynamic comprises both *'research for innovation'* and *'research on innovation'*. Partnerships amongst government, the economic sector and research

universities are growing exponentially so that new knowledge becomes linked to development goals. But, innovation often occurs outside academic environment as a result of inventive thinking and creative experimentation. Research systems must understand the critical factors involved to help advance this process, wherever this occurs.

Consequently, a new meta-dynamic has emerged resulting from the interaction of these systems. As this has steadily increased, an analysis of research management has morphed into observation and study of knowledge systems. In practice, this term denotes the synergy generated by the convergence of higher education, scientific research and innovation systems which have now become strategically interlinked in terms of their objectives and modalities.

Throughout the current decade, the world has witnessed the advance of the Knowledge Society and, its principal engine, the Knowledge Economy. This era has offered great hope and certainly ground-breaking developments have occurred, often due to the pervasive forces of new communication and information technologies. As a result, all countries, whatever their level of development, have been obliged to review and reorganize their capacities for accessing and benefiting from the high-level knowledge which shapes social change and sustainable human development. For those with weak or non-existent capacity in this area, the risk of marginalization has accelerated sharply.

This debate must also address how to address complex global issues with grave local consequences which lie at the heart of sustainable human development. Of special concern are the areas covered by the Millennium Development Goals (MDGs) as well as fields such as climate change and emerging ethical questions arising from ST advances. Furthermore, over 20 years ago, Mode 2 Knowledge was proposed as the modality to understand global complexity through a multi-faceted approach. Yet, this is not widely practised and thus may slow the pace needed to provide effective solutions.

Since 2007, the current global economic and financial crisis has wreaked havoc on many well-established institutions, thus altering the landscape of wealth and stability within a very short time span. But, despite this harsh reality, the global and irrevocably interconnected nature of society in the twenty-first century remains fundamentally unchanged. Protectionism may well re-emerge but technology has sealed the irreversibility of this phenomenon. As a result, the search for more effective local, national and regional solutions must operate in tandem with ongoing global transformations with unknown and possibly negative outcomes.

Against this background, the Forum's mandate for 'research on research' has continued to gain importance. It is now widely held that understanding the Knowledge Society results from the meta-analysis of the crucial knowledge systems – namely, in higher education, research and innovation (HERI) – which fuel its sustained progress in different social contexts from OECD nations to middle and low income countries (MICs and LICs).

Expected Outcomes of the Debate

- To take stock of the evolution and impact of HERI systems in relation to sustainable development over the past decade.
- To identify emerging challenges for HERI systems in a volatile global social and economic climate
- To propose feasible strategies to address the complex issues involved including the importance of promoting Mode 2 Knowledge approaches

KEY QUESTIONS

1. What are the reasons for the integrated debate that is required to understand HERI systems as a key motor for sustainable?
2. Certain examples of good practice be cited from HICs, MICs and LICs with regard to integrated HERI systems. Why have these specific policies succeeded?
3. How are the aspects of quality *vs.* contextual relevance balanced when discussing HEI capacities?
4. What are the dangers in maintaining sectoral approaches to this integrated domain and why is Mode 2 Knowledge difficult to achieve?
5. This HERI debate has shaped the last decade where the Knowledge Society and Knowledge Economy were at the forefront. But the present economic crisis will require new responses from the fields of higher education, research and innovation. What are these likely to be?

The panelists will discuss HERI systems from differing regional standpoints and comment on possible future strategic approaches.



Bionotes of the participants

CHAIR

• **Karen MacGREGOR (South Africa)**

Karen MacGregor is a South African correspondent who reports for *Newsweek*, New York, and has written for newspapers including *The Sunday Times*, London, and the *Globe & Mail*, Toronto, as well as regularly for Unesco, Paris. MacGregor (MA International Relations, University of Kent, UK) was foreign editor of the *Times Higher Education Supplement* and is currently co-editor of *University World News*.

RAPPORTEUR

• **Heather EGGINS (United Kingdom)**

Professor Heather Eggins is currently Visiting Professor at the Institute for Education Policy Research, Staffordshire University, Visiting Professor at the University of Strathclyde and a senior member of Lucy Cavendish College, University of Cambridge.

She was a Fulbright New Century Scholar in 2006, and Editor of *Higher Education Quarterly* 2004-2007. Previously she was Director of the Society for Research into Higher Education. Her research interests lie in higher education policy and strategy, with a particular interest in matters relating to access and participation, gender, doctorates, and the academic profession

PANELISTS

• **Merle JACOB (Trinidad and Tobago /Sweden)**

Merle Jacob is Director of the Centre for Technology, Innovation and Culture at the University of Oslo and Professor of Research Policy at the Research Policy Institute at the Lund University. She was, inter alia, guest professor at the Centre for Climate Science and Policy Research at the Linköping University and Reader and Project Leader at the Institute for the Management of Innovation and Technology (IMIT) at the Chalmers University of Technology. Professor Jacob was also, amongst other projects, a scientific leader in the research group on Management of Innovation and Knowledge (MINK) at the Copenhagen Business School from 2002-2005 and is, since 2004, a Scientific Leader for Phase 1 MISTRA financed research programme at the Linköping University.

• **V. Lynn MEEK (Australia)**

Lynn Meek is the Foundation Director of the L.H. Martin Institute at the University of Melbourne. Prior to this, Professor Meek was Director of the Centre for Higher Education Management and Policy (CHEMP) at the University of New England. Trained in sociology of higher education at University of Cambridge, specific research interests include governance and management, research management, diversification of higher education institutions and systems, institutional amalgamations, organizational change, and comparative study of higher education systems. Professor Meek has published 30 books and monographs and numerous scholarly articles and book chapters. He is on the editorial board of several international journals and book series. He is a member of the UNESCO Regional Scientific Committee for Asia and the Pacific.

• **Miguel NUSSBAUM (Chile)**

Miguel Nussbaum, Ph.D., is full professor for Computer Science at the School of Engineering of the Pontificia Universidad Catolica Chile. His research areas are Ubiquitous and Collaborative Learning with projects in Argentina, Brazil, Chile, Guatemala, United Kingdom and the United States. He has published 50 journal papers of the ISI catalogue and won the best conference paper award at CSCL 2009. Has been member of the board of the Chilean National Science Foundation and is member of the Interim Scientific Advisory Board of the FORUM of UNESCO.

