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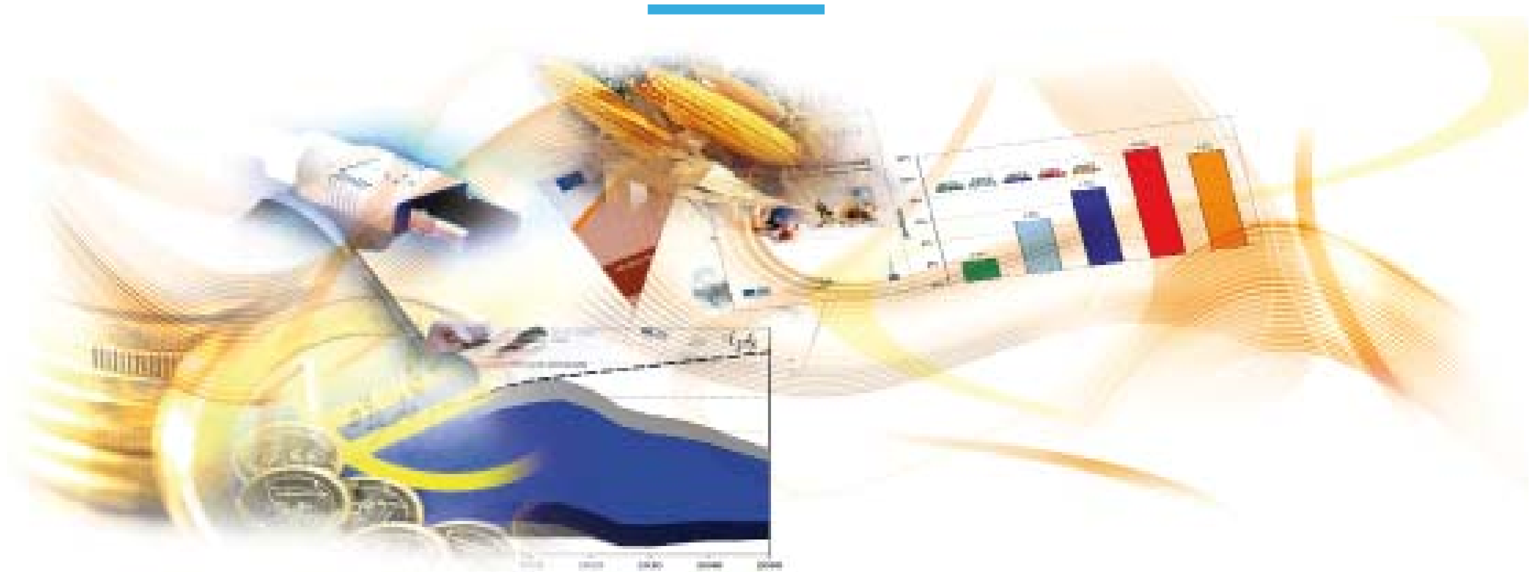

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4th European Conference on Corporate R&D and Innovation: Financing R&D and Innovation for Corporate Growth in the EU (CONCORDi-2013)

Summary Report

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4th European Conference on Corporate R&D and Innovation:

Financing R&D and Innovation for Corporate Growth in the EU: Strategies, Drivers and Barriers

(CONCORDi-2013)[1]

Summary Report

1. Introduction

The CONCORDi conferences (held in 2007, 2010, 2011 and 2013) provide a forum for technical and academic discussions on the role of private R&D and innovation in various aspects of business performance and the subsequent implications for broader economic development. Their objective is to pool the latest knowledge available from the research and academic communities and see to what extent this knowledge can provide responses to the most pressing policy questions in this area[2].

The 4th edition of CONCORDi focused on financing innovation for company growth, an area closely related to such a policy priority. There is a broad consensus about the fact that the high barriers to accessing finance and the lack of investment resources severely hamper the innovation performances of European industry.

Indeed, a large number of firms in Europe continue to face severe financial constraints: the most recent data[3] show a critical situation for the R&D and innovation investments of EU companies. The interplay of specific economic characteristics – Europe has a higher share of small and medium size firms and of medium-/low-tech sectors compared to its main competitors – and institutional conditions – EU Member States in general have bank-based financial systems and low-capitalised stock exchanges – makes the funding shortfall for innovative projects in Europe particularly acute. In particular, high-tech start-ups and young innovative SMEs are severely constrained financially; this has been identified as a major barrier to their growth, for which policy-makers strive to find suitable solutions.

