Universities and Research Centers as Agents for Economic Development

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Panel Discussion on Science and Technology in Greece:

"Greece at the Crossroads- How can we help?"

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The Context

- Challenging times for higher (read post high-school) education – world wide
- Major socioeconomic changes are transforming the way we live, work and communicate
- New Strategies are needed for success in the new so-called “information-knowledge economy”
- Society is “scrutinizing” ever more closely the behavior and performance of higher education institutions
- Great challenges ⟹ great opportunities
- Critical role of ICT (Information and communication technologies)

The Context: Better Integration of Higher Education with Society

- **Changing role of Universities in modern societies**
  - ***Impact on Quality of life*: educate "better" citizens graduate "productive" citizens – careers – economic development**
- **Universities must be "open" and more integrated with society**
- **Our students and their careers are our best ambassadors to society at large**
  - **Must produce students that are more agile in their career pursuit**
  - **Must be able to succeed in the global economy – exchange programs**
  - **Cross-disciplinary education – out-of-school cooperative experience a must**
- **Industry an important factor in this integration – programmatically and financially**

Universities and Society: Examples

- Universities and K-12 education
- Research experiences for undergraduates
- Research experiences for high school students
- Educating high school teachers (math, science, technology, …)
- Universities and life-long learning
- Universities as knowledge sources
- Universities as key contributors to solving problems of significant impact to society
- Universities and economic development – innovation – jobs
- Universities and quality of life and work
- Universities as contributors to art and culture
- Universities for international collaboration and peaceful co-existence

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Universities and Economic Development – Greece

- High quality human capital present
- R&D nests of excellence in several places – competent and winning tough EU funding
- Lack of infrastructure – needs to be created, but not via total reliance on government
- Utilize EU funding opportunities – attract other funds
- Work with “mentors” from successful programs
- Decentralized development and implementation – areas must have strong “local” component for jobs
- Layered post high-school education
- Consolidation of Universities – link them to the various layers and to high schools

Universities and Economic Development – Some Ideas for Greece

- Infrastructure supporting Economic Development
- Infrastructure supporting innovation and entrepreneurship
- Implementing something like the European "Competence Centres" in Greece; across the country in business areas where Greece can be competitive
- Such centers can have social focus, quality of life focus, not just technology focus
  - Agriculture
  - Shipping
  - Health care – local mini-clinics, assisted living, etc.
  - e-Apps for archeology, tourism, restaurants, etc.

Universities and Economic Development – Some Ideas for Greece

- ICT for decentralization – take location away, provide education, healthcare, jobs
- Developing "Total Innovation Systems" (e.g. MTECH at UMD, Sweden, Austria, Germany, France, …)
- Teaching and cultivating entrepreneurship -- "Guided Entrepreneurship" programs
- Government (EU, central, regional) matching of industry funding in projects
- Venture Capital support
- Business Incubators – Technology parks
- Supporting SMEs

Note: Students in Greece are trying on their own – but there is no supporting infrastructure

Some Ideas for Greece

- A small "task force" is needed to investigate several ideas and develop an implementation plan for Greece, including identification of the "best" areas to invest in
- Use EU funding opportunities and EU structural funds
- Use Centers, or other cross-constituencies organizations, to attract companies to Greece world-wide
- Use them to create SMEs in targeted areas
- Capitalize on the rich international network of Greek-origin scientists, engineers, business people – exchange programs, advisors, international collaboration and ventures
- Encourage volunteers in Greece to help – e.g. retired people to "professors of Practice", advisors, etc.