• **Jaana PUUKKA (Finland)**

Jaana Puukka heads the OECD work on Higher Education and Regional and City Development. She joined the OECD Programme on International Management in Higher Education (IMHE) in 2005 to coordinate and manage the project on “Supporting the Contribution of Higher Education Institutions to Regional Development“ which embraced reviews of 14 regions in 12 countries throughout the world. She is now co-ordinating the Phase 2 reviews which reach out to 15 regions in G8 countries and rapidly developing economies. She is the co-author and editor of the OECD publication “Higher Education and Regions – Globally Competitive, Locally Engaged”. Puukka has experience in higher education and regional development in Finland as a national and local government adviser, programme manager, practitioner and evaluator.

• **Mala SINGH (South Africa)**

Mala Singh is Professor of International Higher Education Policy in the Centre for Higher Education Research and Information at the Open University in the UK. She is currently a Fulbright Scholar at the New School for Social Research in New York and a Senior Fellow at the Steinhardt Institute for Higher Education Policy at New York University. She was the founding Executive Director of the Higher Education Quality Committee which manages the quality assurance responsibility of the Council in Higher Education (CHE) in South Africa. She has a doctorate in Philosophy and was formerly professor and head of the Department of Philosophy at the University of Durban-Westville in South Africa. She has published in the fields of philosophy, higher education and quality assurance. She is a member of the European Register Committee, the Advisory Committee of the Association of African Universities' project on quality assurance, and the University Quality Assurance International Board in Dubai. She serves on the editorial boards of Higher Education Policy and the Journal of Higher Education in Africa. She is a member of the Academy of Science of South Africa.

• **Ulrich TEICHLER (Germany)**

Ulrich Teichler is a Professor and the immediate past Director of the International Centre for Higher Education Research (INCHER-Kassel) University of Kassel in Germany. He was a chairman of the Consortium of Higher Education Researchers (1988-89, 1992-98) and President of EAIR (1997-2001). His expert and consultancy activities include those for UNESCO, OECD, World Bank, Council of Europe, European Commission, and national governments as well as various international and national university organisations. He has been awarded the Research Prize of the Council on International Educational Exchange (1997), the Comenius-Preis of the UNESCO (1998), and the Doctor honoris causa of Turku University (2006). He published more than 1,000 academic publications notably in the following areas: higher education and the world of work, international comparison of higher education systems, and international cooperation and mobility in higher education.

UNESCO FORUM ON HIGHER EDUCATION, RESEARCH AND KNOWLEDGE

Mary-Louise KEARNEY

ml.kearney@unesco.org

Annapaola COPPOLA

ap.coppola@unesco.org

Emmanuelle AUBERTEL

e.aubertel@unesco.org

Harrison BECK

h.beck@unesco.org

Sarah Ninon BERTRAND

s.bertrand@unesco.org

Aurélie BOULOS

a.boulos@unesco.org

Bertha Jane McDUFFIE

b.mcduffie@unesco.org





What can we learn from OECD reviews of HE in regional and city development?

2009 WCHE

UNESCO, Paris, 7 July 2009

jaana.puukka@oecd.org

www.oecd.org/edu/imhe/regionaldevelopment

The philosophers have only interpreted
the world in various ways.

... The point , however, is to **change** it.

Karl Marx 1818-1883

Globalisation is increasing the competitive advantage of cities and regions, **knowledge and innovation-intensive places....**

... Innovation and human capital development are vital for social and economic development

OECD's vehicle to mobilise HE
for Economic, Social and Cultural
Development of their Cities and Regions

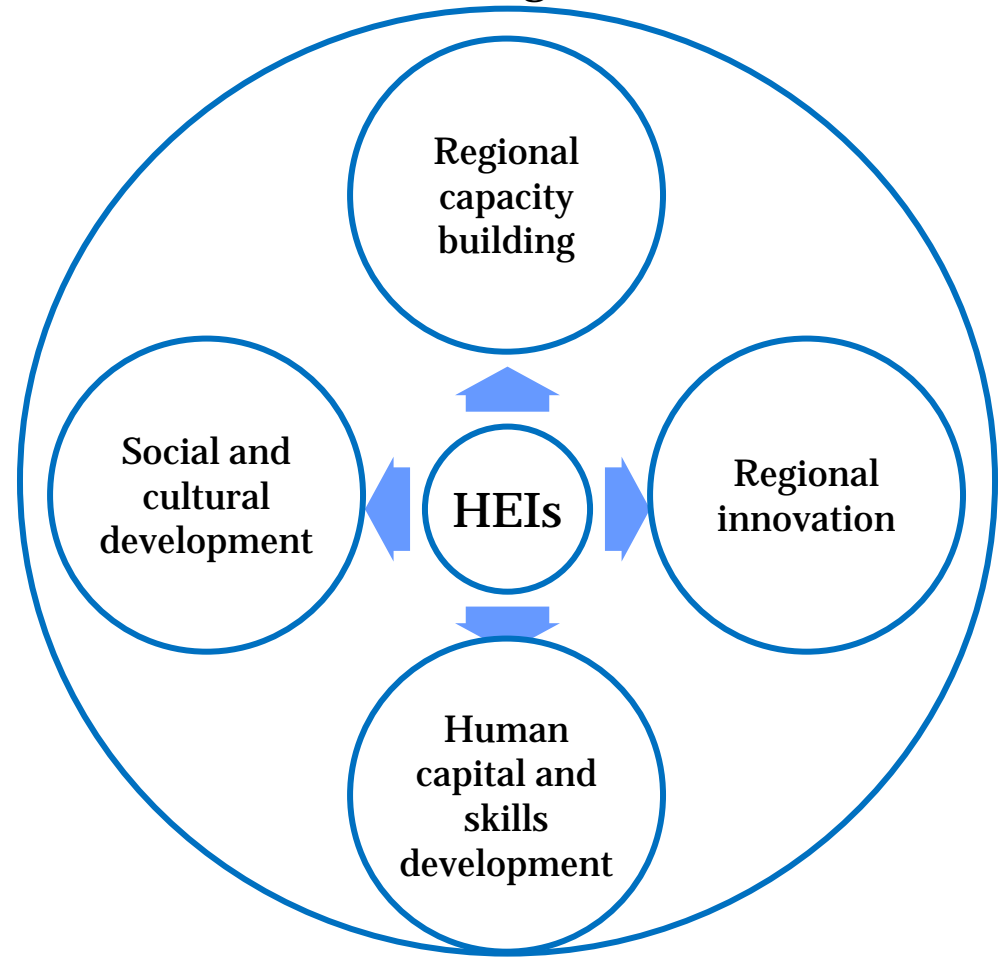
**... Reviews of Higher Education
in Regional and City Development**

What is being reviewed?