Finance for growth is in fact one of the most important roles that the financial system plays within innovation systems, at regional, national and supranational level. Start-ups and innovative companies use finance as the fuel needed to pass through a variety of growth stages. However, finance for growth is exposed to market failures, which stimulate policy discussions and interventions. These failures are mainly related to the intrinsic risk of R&D

[1] CONCORDi-2013 website: http://iri.jrc.ec.europa.eu/concord/2013/index.html

[2] More information on CONCORDi Conferences can be found trough the following link: http://iri.jrc.ec.europa.eu/concord.html

[3] See "The 2013 EU Industrial R&D Investment Scoreboard" (European Commission, JRC-IPTS) and "The Innovation Union Scoreboard 2013" (European Commission, DG RTD and DG ENTR).

and innovation activities, the difficulties of reaping their benefits, and the asymmetric information pervading the relationship between lenders, equity investors and borrowers.

Credit rationing and suboptimal levels of innovation investments are some of the well-known consequences of these failures. In addition, finance for growth is also exposed to strategic failures, stemming from internal competition within firms for alternative destinations of internal resources, and from the short-term attitude that managers often have with respect to their use[4].

During his opening speech, the above facts were referred to by **John Bensted-Smith** (Director, European Commission - JRC-IPTS), who also emphasized that, in spite of its relevance, scientific knowledge in the area of financing R&D and innovation and its link to the growth of firms across the EU is less advanced than that in other areas of the economics of innovation, and that this issue is far from being resolved in terms of policy either.

From the 54 long abstracts submitted in response to the initial call, 18 papers were presented and discussed during the Conference. In addition, the content of seven papers was exhibited as posters on the Conference premises. Nine of the eighteen papers presented at CONCORDi-2013 addressed the first of the two main topics in which the Conference was organised: (1) *Financial sources, constraints and the growth strategies of firms*; while the other nine papers addressed the second topic: (2) Pu*blic policies, policy means and financing facilitators*.

This summary is organised as follows. After this introduction, section 2 summarises the contribution of the Keynote Speakers; sections 3 and 4 sum up the main results of the Parallel Sessions; section 5 introduces the Best Paper Award, while section 6 briefly reports on the discussions of the policy stakeholders. Finally, section 7 recapitulates the main conclusions.

2. Arguments of the Keynote Speakers

The urgent need to transform the finance sector to nurture innovation and facilitate the capital development of the economy was the focus of the first speaker, **Mariana Mazzucato** (RM Phillips Professor in Science and Technology Policy, University of Sussex, SPRU). She argued that much of the current discussion about 'rebalancing' post-crisis economies revolves around the need to reform the financial sector to guarantee and improve its function of nurturing investments, in particular in innovation, in the 'real economy'. Indeed, this is the reason why industrial strategy has made a come-back. However, unless innovation/industrial policies tackle the *financialisation* of the real economy - where value extraction activities have been rewarded above activities focused on value creation (often leading to value destruction) - they will only feed a sick system rather than truly transform it. In this sense innovation policy and financial reform must go hand in hand to foster both innovation and *de-financialisation*, by remodelling the risk and reward structure to render growth both smart and inclusive. One of the main issues that Prof Mazzucato pointed to is that the problem is not just the *quantity* of available financial resources but also the *quality*: the lack of *patient long-term committed finance*. This has become an increasing problem as the 'venture capital' model itself has become more short-termist and risk-averse, focusing on an early exit (usually via an IPO). Whereas across the globe it is public financing that is today funding the high risk areas of the next big wave: clean technology.
Prof Mazzucato argued that governments should focus on making and shaping markets, not only on fixing them. This requires not just solving 'public good' problems and 'nudging' the private sector, but also directly investing in a wide variety of areas: basic research, applied

[4] More on these arguments can be found in a discussion note elaborated before the Conference (http://iri.jrc.ec.europa.eu/documents/10180/14016/CONCORDi-2013%20Background%20Note).

research and early stage seed financing. These activities are indeed what the State (through a decentralised network of well-funded agencies) has done in areas like Silicon Valley where public funds were the catalyst and lead investor, creating and not just facilitating the knowledge economy. Professor Mazzucato claimed that a 'mission-oriented' framework is one that can justify such breadth and depth of investments, and the willingness to engage in the high risk/uncertainty areas. She also argued that understanding the government as a leading risk-taker takes us to the question of risks and return: how to make sure it is not only risk that is 'socialised' but also the rewards. She argued that the tax system no longer works effectively for such a return to come back to the public purse, and thus suggested that different tools be considered: equity (as SITRA in Finland did with Nokia), income contingent loans, and the retention of a golden-share of the IPR. The latter should be combined with policies that make sure the owner of the patent behaves cooperatively, e.g. licensing the patent broadly and fairly after an initial period of protection. The first movers should be able to recover their costs but not exclude others from drawing on the innovation. She argued that only by understanding the state as an active market-shaper/maker, do such knowledge governance issues become central to both innovation policy and financial reform.

