Challenges to Higher Education – Adaptation in Strategic Partnership
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Higher education, entrepreneurship and European integration

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Goal

1. Observations:
   a. The world has changed
   b. Europe is divided in economic and social terms
2. Aim:
   a. Europe needs to revitalize its economy and society
3. Goal:
   a. Present and compare the two successful models of the role of universities exist and that could help Europe

Contents

1. Europe's gap in innovation and performance

Main events:

- External:
  - ✓ end of catching up
  - ✓ growing innovation and productivity gap
- Internal:
  - ✓ productivity convergence of new member countries to the EU average
  - ✓ old member countries: decreasing interregional inequalities and increasing inter-country differences
  - ✓ new member countries: increasing inequalities and decreasing inter-country differences.

1. Europe's gap in innovation and performance

In the EU there was an increasing innovation and performance gap of countries and regions:

- compared to the most important competitors: United States, Japan, South Korea and Switzerland (and China)
- most EU member countries, including all new member countries of Central and Eastern Europe and all their regions (except Prague), are moderate and modest innovators
- innovation leaders: countries and regions of Northern Europe (Sweden, Germany, Denmark and Finland).

2. Knowledge and learning and the role of universities

- Globalisation makes difficult for firms to control the outcome of their investment in R&D
- Risk diversification takes place through "outsourcing" research activity to external agencies, such as universities
- Two paradigms:
  - ✓ Learning organizations
  - ✓ Economic usefulness

2. Knowledge and learning and the role of universities

- Knowledge and innovation play a central role in the performance and competitiveness of countries and regions
- Universities are fundamentally important to the production, transmission, and circulation of knowledge and to innovation through teaching, research and different forms of transmission of their results to firms
- Universities are also important in promoting innovation at local level, provided that the local level has the capability and ability to demand, absorb, transform and adapt to the (codified) knowledge and innovation that universities produce

2. Knowledge and learning and the role of universities

- regions are becoming focal points for knowledge creation and learning
- they function as collectors and repositories of knowledge and ideas and
- provide the underlying context which facilitates the flow of knowledge, ideas and learning

2. Knowledge and learning and the role of universities

Learning organisation:

- focal points for knowledge creation and learning
- function as collectors and repositories of knowledge and ideas
- provide the underlying context facilitating the flow of knowledge, ideas and learning
- master different types of knowledge, including interactive and tacit forms of knowledge exchange
- requires properly educated and skilled persons

2. Knowledge and learning and the role of universities

Fundamental features of learning organizations:

- new forms of organizing work (self-determined and auto-organized work targets and work pace)
- continuous on-the-job training
- multi-function and multidisciplinary team work
- proper incentives to the employees combining support to commitment and change, organisational flexibility, job and income (flexible security)
- new approach to education

2. Knowledge and learning and the role of universities

- Following learning organizations' principles, universities need to:
  - ✓ take a new approach to education, giving significance to students' interactive and networking abilities
  - ✓ based on their academic autonomy and intellectual freedom, be in tune with and open to contribute to local processes, thus creating economic relevance while playing the intellectually and scientifically leading role.

3. Economic usefulness

Important issues with economic usefulness:

- private goals limited to few sciences and fields vs. public mission of universities;
- need to transform the internal organisation of universities (offices, structures and qualified personnel);
- science-based technologies are eminently interdisciplinary while the traditional structure of universities is based on distinct disciplines;
- secrecy of findings and discoveries is at odds with the universities' public mission and careers management.

3. Economic usefulness

Drawbacks and dangers:

- private sponsors may constrain academic freedom of researchers and thus the development of alternative fields and paths of scientific development
- commissioned research may provide the incentives and resources to develop other fields
- rent-seeking attitude of universities in the allocation of public financing
- low quality of local governments' science and research policies and technical management
- local governments must keep the effect of their policies at home

3. Economic usefulness

Two strategies in the European Union:

- Weak: cost-cutting strategy through decreasing wages and weakening welfare (European Competitiveness Pact of 2011, Southern and Eastern Europe). Role of universities: advisor to cost cutting.
- Strong: long-term investment in knowledge infrastructure and human resources and high quality services (Lisbon Strategy, Northern Europe). Central role for universities.

