

Policy Panel: Choosing and designing R&D and Innovation Policies to Enhance Growth

June 10th 2005, at Universitat Pompeu Fabra, in Barcelona.

Moderator: Ramon Marimon, Professor, Universitat Pompeu Fabra, CREI-UPF and CREA

The Policy Panel consisted of:

Marta Aymerich, Director, Interministerial Council for Research and Technological Innovation, Government of Catalonia

Guillermo Perry, Chief Economist, Latin America and Caribbean Region, World Bank

Nathan Rosenberg, Stanford University

Andrew Sors, DG Research, European Commission

Luc Soete, Universitat Maastrich

Enric Banda, Director of Fundació Catalana per a la Reserca i la Innovació

Summary

Ramon Marimon opened the discussion as a continuation of the morning sessions by Paul Romer and Nathan Rosenberg from Stanford University as well as Philippe Aghion from Harvard University on the topics of Science, Innovation and Institutions.

*Marta Aymerich,
Director, Interministerial
Council for Research and
Technological*

Marta Aymerich, who is responsible for the coordination of the R&D and Innovation policies in Catalunya, mentioned that Catalunya has an R&D and Innovation plan, with the objective of raising the R&D expenditures to 2 % of the GDP within 2008. Catalunya is following the structure of R&D expenditures recommended by the EU. Catalunya is spending 2/3 on the private sector and 1/3 on the public sector. Aymerich presented how the Government of Catalunya has prioritised and committed to biomedical research and cluster building in their effort to drive R&D and innovation in the region. Today, Catalunya as a region, is among the world leaders in scientific production, regarding publications and citations within life science. But looking at the top 10 world ranking of number biotech companies per country, Spain is not represented. Therefore the Government of Catalunya's mission with the biotech region is to enhance biomed and biotech based business activity of international reference in Catalonia, with a clear impact on the generation of added value and more and better welfare. To accomplish the goal the Government of Catalunya has set up 10 critical factors for success. One of the important elements has been the ICREA, that are attracting highly skilled senior researchers from abroad, 100 over a period of 4 years.

*Guillermo Perry, Chief
Economist, Latin America
and Caribbean Region,
World Bank*

Guillermo Perry's contributed to the discussion with how and why to enhance innovation in Latin America and the Caribbean (LAC). Perry stated that LAC should definitely worry about enhancing innovation. The last 30-40 years TFP has been much lower than in the peer countries. The low TFP growth has been due to several factor as limited entry and exit of formal firms (international), sever low quality of education, low levels of innovation by firms, including technology transfer and training compared to the Asian Tigers, and last low levels of R&D, patenting and university/firm collaboration. All forms of innovation share the same problems of appropriability and spillover, which reflects that the policies and instruments are to be the same. Using wisely the natural wealth requires skills and R&D allocated to the appropriate sectors and used efficiently. LAC has consistently been lacking behind in production and quality of R&D, and lower than expected for the level of development. LAC has to be prepared to do more than they have been doing in the past. There is a general problem of how LAC allocate R&D as well as the disconnection between universities and firms. Les then 20% of R&D are done by firms, most is done by the universities. 60 % of R&D is devoted to basic science compared to 15 % in the US. The priority of is horizontal policies to enhance both investment and innovation. LAC has to deal with the weakness in basic institutions (rule of law, IPR), reduce over-regulation, continue to improve macro/financial policies, foster trade openness and competition and last overcome infrastructure and access to finance bottlenecks. The issues with specific policies and institutions dealing with innovation are that there are still open questions regarding the right balance between strong IPR and efficient subsidies, as well as tax credits and tax incentives are not the right way to go in LAC. So how do you design efficient subsidies?

*Nathan Rosenberg,
Stanford University*

According to Nathan Rosenberg the reason why US has been very successful in high-tech has been their high spending on education. EU spend less than US on education as a percentage of the GDP (EU 1,3 % vs. US 2.5 %). Actually there is no single country in Europe that has higher percent spending on education than US. It is not only the high level of education that matters, but how to adjust the responsiveness of the education in the universities to the changing needs of the economy. One way to improve the responsiveness is to improve the management of the university – industry interface. A two century university – industry interface has benefited the innovation in US. Especially, since World War II, the computer world, including the hardware and software industry, has benefited from the allocation of R&D resources by the Department of Defence. In Europe this university – industry interface has never reached the same efficiency. Even though some of the most breakthrough results in biotechnology has been done in Europe, Rosenberg has seen very little evidence that European companies for example have exploited the university science on biotechnology. Countries like France, UK and Sweden have very good research results but the industries have had a very little role in promoting university spin-offs. US has been good to shift academic resources in different fields. One example is the shift from physical science to medical science. Today the all US university R&D budgets are allocated 60 % to the medical science compared to 10% physical science. Another reason why US has done good is that the private industry has been home of scientific research, and to some extent to Nobel prizes. The ability to exploit university research requires to some extent very good in-house research by the companies. In this context, Europe fails to exploit a significant scientific body.

