



## **FIRST SYMPOSIUM COTEC**

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### **LISBOA: A NECESSARY GOAL**

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#### **European competitiveness is significantly behind the USA**

European Union (EU) achievements have not been fully consistent. In addition to success such as the monetary union or EU enlargement, there are other aspects whose results have not reached a relevant level yet. Current development of the "Lisbon strategy for growth and employment" should be included among the latest. This strategy was defined in that city in 2000 to accomplish its objectives in 2010. Independently of the different ways the key elements of this strategy wide Agenda could be grouped, promotion of entrepreneurial activity and its innovation ability are shown to have relevant and self entity, as an essential way to improve competitiveness.

After half of the time period provided to develop the Agenda was spent, there is a general believe that its progress is being insufficient. Values for most indicators have moved away and stay behind from those characterizing the USA economy, previously accepted as the reference. Considering input indicators, EU R&D expenditure provided as a percentage of GDP is 1.95%, which means 71% of that corresponding to the USA. European companies support 55% of this expenditure, while in the USA private contribution reaches 67% of the whole R&D expenditure. Venture capital investment in the business budding steps over GDP is in the EU 64% that of the USA. Indicators related to development of Information and Communication Technology (ICT) show again a delay of the EU *versus* the USA, as expenditure on European ICT over GDP are 65% that of the USA. There are only few indicators showing equal or better values in the EU than in the USA. The rate of graduates in science and technology among the

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population ranging between 20 and 29 year old is an example, since in Europe there are 11 per thousand, one point higher than the USA rate.

Conditions are equivalent for output indicators. While the number of patent applications to the European Patent Office per million citizens is similar, the USA Patent Office is only receiving from the EU one fifth the amount of applications from the USA. Another good indicator of company innovation ability and country competitiveness is the high technology export ratio over total exports. This value in Europe is 66% that of the USA.

The existence of significant differences among European countries is also true, showing an unfavourable comparison for our three countries. Our differences with the EU are particularly deep in R&D expenditure as well as in the above mentioned output indicators, patents and high technology exports. These differences can be clearly observed in the indicator values for Italy, Portugal and Spain compared to those from the EU-15 and the USA as shown in table 1.

**Table 1. Technology innovation indicators**

	<b>USA</b>	<b>EU-15</b>	<b>Italy</b>	<b>Portugal</b>	<b>Spain</b>	<b>Year</b>
<b>Gross domestic expenditure on R&amp;D (% GDP)</b>	2,76	1,95	1,16	0,79	1,11	2003
<b>Business expenditure on R&amp;D (% total)</b>	72,9	64,7	49,1	31,8	52,4	2001
<b>ICT expenditure (% GDP)</b>	4,6	3,0	1,9	2,0	1,7	2004
<b>High Tech Export (% total)</b>	26,9	17,8	5,9	7,4	7,4	2003
<b>Patent granted at the USPTO (# per millions populat.)</b>	301,4	59,9	30,3	1,29	8,0	2002
<b>Patent applications at the EPO (# per millions populat.)</b>	103,6	128,4	64,6	2,9	18,0	2000
<b>Science and technology graduates (# per million pop.)</b>	10,0	11,0	7,4	8,2	12,6	2001

Europe is very concerned about its growing lag from the USA, and in some aspects from Asia too. An analysis of this situation brought the Kok Report to conclude and the European Council to decide about the need of an urgent reactivation of Lisbon Agenda.

The Council stated that it is still possible for Europe to “renew the basis of its competitiveness, increase its growth potential and its productivity and strengthen social cohesion, placing the main emphasis on knowledge, innovation and the optimisation of human capital. It is also important to highlight that the Council considers necessary and reachable the objective of 3% average R&D European expenditure of GDP for 2010 under an adequately split between public and private sources. Definition of intermediate specific levels is however left to the national responsibilities by the Council.

### **Structural problems hinder the recovery**

Competitive lag is caused by important structural and organizational general deficiencies affecting the European Union, which are even worse in countries such as ours. Those circumstances make this progress towards Lisbon strategy objectives even more difficult.

The very low number of companies generating own technology in our countries is one example of such structural deficiencies. Very few companies support their business on a systematic R&D activity. Some enterprises occasionally promote R&D activity as a reaction to market pressure which is not always supported by their own resources. The majority limits themselves to just absorb and apply technology developed by others. Thus, very few European companies and especially SMEs base their competitive advantage on technology.

Innovation is not favoured by the short term view of many Board of Directors frequently not familiarized with the benefits of the technology. This is a root cause for companies to often rely their growth policy on the entrance in emerging markets with poor demand of technology, and for the rare consideration given to scientific and technology knowledge in decision making towards company expansion or alliances policy. It is also a structural deficiency that EU leadership is limited to aeronautical and mobile communication industries.