Partnership building

HEIs and public and private agencies identify strategic goals and work towards them.

National and regional context



Focus of analysis of the OECD review

Plenty of activity... but

...**Limited co-operation**

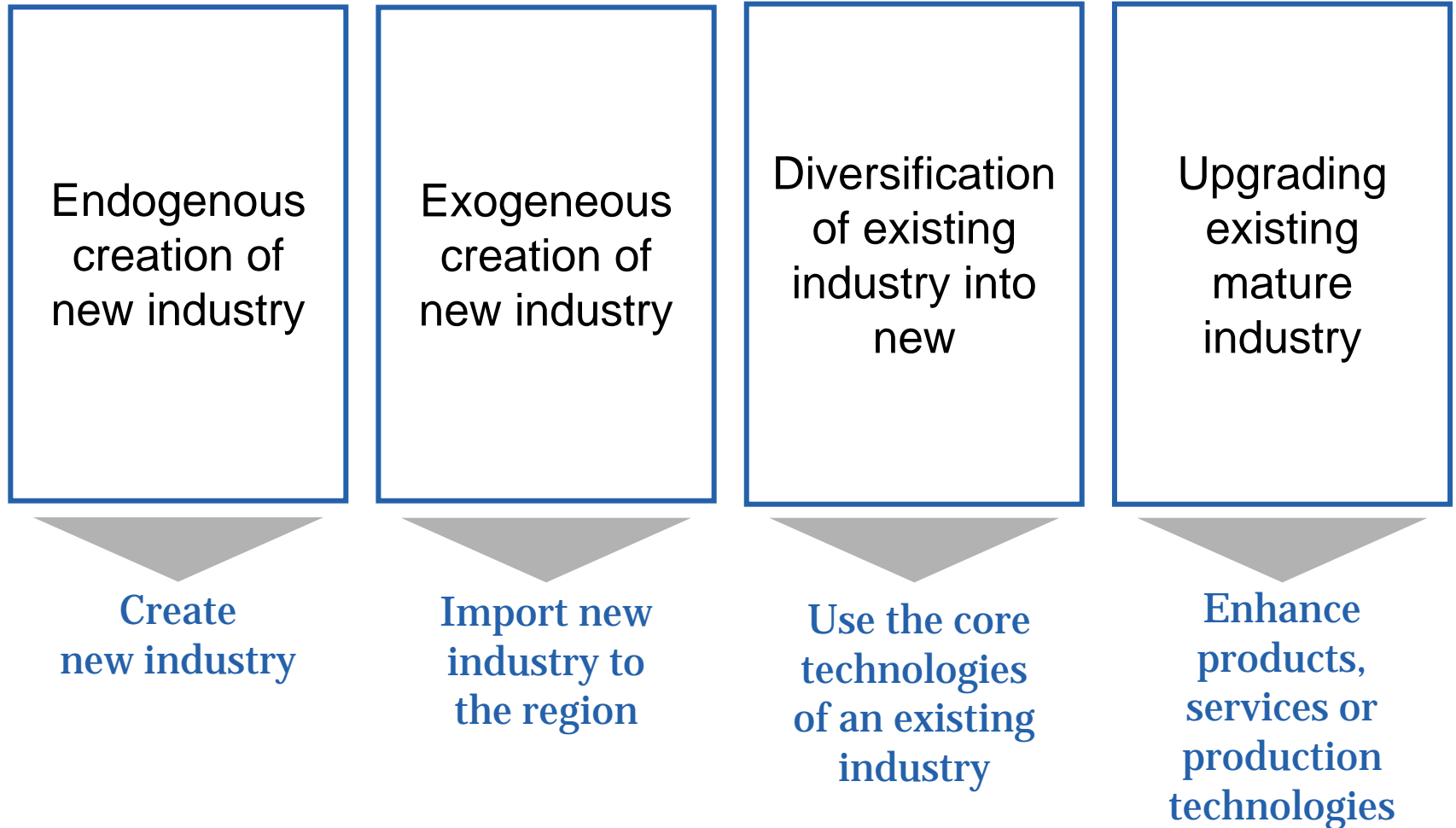
...Policy focus on few **high tech** fields

...Only **few HEIs** worldwide **have gained income through commercialisation**, still, HEIs are building their individual capacity...

...Open science can enhance innovation by reducing the costs of knowledge transfer.

...Human capital development and **“knowledge transfer on legs”** is the key.

Innovation-led Growth: 4 Pathways (MIT)



...large emerging economies
are mobilising foreign direct investment, trade
and human capital
to transform universities into engines for
technology based **innovation...**

...low income developing economies have
limited human and social capital for producing,
disseminating and using knowledge...

... consider **broader forms of innovation** and
adaptation of existing technologies to
address local needs

It is not the strongest of the **species**
that survives,
nor the most intelligent,

but the one
most responsive to change.