*Andrew Sors, DG
Research, European
Commission*

Andrew Sors told that 13 EU member states are meeting in two weeks to discuss the EU budget for R&D funds for 2007 – 2013. Due to the new situation in the EU the research and innovation program is at stake. Sors stated that the future for Europe is knowledge, and emphasised that the knowledge-based growth is the only way for sustainable competitiveness. Europe cannot compete on labour cost neither primary resources. Sors explained the re-launch of the Lisbon Strategy and the knowledge triangle. EU is working on implementation actions to 1) make Europe a more attractive place to work and invest, 2) to leverage knowledge and innovation for growth, and 3) to create more and better jobs. The key to the leverage of knowledge and innovation for growth is the Knowledge Triangle, where EU is aiming to create substantially leadership in the way knowledge is produced through research, the way knowledge is diffused through education and the way knowledge brings competitive advantage through innovation. EU has developed special tools to reach these goals, including the 3 % Action Plan, 7th EU Framework Programme for RTD. Beyond the current constitutional and budgetary issues, the challenges for the future on the research and innovation policies are the scope and range of policies, the diversity of suitable policy mixes and the subsidiary and co-ordination.

*Luc Soete, Universitat
Maastricht*

Luc Soete inspired by the by the current EU debate and various contributions of yesterday and today talked about R&D, innovation and specialisation, implicit normative biases in linear model and the national structural reform policies of public research ‘need for “activating” knowledge policies’. The EU’s 25 member states are composed of a majority of small countries, with small activities in R&D, and with large differences in scope of industries and economies, why the 3 % Barcelona target is quite meaningless on country level. The 3 % does not take into account the single member state’s interest, which is one of the main elements in the EU constitution. Soete challenged the question on how to organize R&D and Innovation specialisation within EU-25. Currently the focus is on stronger IPR, as well as, on increasing subsidies for basic science (e.g. ERC). The consequence could be that the framework programmes are “never landing”. The challenge with national reform policies is the over-commitment of investor. One issue in Europe could be that the big companies are sucking out the basic research in universities, and are becoming big ivory towers and golden cages for entrepreneurs. There is a need for activating knowledge policies at national level similar to activating labour market policies in the 80’s and 90’s. He finished by stating that a solution would be to go back to the fundamental issues and look at a traditional way on the R&D issues and well as the activating reform for these issues.

*Enric Banda, Director of
Fundació Catalana per a
la Reserca i la Innovació*

Enric Banda was not sure that the R&D and Innovation Policies were managed by the right people. Banda would like to see more mixed managerial teams, with more practitioners. Practitioners have been very helpful in the design of policies. Human Capital schemes are the most rewarding for innovation. Universities have not been too good at administrating this, including hiring skills. Hiring should in the future not be done by the universities, but through projects. Making choices and prioritising R&D is difficult.

Not so difficult in terms of whether to focus on basic or applied research, but more about where to concentrate your research. Banda's last point was that economist should work on a way to measure the out put of the initiatives, including better benchmarks as well as the linkage between R&D and innovation.

Discussion

Several issues were emphasized in the discussion that followed. The level of education is more important the closer you are to the technological frontier. Research made in the states of US showed that the states close to the technological frontier benefited more from graduate education than the other states.

Importance of the Human Capital is absolutely fundamental. More research should be in the hand of young people, with longer perspectives and new thoughts. Focus on regions and clusters are not necessarily the solutions. It is the competing mobile resources that are the beneficiaries, not necessarily the local authorities and government.

There is a large issue of institutional investment in the biotech industry. It does not help that there research projects, which are related to commercial strengthening are not getting funded. Furthermore Europe has to focus on educating scientist with business and entrepreneurial skills, before that Europe will not have world-class companies that can drive the R&D. LAC are some of the countries in the world with highest FDI, but the spillovers are very low.

It is only the last years that EC has focused on the basic research.

In Europe we do not have a tuition debate. It is one of the main reason to why education is more advanced in management, in US.