Innovation for Growth – i4g

Relation of research & innovation with smart, sustainable and inclusive growth

Major Findings and R&I policy recommendations of the first ten
i4g policy briefs. February 2013

The High-level Economic Policy Expert Group 'Innovation for Growth – i4g' has published during its first year of existence a series of policy briefs (see annex for list).

This summary provides the major findings and the policy recommendations derived from these ten i4g policy briefs:

1. Design a new European Annual Growth Strategy
2. Address Europe's early stage venture gap and shift the public role to financing innovative companies to seed investment
3. Seize the opportunities of service innovation
4. Reform the risk-reward nexus in innovation
5. Apply Smart Specialisation as a New Industrial Policy
6. Enlarge the focus for socio-economic benefits of ERA
7. Contend growth impeding innovation: the case of Greece
8. Promote Public Procurement of Innovation
9. Improve European universities' research excellence in international comparison by smart specialisation.

The first 5 recommendations are on general R&I policy directions and approaches. Recommendations 6-9 are more detailed and targeted to provide new or improve already existing policy measures and instruments that are vital to implementing the Europe 2020 strategy, and most prominently the Innovation Union strategy.
General R&I policy directions

This part deals with proposals pertaining to general European Commission and Member States policies in innovation and subsequently economic growth. It aims at providing macro-oriented recommendations on policies and approaches for the next years.

1. Design a new European Annual Growth Strategy

More radical structural reforms than those presented under the Annual Growth Survey (AGS 2012) are needed in analogy with the three headlines of the Europe 2020 strategy.

**Smart growth** requires smart public policy by:

- A stronger cooperation in R&D with third countries and a stronger focus on the deployment of ICT based technologies due to the internationalisation of knowledge;
- A shift from the Barcelona target to a new 3% knowledge investment policy target consisting of a 2% higher education and 1% public R&D effort without being subjected to any fiscal consolidation measures;
- Limiting R&D tax credits across all EU MS to 0.1% of GDP to avoid net welfare losses as well as a "beggar-thy-neighbour" effect.

**Sustainable growth** – influencing the direction of technological change by:

- Establishing a European policy commitment to green technologies;
- Enhancing both public and private research investments and technology transfers and redressing the protection of intellectual property rights for those technologies;
- Making the EU a global leader by 'Innovation Partnerships' for green technologies including China and the other BRIC+ countries as a matter of priority.

Safeguarding **social cohesion** in a Euro-crisis by:

- Smart public specialization leading into a new phase of economic integration of public services in the EU;
- Introducing pilots for new innovative procurement of debt stricken countries, regions or municipalities in Greece, Portugal, Spain or Italy by new North-South European Private-Public Partnerships based on new creative financing solutions (e.g. aimed at reducing public electricity expenses);
- Granting EC structural funds as a form of regional RSFF by shifting the purely grant nature of structural funds to a loan facility.

2. Address Europe's early stage venture gap and shift the public role to financing innovative companies to seed investment

2.1 Fostering Innovation and growth performance will require addressing Europe's early stage venture gap and putting more emphasis on nurturing new firms in new sectors, enabling them to grow to leading-innovator status. For the moment European venture markets are too thin with
too low levels of interaction between venture capital (VC) and young, high-potential firms. The critical size for a viable, fluid, thick European VC market can only be reached when VC markets operate at an integrated European scale and are open to the world. As regards policy action, i4g recommends that new initiatives at the EU level should be undertaken:

- Grants for ‘yollies’ to bridge the lab to market gap;
- A fund-of-funds to leverage Europe’s early-stage VC market.

2.2 Providing venture capital should be mainly left to the market, while the provision of seed capital investments should be addressed by the public sector. However, public intervention should not aim at reducing private risks in an already developed market, also not in the case of so called specific ‘gaps’ where the market can’t (or doesn’t want to) operate.