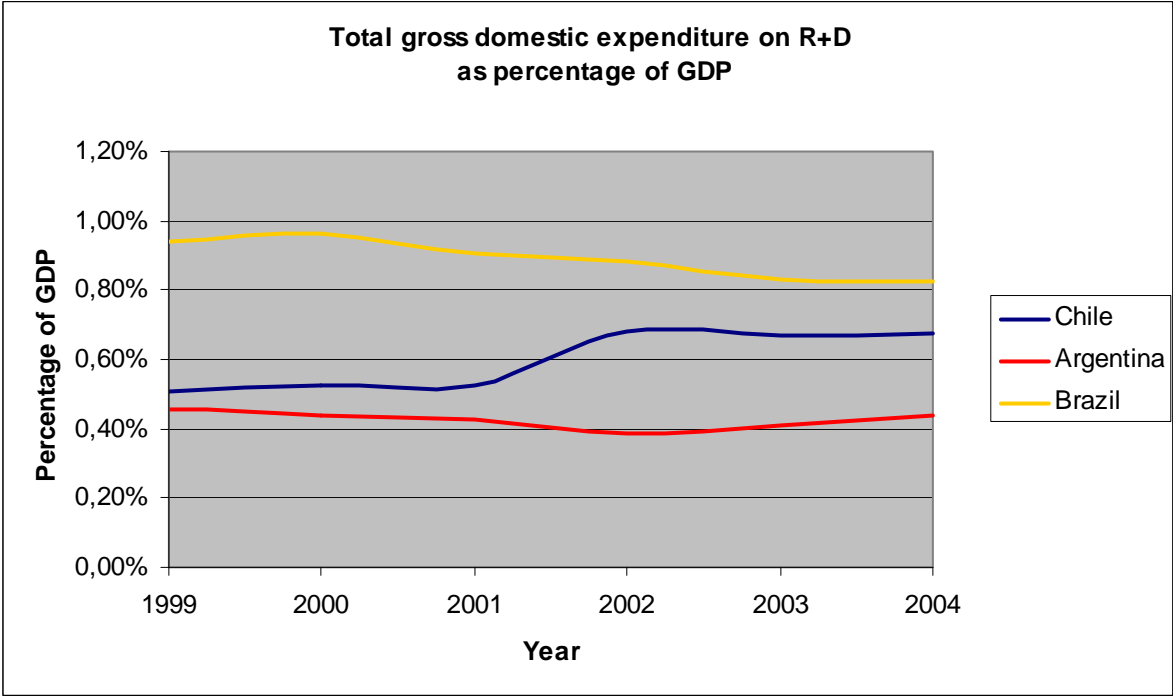
Attributed to Charles R. Darwin

Learning from the Chilean Research Experience

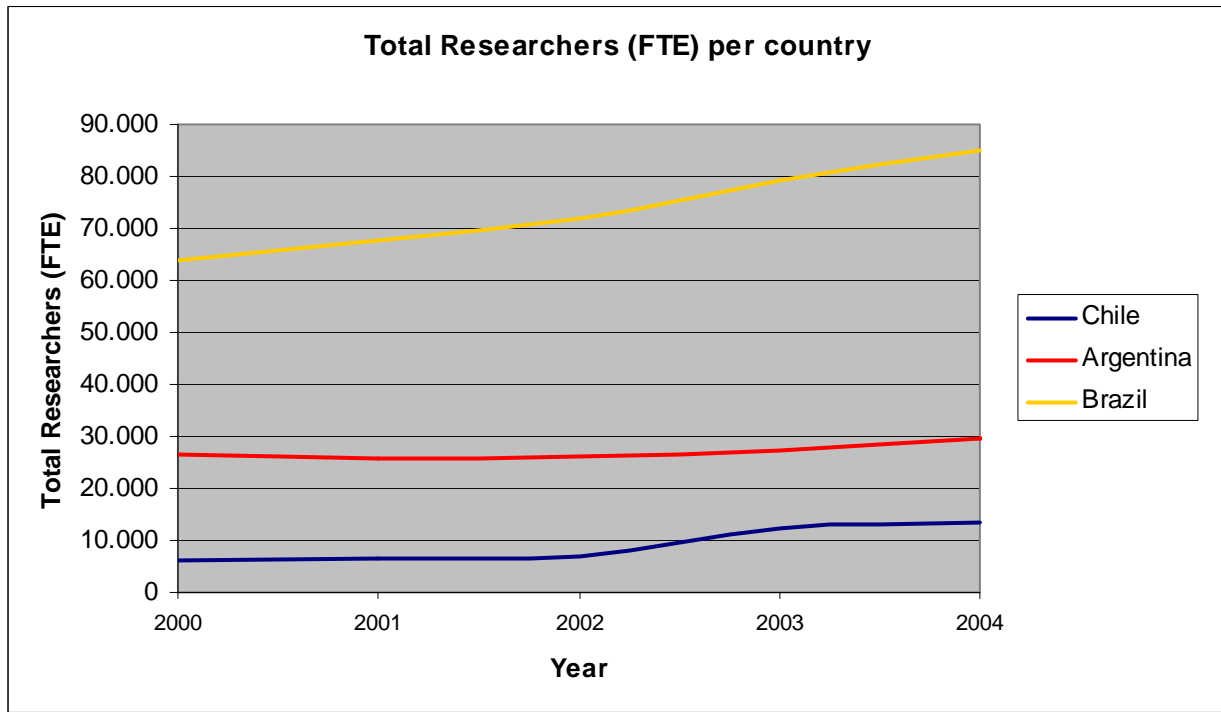