Some Ideas for Greece

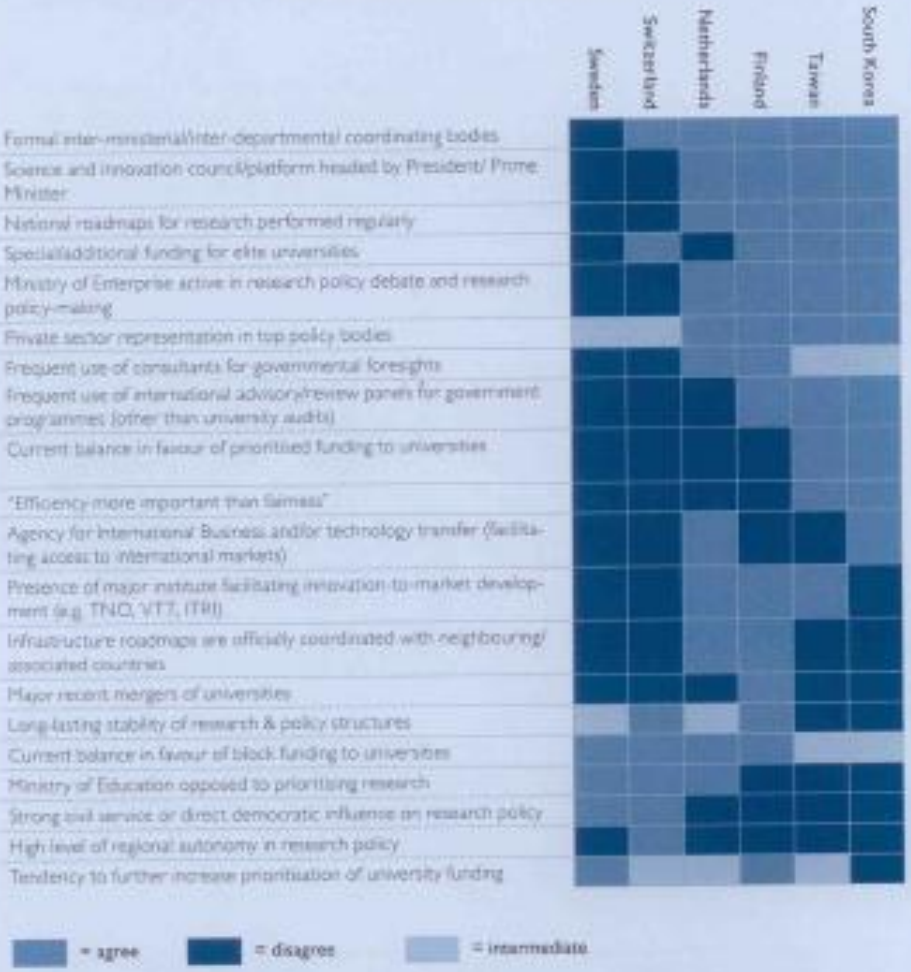
- **Some examples of Center topical areas for Greece:**
  - **Health IT**
  - **Sensors and improvement of agricultural processes**
  - **Maintenance and repair of merchant marine ships**
  - **Sustainable management of fisheries**
  - **Location aware e-Apps for tourism**
  - **Energy-photovoltaic systems**
  - **All electric cars**
  - **Fast trains**
  - **Efficient ethanol production from diverse plants via biotechnology**
- **Can Greece still play a major role in SE Europe and the Middle East? R&D, Education, Economic Development**
- **International R&D collaboration programs that include economic development impact (with US, Europe, China, …)**

Need for National Policy/Strategies -- All Stakeholders

- **Project and extensive study by the Royal Swedish Academy of Engineering Sciences (IVA) -- 2009**
- **The question posed: What should Sweden do to preserve its quality of life in the 21st century?**
- **The answer: Educate its people so that they can get the best jobs world-wide**
- **Compared R&D strategies and economic development in Sweden, Switzerland, the Netherlands, Finland, Taiwan, South Korea**