Seed capital concentrates on the very early stages of young innovative companies, which are characterized by high levels of investment risk. It is aimed at supporting companies in moving from the idea or prototype stage to the first commercial revenues. It offers a limited amount of equity capital (typically in the range of 200-300,000 Euros and usually not beyond 500,000 Euro).

i4g recommends establishing Seed Capital Funds created with public resources. Operational guidelines for Seed Capital Funds should be designed as follows. The management is delegated to an investment vehicle that respects the following conditions:

- Invest only in equity or quasi equity instruments that are directly issued to young innovative companies in the seed capital phase;
- Prior to investing, require all shareholders of the target company to sign an agreement according to which they are bound to repurchase the Seed Capital Fund stake after a given period (e.g. 3 years from the investment, with a possible postponement for given reasons up to 5 years);
- Do not invest more than 500,000 Euro for each target company.

3. Seize the opportunities of service innovation

Innovation in services will have outmost positive effects on growth and employment due to the sheer size of the service economy. Addressing the Grand Challenges is also closely associated with service innovation. Efficiency, productivity, and quality of services are the features to be addressed in service innovation. Service innovation is strongly linked to ICT usage and largely affected by non-technological measures (organisation, business models) and intangible assets. In order to seize the opportunities of service innovation, i4g recommends to:

- Focus R&I policy in service innovation with regard to public services;
- Link service innovation to the research priorities under the Grand societal Challenges (in Horizon 2020);
- Make national programmes on best practice in service innovation subject of mutual learning exercises between Member States;
- Accelerate demand and support for innovation in services by introducing relevant instruments e.g. public procurement, eligibility criteria for R&D tax allowance, voucher schemes, innovation grants, etc.;
• Develop indicators for service productivity and for the measurement of intangible assets in value creation.

4. Reform the risk-reward nexus in innovation

Empirical evidence has shown that 77 out of the most important 88 innovations counted between 1971 and 2006 received state funding in early technology development. Also, smartphone technology like GPS, internet, touch screen, etc., were funded by the public. As the examples show, the success of general purpose technology development often is heavily dependent on public funding. The motive for risk taking in the private sector is the high reward it offers. Venture Capital (VC) is building its strategy of rewards on the risk-taking role in the growth phase of technology development. Contrary, public funding focuses on the early and very early development phase of technology and it has no strategy of reward for its risk-taking. Therefore, mechanisms to reward a successful state funded technology should be considered.

In order to improve this risk-reward ratio, i4g recommends:

• Where an applied technological breakthrough is directly financed by the government, it should in return be able to extract a small royalty from its application;

• As high tax income from successful technology firms as risk rewards can't be forecasted (e.g. Apple) other return mechanisms should be considered.

5. Apply Smart Specialisation as a New Industrial Policy

Smart specialisation is a method to identify areas for innovation policy. It is a policy approach helping the regional economy to discover new activities with strong economic development potential and supporting a process to empower those actors most capable of realising the potential. I4g recommends that smart specialisation shall be applied as a 'New Industrial Policy' based on five principles:

• Smart specialisation must be an entrepreneurial discovery process;

• The prioritization concerns economic activities, not sectors;

• The discovery process shall bridge present with future strengths of the economy;

• The priorities emerging today will not be supported endlessly;

• The benchmarks, criteria for success, and evaluations are crucial to support the policy process.
Concrete recommendations addressing a single policy or instrument

Thanks to in-depth i4g case studies, this part provides detailed recommendations that can be applied to more specific subjects and challenges. The advantages of such confined case studies is that recommendations can be specifically targeted and easily translated into recommendations and proposals for new policy instruments.

6. Enlarge the focus for socio-economic benefits of ERA

Any future analysis of the socio-economic benefits of ERA shall be complemented by the following activities:

- Focus on private research initiatives in ERA: The Europeanisation and performance of private research within ERA should get higher attention. A special focus should be on FDI in research and innovation activities;
- Give higher attention to the global dimension of ERA: Excellence markers in research (Scopus, WOS) indicate that Europe has lost ground. Therefore, ERA has to be instrumental for open access to research and knowledge as well as researchers’ mobility;
- Increase effectiveness of the public research systems: The structure of the European public research system should become more effective. The institutional features and their competitive strength in view of scientific excellence as well of their contribution to innovation should be assessed.