Miguel Nussbaum

P. Universidad Catolica de Chile

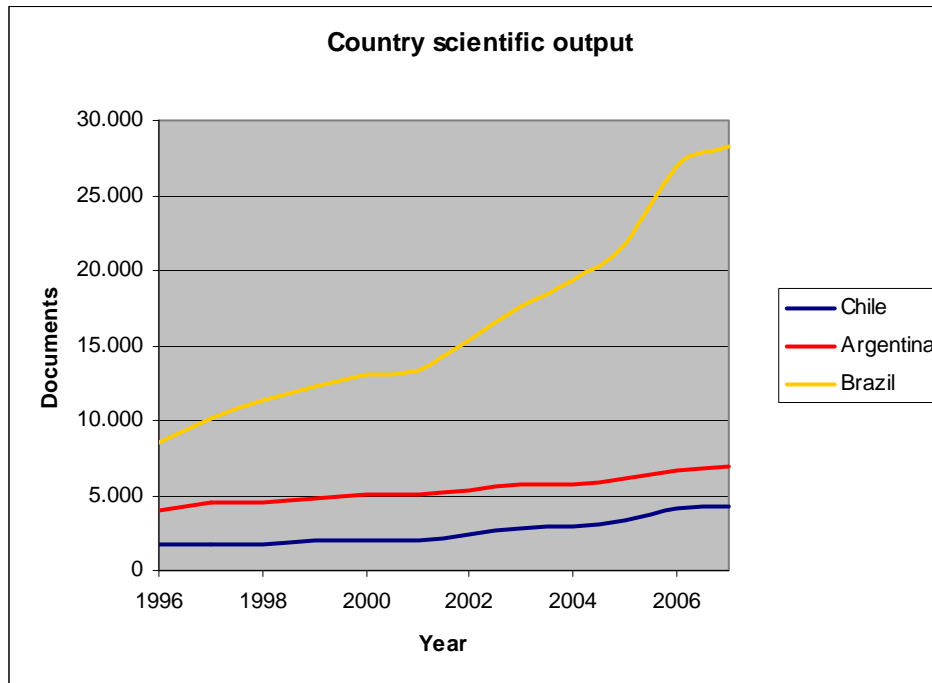
mn@ing.puc.cl



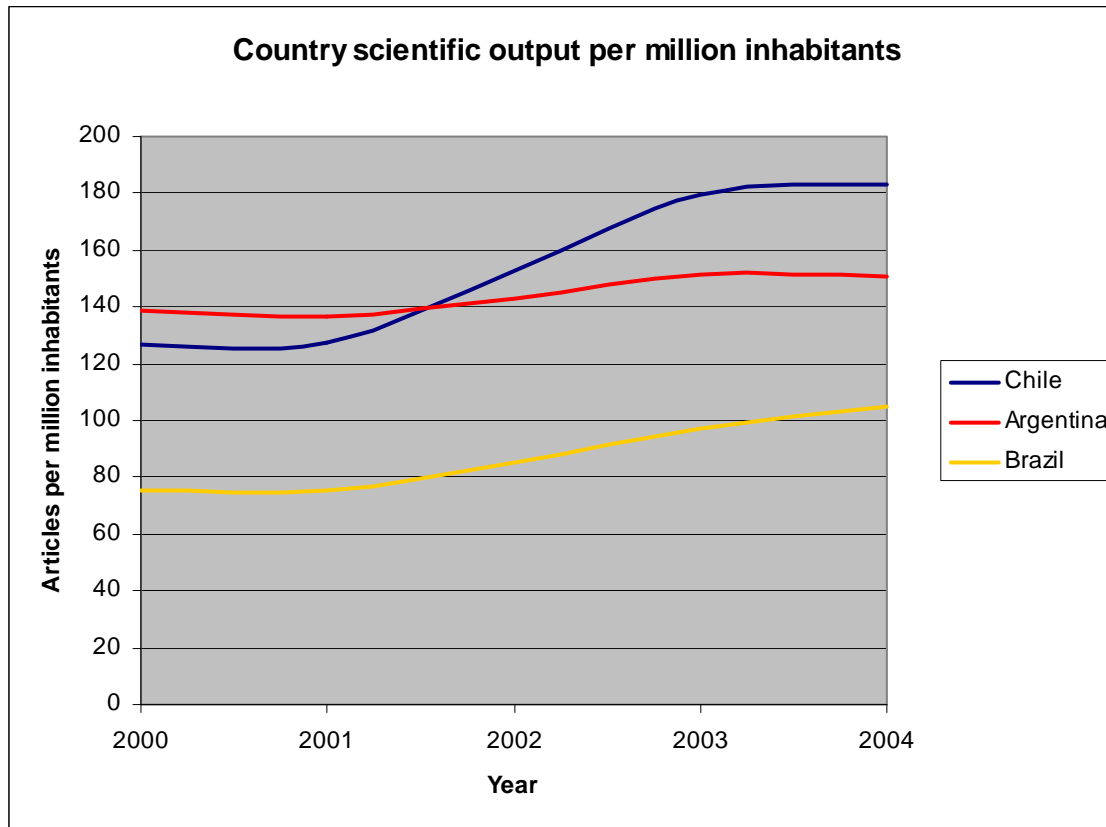