4. Europe: A maze of challenges

Challenges:

- external to universities: support countries and regions to:
  - ✓ pursue further integration
  - ✓ recover from the crisis
  - ✓ recover its disadvantage in education, R&D, innovation and competitiveness
- within universities: upgrading their structure and skills for pursuing the universities' three missions

4. Europe: A maze of challenges

Labor and education:

- Labor mobility in the EU low
- In an incomplete monetary union, labor mobility is fundamental, particularly in the case of highly educated and skilled people
- Labor mobility requires the recognition of degrees and programs for complementing the needed knowledge content of those degrees of immigrants
- In an ageing continent high quality lifelong learning is increasingly important

4. Europe: A maze of challenges

Innovation:

- The future of European countries depends dramatically on innovation and the new, more flexible organization of labor
- This requires institutional innovation of and within universities:
  - ✓ Teaching approaches
  - ✓ Teaching and research programs
  - ✓ Third mission
- Sizeable inter-country and inter-regional differences

5. The local dimension

- Innovation is largely a territorial process, distributed among different organisations connected through proximity:
  - ✓ Technology: locating firms close to universities guarantees faster and easier access to research findings (advantages large multinational firms)
  - ✓ Economy: agglomeration and scale economies in university-industry cooperation
  - ✓ Society: tacit knowledge and social interaction that localisation makes possible (social capital and embeddedness)

5. The local dimension

Learning regions:

- innovative forms of economic growth and success emerging particularly at regional level
- regional advantage has to be based on endogenous capabilities;
- regional innovation policies should reduce the cognitive distance between actors and foster a creative knowledge and learning environment

Learning regions require partnership among governments, business and universities aiming at learning-based processes of innovation and change

5. The local dimension

Origin of the central role of localised knowledge:

- knowledge resides in individuals in the form of tacit knowledge and is sticky (the mobility of individuals with scarce talents and skills is insufficient)
- knowledge is also embedded in organisations: attracting firms is important role but also strong absorptive capacity is necessary
- absorptive capacity is made of knowledge embedded in the relationships between individuals and organisations and is often industry and cluster-specific

5. The local dimension

Strategies for regional competitive advantage:

- close interaction and common understanding among regional agents and capabilities-based approach
- openness, diversity, participation and internal contradiction required to overcome regional routines
- promoting R&D intensive industries is insufficient
- cannot be translated into a unique path to development and competitiveness
- strategies based on emerging science-based industries cannot work as general strategies (disadvantage other industries, low success rate, favour disproportionately large cities and regions and highly educated people)

6. Managing the three missions

- The role of universities in innovation depends on proximity
- Proximity facilitates interdependence among universities, firms and governments and
- Proximity promotes the institutional change that comes along both with this interdependence and within each of these actors ("triple helix" of Etkowitz and associates)
- However, this is not so for:
  - ✓ mature industries (such as steel or automobile with no particular relation to universities
  - ✓ a number of high-tech industries, whose success is due to military and other forms of public expenditure and research establishments

6. Managing the three missions

- The upsurge in the university-industry relationship since the 1980s linked to the new high-tech industries (e.g. information technology and biotechnologies)
- Universities are catalysts of local development
- Proximity promotes the efficiency of the innovation process through convergence in missions at local, regional and national levels
- Clusters are the most powerful form of proximity, particularly when they include a university
- In the EU necessary the recombination and defragmentation of EU public research

6. Managing the three missions

United States:

- federal agencies created incentives for universities and firms to collaborate;
- state policies aim at retaining policy effect in the state and favour smaller technology-based firms.

Main approaches of state policies:

- 'upstream' policies dominant during the 1980s: long-term strategies complementing R&D of existing high-tech industry and fostering new industries. Particularly beneficial to universities.
- 'downstream' policies assisting the advancement of new technologies into marketable innovations: shorter-term approach creating new and nascent technology firms and jobs. Weaker direct benefits for universities.

6. Managing the three missions

University-industry relation by:

- establishing laboratories in the proximity of universities; involves a limited number of large corporations and few large and prestigious universities
- entering into long-term agreements with university laboratories
- contribution of universities to small-scale innovation with primarily small and medium size enterprises

6. Managing the three missions

Problems:

- most university inventions are hardly marketable and risky for venture capitalists
- must rely on the inventor's tacit knowledge
- solution: seed capital by universities and room for small firms (70% of licences of universities in 2004 in the US)
- important local effects when in receptive and active context
- Need for transformation of universities internal structure by:
  - ✓ establishing technology transfer offices (disappointing experiences)
  - ✓ establishing large laboratories focused on technologies deriving from research frontier and fostering interaction between university researchers and industry developers (important role of states)

7. Major findings and conclusions

Main findings:

- research and high education are fundamental missions of any university
- spread access to high education resulted in proliferation of regional universities
- large corporations interested in incremental innovation and relying on their internal laboratories, plus extensive networks of universities and research laboratories for general knowledge
- small and medium size enterprises increasingly active in frontier, risky innovation and interested in cooperating with universities

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7. Major findings and conclusions

In the EU:

- Important national and regional differences in the role of knowledge, education and universities
- Greater challenges than elsewhere due to the integration process
- Need for a coordinated systemic and integrated approach