Many European universities have not assumed the so called third mission yet, i.e. to get involved in making useful to companies the generated knowledge. Furthermore, there is an evident difficulty for some universities to understand and solve entrepreneurial technology problems as well as to valorise the results of their own research.

In many countries, public R&D system is also highly fragmented in small research groups, not very much open to collaboration among them, thus preventing the system from reaching the critical mass needed in their area or required to participate in multidisciplinary projects. These structural defects of our public R&D system are hindering the potential advantage of many innovation promotion instruments designed for more advanced systems.

Member States public administrations, and the Commission in some ways too, are still applying innovation policies more appropriate to the old industrial restructuring period than for a society willing to base its economy in creativity, technology transfer and knowledge advantage. In addition, these policies are not considered a priority being quite often the first target in budget reductions.

Although it is generally accepted that public support should be more directed to innovation and specifically to research promotion, these objectives take long to become the adequate instruments capable of producing the multiplying desired effect. The way market regulation has been scored and business practice rules have been implemented has quite often forgotten innovation promotion possibilities.

European market and public procurement, in particular, are poorly demanding in products and services requiring new technology development. Simultaneously, ICT private consumption is facing more to a coverage of routine needs, and the particular use by companies is poorly innovative without providing any additional new competitive advantage, not being the source of any innovation.

Venture capital essential for incipient innovative business has not been able to well integrate in the European finance system almost completely absent of business angels, which are a very common instrument in the USA.

Higher European education gives rise to fewer technology based enterprises than in the USA. This structural defect of particular concern in our three countries is also shared by a culture which does not appreciate risk taking, neither does induce experimentation and penalizes the first failure.

### **Stronger Member States commitment is required**

Desired Lisbon objective fulfilment is demanding to decidedly face solutions to overcome those previously indicated shortages. In April 12<sup>th</sup>, the Commission published its recommended action lines directed to achieve growth and employment

during years 2005-2008. It involves 23 guidelines, organized in three groups such as Macro-economy (6), Micro-economy (9) and employment promotion (8). The Commission believes these action lines are a coherent and stable frame to help Member States to design the reform programmes requested by the European Council for next autumn. Under these circumstances it has been recommended to Member State Governments and political and economic forces to take Lisbon Agenda as an own compromise to involve the whole society.

From a Spanish perspective, the country has already performed a similar type of job related to other European topics and successes achieved recommend the use of a similar way. First of all, Spain joining process to the UE, lead to such an enthusiasm enough to push the reforms virtuous circle for growth and modernity. Later on euro single currency in Europe was the stimulus for a new effort. Now we find ourselves in front of a similar challenge, though global European competitiveness progress is almost blocked due to economic growth standstill and security threat. Based on that, a stronger decision to initiate the long actions list demanded by the Agenda is necessary.

Anyway, our three countries need however urgent actions to facilitate development of new technology based enterprises, to improve business environment and to motivate entrepreneurial productivity.

In order to regenerate the production system including ours, a facilitation of new company creation is mandatory. Reduction of costs and bureaucratic charges, and removal of the administrative barriers found by public scientists when they decide to transform their academic research results in products and services would be a significant help.

In addition, it should also be encouraged every kind of venture capital intervening at the first steps of enterprise life, and especially those complemented by commercial and management advice. And of course, there is an urgent review of the bankruptcy rules in order to avoid that business failures inhibit the entrepreneurs to start new ventures.

Business management requires a regulation frame simple, neutral and predictable for technology, which at the same time is able to stimulate innovation and induce taking the advantage of the European market great size. We are conscious in Europe that regulatory and administrative burden constitute an important handicap to grow. The Commission has calculated that around 50,000M€ could be saved each year with a better regulatory frame. Public entrepreneurial R&D support policies should be

designed to leverage private expenditure and to promote an increase in the company technology capabilities, especially the SMEs.

Previous policies should consider that big European companies constitute important knowledge niches, providing technology and training. Moreover, a long term and confident relationship of companies with universities constitute the best way to align scientific, technological and entrepreneurial interests. And finally, big companies should assume the role of technology tractors for their industry.

To promote companies innovation activities, Europe and Member States should take advantage of the huge potential of public procurement, whose volume is estimated in 16% of the European Union GDP. The USA has shown that this is an excellent instrument for innovation policy, assuming there is an ability to detect early demand of advanced technology solutions to public administration needs. Furthermore and following Commission estimations, an adequate "public procurement of technology" could involve an approximate 5% saving in total procurement expenditure to Governments. Implementation of this instrument requires the Governments to review their institutions buying practises as well as training the personnel involved. Thus, it seems an urgent task to perform a review of public procurement environment in order to adapt it to knowledge society.