Analysis: Brazil and Chile



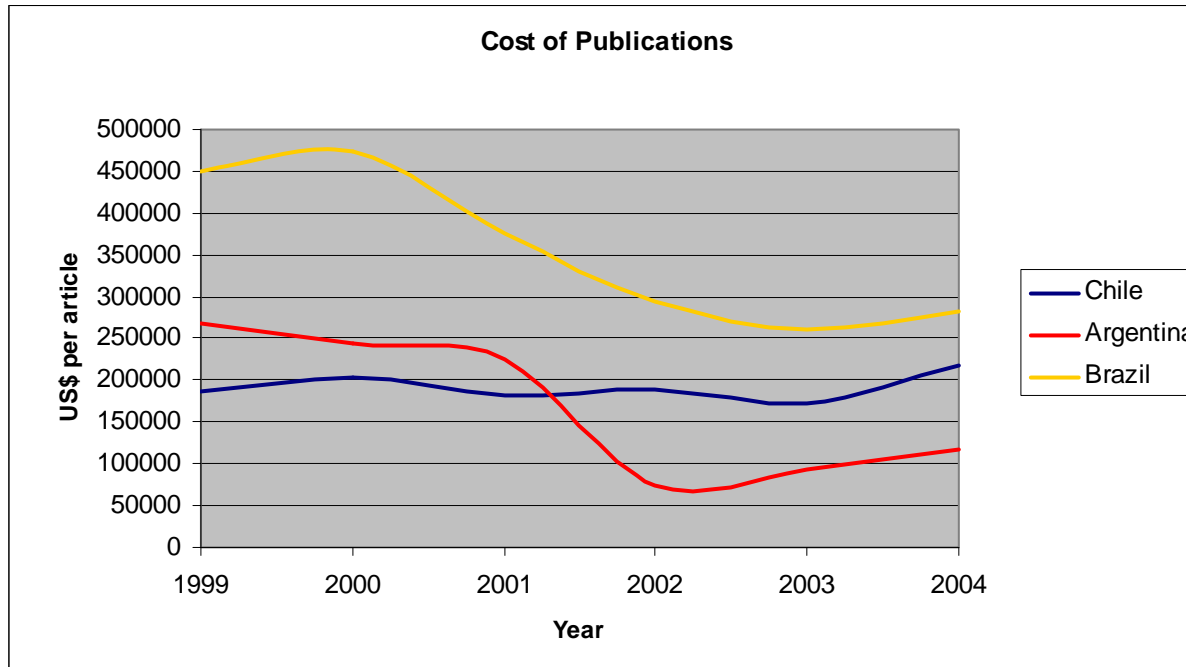
Analysis: Brazil and Chile

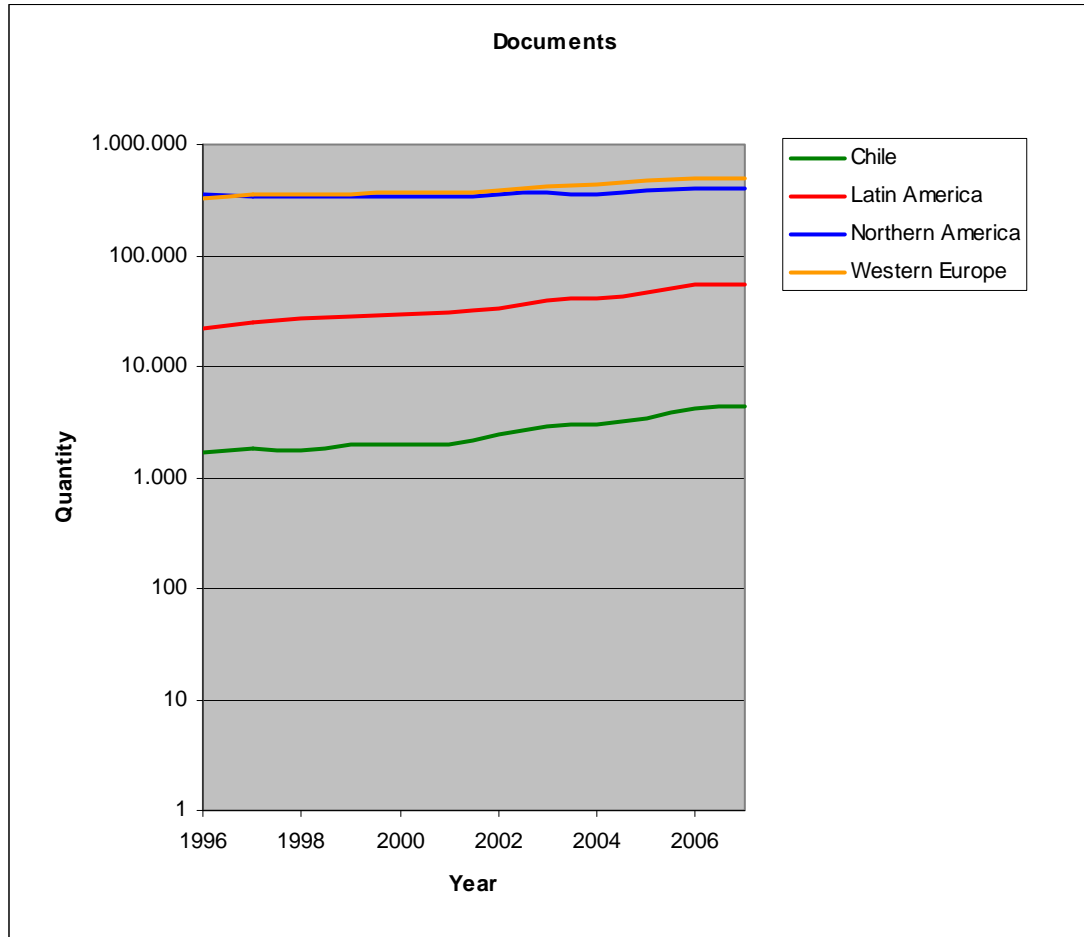


