Research and Innovation: catalysts of growth

The challenge for Italy is bringing universities and businesses together

Marco Magnani and Paolo Di Caro *

In the course of the campaign for Italian political elections not a single word was spoken by candidates on one of the issues that will weigh crucially upon the road to economic growth over the next decade: research and innovation. This is a most unfortunate circumstance, since it is exactly the issue that Italy needs to address to determine its ability (or lack thereof) to get on the track to steady and sustainable growth, as well as orient itself toward new ways of generating wealth.

After all, the fact that innovation is the most powerful catalyst of growth is not news. The road has been long, but since the first intuitions of Smith and Schumpeter on the pivotal role of labor productivity, a number of economic theories have formalized their insight into proper scientific propositions. Most governments and international organization have tried to devise actions to promote and foster innovation; they aim to sustain it and convert it into effective economic gains. Some did not limit themselves to paying lip tribute to this great engine of growth, but turned their good intentions into tangible policies. Scandinavian countries, for instance, have spent a very significant amount of their GDP over the last few years in investments in innovation, going well above the threshold of 3% of GDP that the EU self-imposed as an objective by 2020. Others, unfortunately, were not as determined with their intents or, in any case, were not effective in pursuing them. Resorting to sheer numerical data might seem sterile, but numbers are a sort of piece of litmus paper in this case, keeping track of a multi-faceted problem. It is significant, in this regard, that Italy invested just about 1.25% of its GDP in research and innovation in 2011. Over the same period of time, Finland invested as much as 3.78%, Denmark 3.09%, and Germany and France stand respectively at 2.84% and 2.25%.

The aggregate data on state expenditure on innovation is not, however, the most peculiar elements of this numerical analysis. The fact that Italy cannot keep up with other European countries is not mainly due to the failure of public institutions to invest, but rather to the chronic lack of investments in R&D on the part of private companies and firms. There are several reasons why this may the case, but there is no denying that the small size of most firms in the Italian productive system is squarely at fault. Italian firms are too small to have the insight, let alone the financial capabilities, to invest in intangibles that would spur productivity.

An idea has been put forward to tackle this thorny problem, namely the set-up of a special fund of private equity, with features specifically suited to the Italian economy. This would provide financing for those small and medium sized businesses that desire to invest in innovation, attempting to reverse the trend of chronic underfunding for small businesses. This is a good proposal but, in addition to it, other solutions should be explored. These should make the most of one of the main features of innovation: the fact that it is the outcome of a synergic exchange and

interaction among a number of players, all part of what could be defined as a "network of knowledge." Typically, these would be made up of universities, research centers and private companies.

Following are three specific proposals to create a fruitful exchange between universities and firms.

First, the creation of a new PhD program with an hybrid nature, funded by the double sponsorship of both an academic institution and a private corporation. Similar programs are already in place in Italy but do not involve the participation of small to medium-sized businesses. The Swiss approach to this issue is particularly interesting. Once students enroll on a PhD program in a university in Switzerland, they have to specify formally how much time they intend to commit to theoretical research in academia and how much time they want to devote to more applied research activity with the partner firm. The salary of students is paid pro-rata by the university and the hosting firm. This is a win-win situation for all parties concerned: the PhD student is actively involved in an academic and professional environment; the hosting company can invest in R&D projects which fit its interests at a relative low price; the university saves on financial expenses for PhD students by paying them on the basis of the academic activity which they carry out.

A second proposal il about allocation of public funding for research among Universities. An interesting model is Germany where universities receive financial support from the government based on how much funding they can raise from the private sector, traditionally by establishing forms of cooperation aimed at developing innovative products or processes. Needless to say, this mechanism will work primarily in the field of applied sciences, whereas more theoretical faculties would be excluded from such a system. At any rate, pursuing this solution would mean allocating scarce resources in a more rational and objective way, able to capture the real quality of certain institutions. This would trigger a virtuous circle by which universities would be incentivized to take on a proactive role in facilitating technology transfer.

Finally, the UK offers an interesting model of direct universities investment in applied research and innovation.. The University of Cambridge has been acting for some decades now as a venture capitalist for small businesses and start-ups connected with the University. Who is in a better place than an academic institution, in terms of competencies and insight, to assess the economic profitability of certain investments, especially those aimed at high-tech companies? The fund managed by Cambridge has an annual turnover of about £170 million and employs 1,700 people. The funds' proceeds are partly reinvested in other companies and partly used to fund academic activities of the university. Some Italian universities have very timidly experimented with this model, but a large scale application would be much appreciating, leaving behind the notoriously haphazard ways of funding education and embracing a model that makes universities take partial responsibility for their financing.

**Marco Magnani is a Senior Fellow at the Mossavar-Rahmani Center for Business and Government of the Harvard Kennedy School working on the research project "Italy 2030"; Paolo Di Caro is a graduate of Bocconi University and University of York and is specializing in Public Economy at the University of Catania.*