The relevance of Venture Capital (VC) for the creation and growth of innovative business in Europe was the main topic addressed by **Alexander Popov** (Principal Economist at the Central European Bank). He first showed that Europe underperforms in terms of productivity growth relative to the US. He then argued that in the European context, there is a positive effect of VC on new business creation, but a relatively weak one on patented innovation. The latter phenomenon is stronger in countries with lower taxes on capital gains and with a higher protection of property rights. Regarding the effect of VC on new business creation, it tends to be stronger in capital-intensive industries than in R&D-intensive industries, suggesting that VC is not as efficient as expected. Finally, Dr. Popov expressed his support for a holistic approach to innovation in which all stages of the innovation process are addressed, from credit constraints at firm level to the flow of ideas and the demand for innovative products. He proposed several policy actions that could improve the present situation. Chief among these are: i) improved regulations (e.g. lower risk weights on bank investment in private equity funds; laxer regulation of other institutional investors, such as insurance companies); and ii) the implementation of structural reforms (e.g. addressing labour market rigidities; education reform; protection of intellectual property rights in value-enhancing areas); and iii) the stimulation of VC through institutions[5].

3. Financial sources, constraints and the growth strategies of firms[6]

The nine papers presented and discussed in the parallel sessions of CONCORDi-2013 have been grouped by the three broad themes that they explored. These themes are external barriers, the firms' own behavior, and the interactions of the two.

The first group of papers (by **Coad, Pellegrino** and **Savona; Bontempi, Pellegrino** and **Savona; Brown** and **Martinsson**) studied the importance of various *external* factors affecting the R&D efforts and innovative activities of firms. These studies reinforce previous findings that financial constraints have a negative impact on innovative activities, and add new evidence from different European cases showing that non-financial hurdles may matter too. Furthermore, these papers suggest that there is a high degree of heterogeneity among firms and that financial constraints are most common among those potentially most

[5] For example: the EIB group provides VC funds through "High Growth and Innovative SME Facility". More information can be found in http://ec.europa.eu/enterprise/policies/finance/cip-financial-instruments/

[6] This Section largely relies on the content of the visual aids elaborated by Ari Hyytinen (University of Jyvaskyla, FI) with the contribution of other Members of the Scientific Committee and used during his intervention at CONCORDi-2013 to summarize the scientific output of the Conference for this topic.

innovative, and whose environment is characterized by high uncertainty and limited information disclosure. In fact, the quality and quantity of financial disclosure rules/practices positively affect the firms' investment in R&D as well as the speed of growth of firms, especially in the high-tech industries. Furthermore, the tax treatment of R&D has a relatively stronger effect on R&D in less innovative industries.

The second group of papers (by **Simeth** and **Cincera; Czarnitzki, Hall** and **Hottenrott; Lahr and Mina**[7]) addressed the question of how the firms' own behavior affects market perceptions and the severity of financial constraints. In fact, as prior literature amply demonstrates, by adopting certain types of behavior, firms can either reduce or magnify their financial constraints. These papers show that strong intellectual property activities (patent applications and scientific publications) are associated with greater R&D activities in high-technology sectors, and attenuate the financial constraints. In particular, this occurs for small firms, for which information asymmetries may be particularly high and collateral value is low. Furthermore, these papers disentangle the relation between the financial constraints of firms and their innovative activities. This is suggestive of two-way feedback effects (bi-directional). More precisely, the financial constraints experienced by the firms analyzed do not seem to dampen their R&D and innovation, while R&D activities and innovation make firms more financially constrained.

The third group of papers (by **Lööf** and **Nabavi; Altomonte, Mancusi** and **Vezzulli**) investigated how the financial constraints, innovative investments and exports of firms interact. The papers support existing literature on this interaction, and provide new evidence of such an interaction being dependent on the availability (or lack of availability) of financial resources: financial constraints (the level of financial health of the firm) intertwine with product competition in preventing firms from investing in R&D to gain foreign market shares and to grow. Moreover, it seems that financial constraints can shape the relation between innovative activities and exports in a very particular way: if financial constraints are binding, export and innovative activities are less likely to be complementary to each other.