Analysis: Brazil and Chile

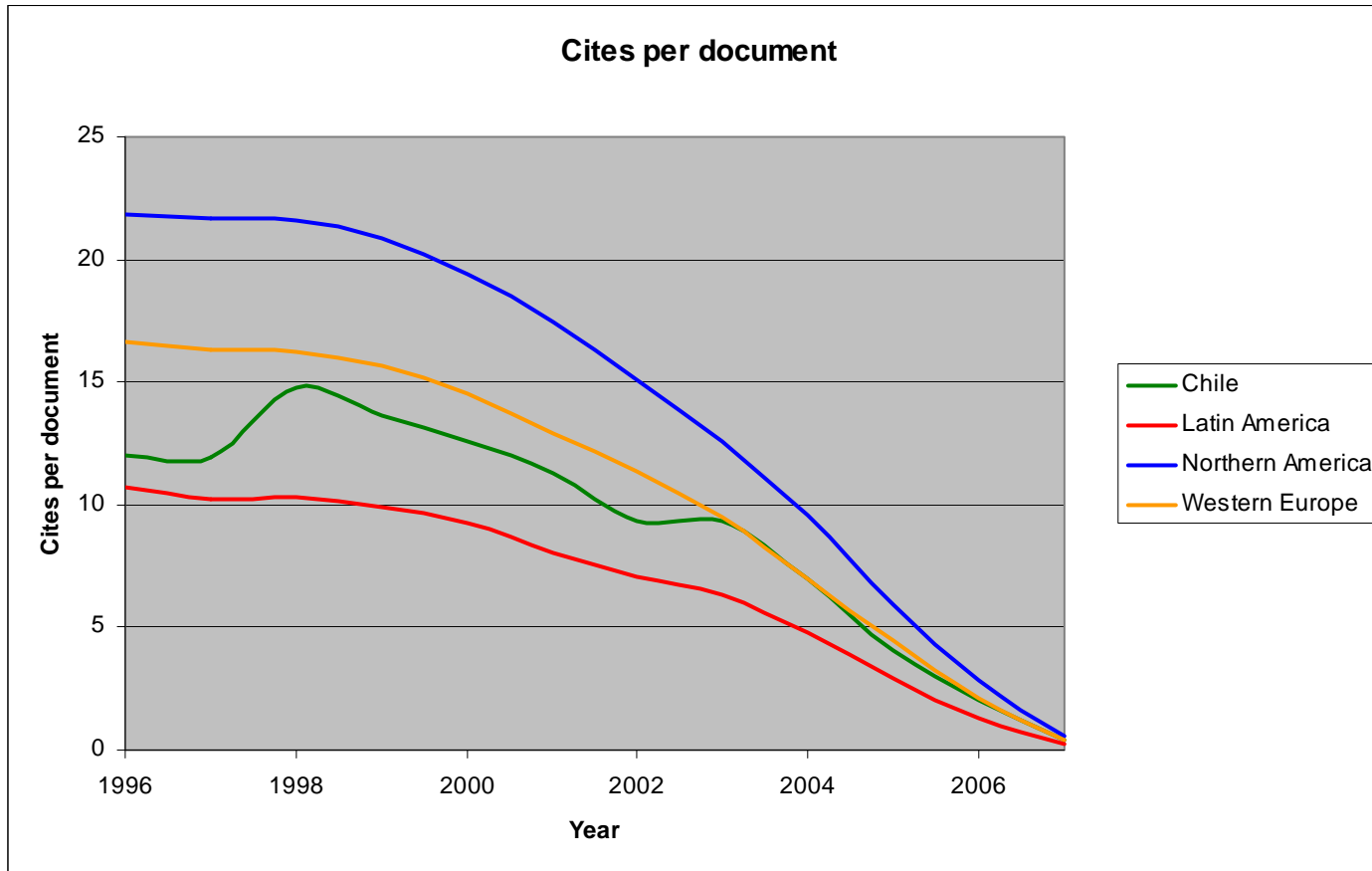


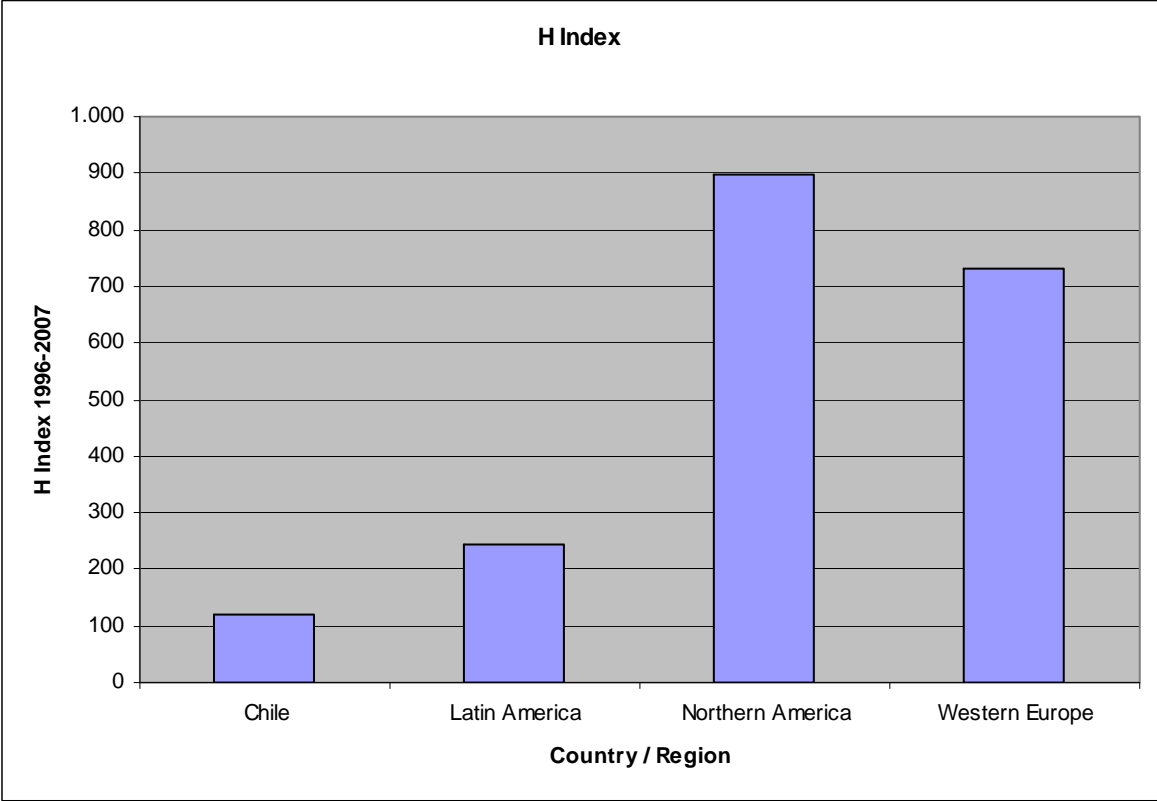
Increase bigger than boost in researchers