Company productivity is based on human capital and intensive use of technology, mainly ICT. Involving all society agents, there is a need to reach a consensus about the features defining human capital quality in order to invest in education and training. Efficiency of product, process and service innovation will be significantly improved by an adequate use of ICT.

A well supported European Research Área (ERA), capable of attracting and holding back the best scientists, allowing them to freely move through public European institutions and to participate in companies, is paramount for the quality of the European innovation.

### **New Commission Policy to reinforce Lisbon strategy**

Cotec welcomes the policy integration proposed by the Commission based on what it has been defined as the "knowledge triangle", whose sides are research, education and innovation. The Commission has stated that "to be a genuine competitive, knowledge-based economy, Europe must become better at producing knowledge through research, at diffusing it through education and at applying it through innovation".

In its April 6<sup>th</sup> 2005 recent communication, the Commission has announced that it will coherently mobilize its funds towards knowledge economy using the six following financing tools: Structural and Cohesion Funds, Competitive and Innovation Framework Programme (CIP), the new generation of Education and Training Programmes, Trans European Networks, the new Agriculture Fund for Rural Development, and the VII Framework Programme.

**Structural and Cohesion Funds**, traditional in regional policy, have evolved to consider promotion of research and development, innovation and transition to knowledge economy as the main priorities of their new objectives of convergence, regional competitiveness and territory cooperation.

The new generation of **Education and Training Programmes** will be directed to promote the ability to produce and exploit knowledge through integrated actions which will include university education and scientists training.

**Trans European Networks** will create advanced infrastructures which simultaneously will use and promote European technology. European technology will also be a priority of the new **Agriculture Fund for Rural Development** implementation.

Closer to the three Cotec concern is the creation of the new **Competitive and Innovation Framework Programme (CIP)** focused to increase EU innovative capacity through the provision of support to innovative SMEs and networks, diffusion of results and technology transfer, and venture capital for technology innovation financing. These features make this programme particularly attractive for our three countries which have an extraordinary presence of SMEs in their industrial tissue. **CIP** will operate side by side with the VII Research Framework Programme towards Lisbon objectives, and is organized in three sub-programmes, as follows: Innovation and Entrepreneurship, ICT and Intelligent Energy.

Finally, the **VII Framework Programme for Research, Technology development and Demonstration activities** will be an essential instrument to hold up the knowledge generation side of the "knowledge triangle". Around each of its four programmes, Cooperation, Ideas, People and Capacities, several initiatives have been proposed that we consider particularly relevant for Lisbon Agenda development. Among them, the Joint Technology Initiatives in the thematic areas of the Cooperation programme stands out. Though it is planned that topics will be identified under close dialog with enterprises, we must report for this thematic approach the risk of keeping

out of the programme the cooperation in sectors with a strong mixture of disciplines, such as Building industry or Tourism, both of critical importance in our three countries economy and currently needing a decided innovative push. Technology platforms offered them an opportunity that should not be ignored by the new initiatives.

The Cooperation programme, also considers the joint implementation of national research programmes according to article 169 of the Treaty. Governments of our countries shall consider that these programmes selection will be performed following criteria of value added contribution, leverage effect and high level of company commitment.

Cotec welcomes researchers mobility between university and industry facilitation by the People programme, with the objective of reinforcing European research human capital potential. It is also positive the intention to create regional clusters to drive research by the Capacities programme.

## **Conclusion**

Evolution of input and output innovation indicators will provide a good picture of the progress towards Lisbon objectives. Beside the well known quality problem of indicators, it is accepted a good correlation between business enterprise expenditure on R&D (BERD) and patents number and high technology export ratio. Our countries are far positioned from the EU average for all three indicators, and even farther from those of the USA. A surveillance of these three indicators will provide us with an acceptable view of our progress.

The Lisbon agenda sets ambitious objectives in terms of innovation performance. Italy, Spain and Portugal, with an R%D expenditure on GDP ratio very close to 1% are still far behind the EU-15 average (close to 2%), and still further from the 3% target set by the Lisbon agenda in 2010. In addition, the private sector funds approximately 40% of total R%D expenditure in Italy, slightly more than 30% in Portugal and slightly less than 50% in Spain. Once again, the three countries should produce a considerable effort to meet the Lisbon objective, according to which R&D expenditure should be financed by 2/3 by the private sector by year 2010.

Policies discussed in this paper are really ambitious. Challenges to be assumed by Member States are really difficult, and they will require the involvement of important resources. If we believe that Europe is able to reach the assigned objective, there are no acceptable excuses however to delay putting actions in practice.