Need for National Policy – Six small countries

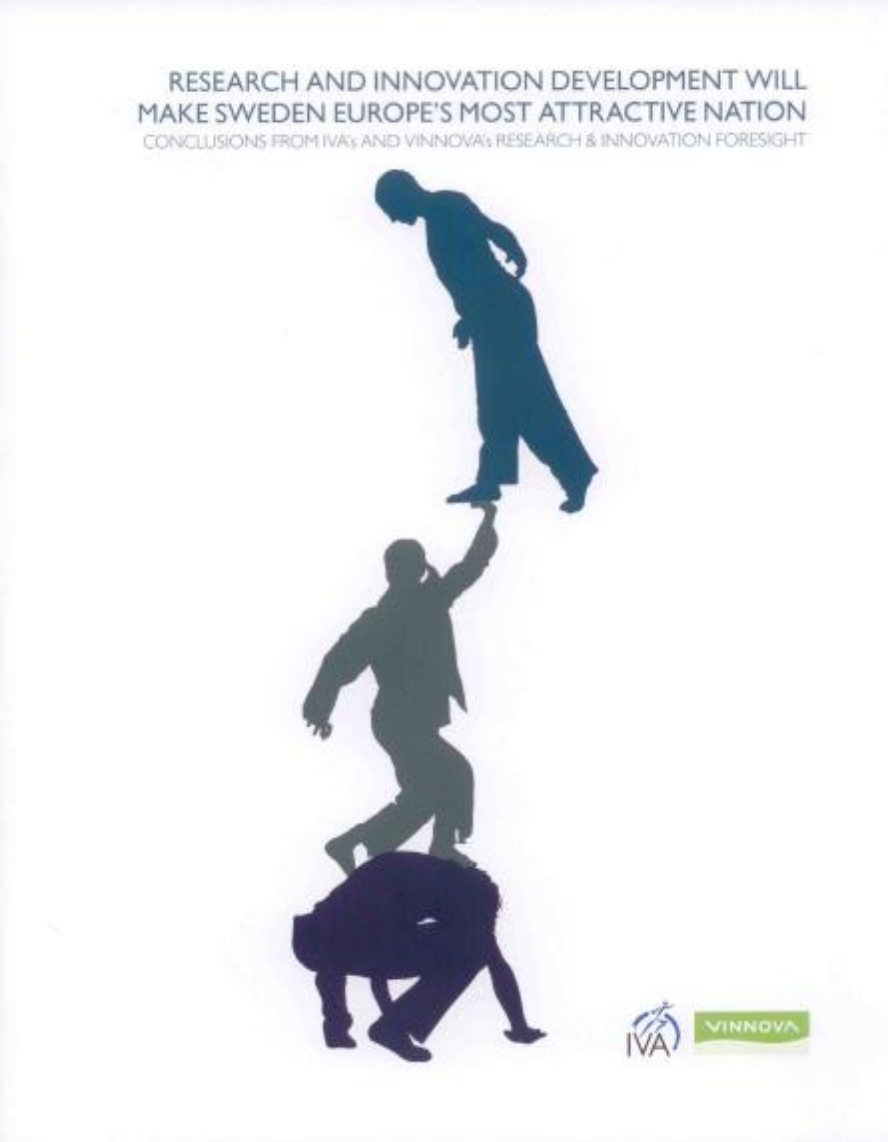
Table 1. Preliminary comparisons based on interview data. Blue denotes agreement with the statement while dark blue denotes disagreement (and/or the opposite is true); light blue reflects an intermediate/unknown state/no change – for many of the statements the colours are not absolute, but relational in nature (e.g. in comparison to Switzerland, Sweden has been and is less stable in its research structures).



Difficult/sensitive issues

- **Funding for Universities: Prioritized or block? Mixed?**
- **Role of *Government research institutes*?**
- **Need for a major institute/agency to facilitate innovation and commercialization?**
- **Regional *vs*. national competence centres, programs?**

Strategies and Programs in Sweden



Most important findings/considerations:

A general principle for all research:
Research results must benefit society.

The insights that lead to this principle:

- Global competition necessitates relevance, excellence and critical mass.
- The need for new knowledge should determine the focus of research.
- Government funding of civil R&D should be stable, long term and amount to at least one per cent of GNP.
- Close collaboration between researchers, business and industry and society's other players will result in an effective innovative system.
- International cooperation and greater EU integration will increase the impact of investment in research.