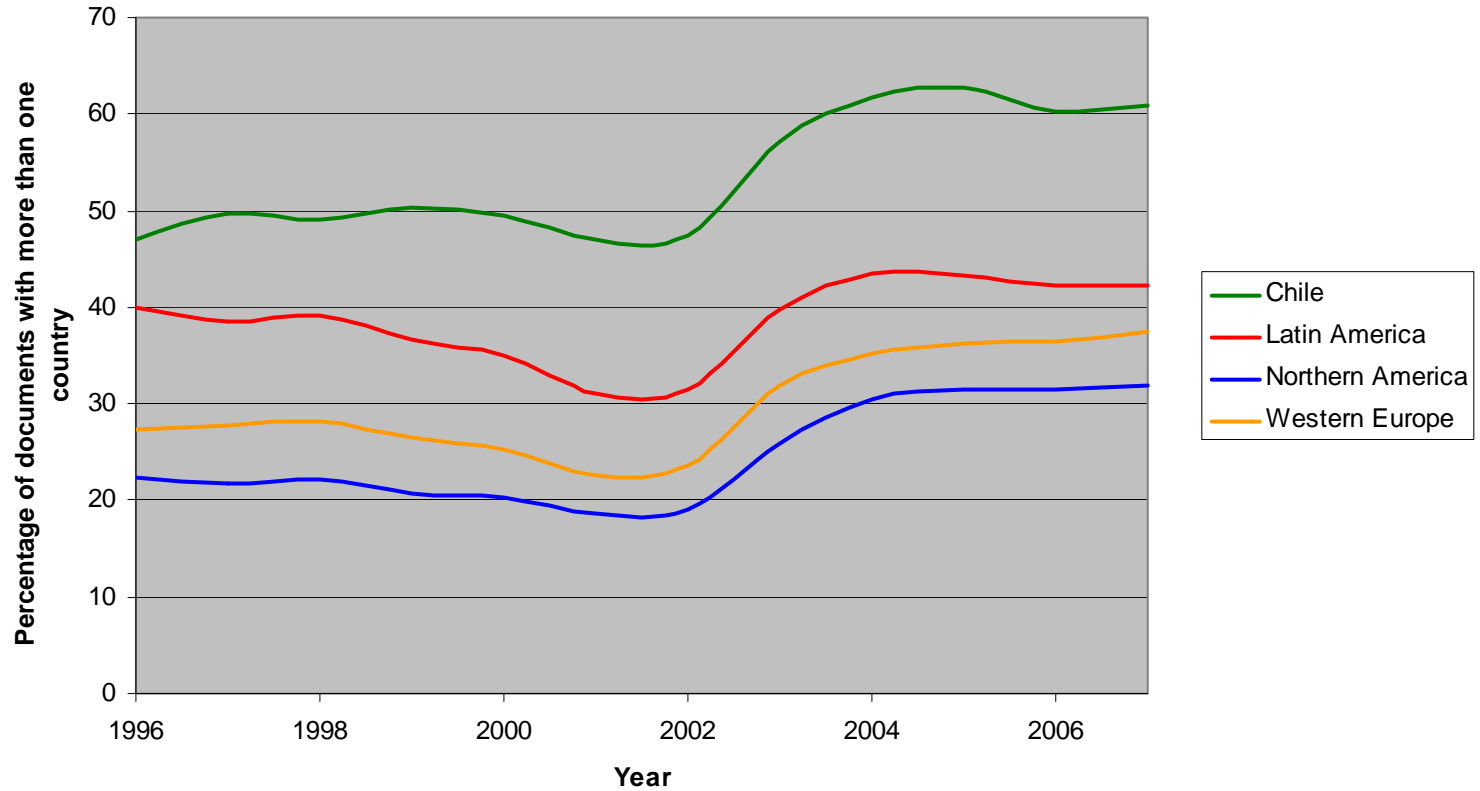


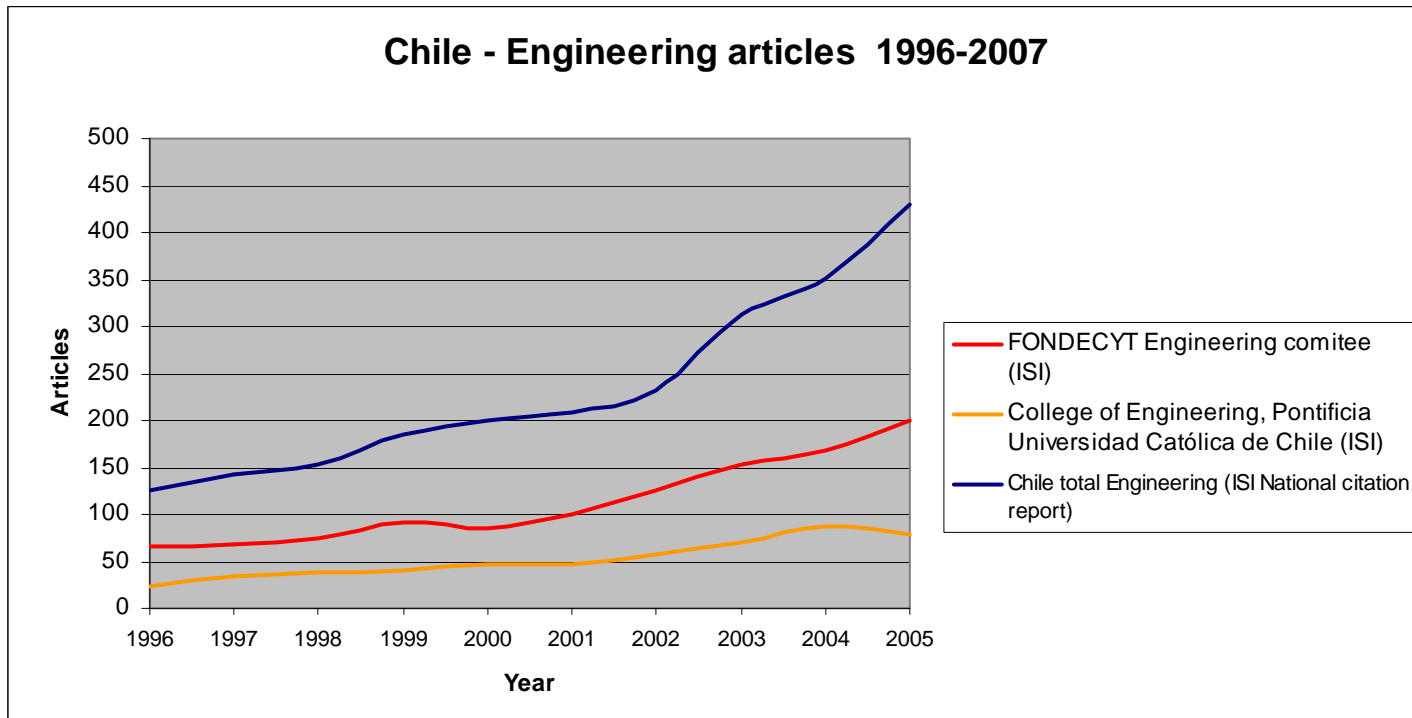
Wider picture





International Collaboration





Micro analysis

SCImago webiste. Engineering considers SCImago cathegories Engineering, Chemical Engineering and computer science.
 FONDECYT - CONICYT
 College of Engineering, Pontificia Universidad Católica de Chile

Conclusions

Policy should transcend beyond the immediate scope

Conclusions

Policy should transcend beyond the immediate scope

RELEVANCE

We are far away of transforming knowledge into value

Patents are costly and do not guarantee income

Start Ups need more then funds;

Marketing networks

Learning from the Chilean Research Experience

Miguel Nussbaum

P. Universidad Catolica de Chile

mn@ing.puc.cl