7. Contend growth impeding innovation: the case of Greece

Greece has benefitted from significant regional development aid since the 1990s and it is well integrated in the European Framework Programmes for Research and Development. However, this aid did not help transforming the productive sector into economic sustainability. Contrary to lagging innovative activities, the scientific publications, citations and impact factor have improved systematically during the period of economic convergence. But the improved scientific performance was not accompanied by improving innovation. The strengths of the Greek performance, namely education and research could not be directed towards the productive sector. A significant brain-drain after the outbreak of the crisis is depriving the country of a major strength. Structural policies are guided by other than competitiveness priorities: absorption of EU funds, short-term maintenance of employment and the broadest possible political satisfaction while spreading support thinly. Entrepreneurship and innovation are not in focus.

In order to seize the opportunities for innovation in Greece, **i4g recommends** prioritising and further supporting innovation activities.

- Stabilising the economy should go hand in hand with financing innovation-led growth as well as behavioural and institutional change.
- Fight the innovation gap within the EU: The crisis has revealed the increasing lag of innovation in cohesion countries. The traditional instruments of structural funds and FP support did not work out properly. Incentives and innovation mechanisms in favour of cohesion countries have to be explored.
8. Promote Public Procurement of Innovation

A powerful tool to foster innovation is targeted and specifically designed public procurement (PPI). Therefore, public procurement shall be utilised to stimulate innovation and to create new markets. Awareness rising and changing the minds of procurers is essential to overcome the slow and timid application of PPI in Europe and to fight barriers and risks associated with the change of procurement culture. As regards policy action, **i4g recommends**:

- Building up the necessary human resources and skills for operating PPI;
- Structural Funds should envisage enabling measures in their guidelines;
- Appointing a State Minister responsible for procurement and innovation and/or the establishment of special agencies.

Moderate innovator countries and catching-up countries would benefit most of PPI as intervention needs are moderate and Structural Funds would be most instrumental.

9. Improve European universities' research excellence in international comparison by smart specialisation

The main conclusion, with important policy consequences, of this i4g brief is that Europe lags behind not only compared to the US but also to Asia, and that the distribution of excellence in European universities is very different to the one in the US or that in Asia. We need to thoroughly observe world-wide university excellence data in order to understand better Europe’s position:

- In the top 10% of excellent universities the geographical distribution is in the order of 6:3:1 between North America, Asia, and Europe last.
- In the top 30% of excellent universities the geographical distribution is more favourable for Europe: 5:3:2 between North America, Europe, and Asia respectively.
- The first 7 US universities in the top 10% (Harvard, Johns Hopkins, MIT, University of California at San Francisco, Pittsburgh, Stanford, University of Michigan at Ann Arbor) account for a larger number of fields of excellence than all European universities combined.
- Only four European countries (United Kingdom, Netherlands, Switzerland and Sweden) account for 46.2% of the scientific fields in which European universities are able to compete. With the exception of the UK, these are relatively small countries. The other four large European countries (Germany, France, Italy, Spain), only account for 24.6% of the science fields.

The conclusion is that Europe is not a leader at the aggregate level (US and Asian universities are far better at the aggregate level). However, at the disaggregate level (per discipline) Europe is doing rather well. This in turn indicates a ‘long tail of specialisation’ in European research excellence: many pockets of excellence across the continent rather than concentrated clusters across all disciplines. Therefore **i4g recommends** that the European way to research excellence should follow much more a pattern of smart specialisation.
Annex: i4g policy briefs

The first series of i4g policy briefs is dedicated to the following topics:

1. Innovating out of the crisis: Designing a new European Annual Growth Strategy (Luc Soete)
2. Public procurement of innovation (Lena Tsipouri)
3. Socio-economic benefits of ERA
4. Financing of innovation: addressing Europe’s early stage venture gap (Reinhilde Veugelers)
5. The public role in financing innovative companies: shifting from venture capital to seed investment (Andrea Bonaccorsi)
6. Growth impeding innovation: the case of Greece (Lena Tsipouri)
7. Seizing the opportunities of service innovation (Metka Stare)
8. Smart specialisation and the new industrial policy agenda (Dominique Foray)
9. Smart and inclusive growth: reforming the risk-reward nexus in innovation (Mariana Mazzucato)
10. Are European universities facing the Asian challenge in excellent S&T research? (Andrea Bonaccorsi)

The i4g authors or mentors of the policy briefs are mentioned in brackets. All policy briefs have been discussed in i4g meetings as an outline and subsequently at least once in a draft form.