The **implications for policy** deriving from the nine papers are twofold. On the one hand, market failures that hamper the access to finance could be corrected by a more precise design of policy actions in order to exploit complementarities among different production domains (e.g. across R&D, export and financial supply domains, as there is a mutual causal interaction among them). The results of the investigations also call for better/more policy coordination across EU countries (presently fragmented). Furthermore, the attention of policy makers should be directed to the financial constraints that persist and are even intensified after firms innovate and when they enter the stage of spreading their innovative products into the market (especially with respect to SMEs), that is, the moment at which firms could benefit from their innovative efforts. On the other hand, however, there are also important external, non-financial barriers to innovation, which are consistent with the view that there may also be a demand side to the innovation problem. In any case, the rationale for policy intervention should be adequately elaborated. Given that innovative firms apparently can take active steps to alleviate their financial constraints, the design of such policies should be carefully considered to maximize their cost-effectiveness. Because it is unclear which policies work best in this respect, policy experimentation and evaluation may be needed.

Finally, it emerged that **further research** is needed on: a) the magnitude, and thus relative importance, of the various external barriers to innovative activities; b) the factors that determine why and when innovative firms are willing (or forced) to take actions to alleviate their financial constraints (for example, to what extent this depends on the governance

[7] Note: CONCORDi-2013 *Best Paper Award* was granted to Henry Lahr and Andrea Mina, for their paper titled "Dynamic financial constraints and innovation: Evidence from the UK innovation surveys". More information is provided in section 5

structure of the firms? Are there dynamic effects of obtaining informed financing early on?); c) the relation between firm growth and financial constraints (mechanisms; quantitative importance; heterogeneity). More generally, there is relatively little knowledge about what makes an organization (a firm) innovate, what could favor the rise of such organization, and whether certain socio-economic environments and policies can support their development in both manufacturing and service industries.

4. Public policies, policy means and financing facilitators[8]

The nine papers presented and discussed in the second parallel sessions of CONCORDi-2013 are grouped here by the three broad themes that they explored. These concern R&D tax credits, R&D subsidies and policies to finance new innovative firms.

The first group of papers (by **Guceri; Teirlinck, Neicu** and **Kelchtermans; Bozio, Irac** and **Pyz**) investigated the effectiveness of R&D tax credits. The most salient results arising from these papers are presented below. R&D tax incentive schemes for large companies could generate positive effects, in the case of the UK, an increase of 18% in business R&D is obtained in comparison to the counterfactual scenario of no tax credit, implying a user cost-elasticity of 1.35. Furthermore, it is better to have two policy instruments rather than just one: R&D tax credits and R&D subsidies work better to prevent crowding out, as evidence from the Belgian experience shows. In fact, the effects of R&D tax credits and R&D subsidies are differentiated according to the characteristics of the firm and of the R&D projects. In the case of the new French R&D tax credit scheme, which is particularly generous in terms of the resources allocated (it has absorbed 0.25% of its GDP), important specificities arise. It was estimated that this programme has led to a 13% increase in business R&D, but without a visible increase in innovation output as measured by patent applications. This result emphasizes that the choice of output indicators is particularly challenging when large schemes (policy) are evaluated, especially as the goal of such schemes is not necessarily to increase private returns to R&D (as indicated by patent applications).

A second group of papers (by **Hottenrott, Lopes-Bento** and **Veugelers; Tanayama** and **Asikainen; Huergo**) dealt with the effectiveness of R&D subsidies. When dealing with R&D, targeting "R" induces more private investment than targeting "D" (the Flemish scheme treats funds supporting the “R” phase differently to those devoted to the “D” phase). In addition, there are significant “cross-effects” with more significant spill-overs stemming from the "R" support to the "D" private performances; these effects largely depend on the size of the targeted firms. In the Finnish experience subsidies are allocated - through the selection of the Finnish agency TEKES - to more technologically challenging, riskier and novel innovation projects. However, important differences arise when firm size is considered: commercial risk is negatively correlated to the subsidy decisions for SMEs, but positively correlated for large firms. Finally, the experience of the Spanish CDTI agency shows that young firms, exporters, large firms, firms operating in high-/medium-tech industries, and especially firms with previous experience in similar programmes, are more likely to use R&D subsidies.

The third group of papers (by **Czarnitzki** and **Delanote; Grilli** and **Murtinu; Cordova, Dolci** and **Gianfrate**) investigated which are the best (and newest) policies for financing new innovative firms. The main results are quite interesting. As European new R&D-intensive firms seldom become very big, public policies try to address this issue in different ways. However, this attempt is rather difficult, even in Germany where there is strong evidence that R&D subsidies targeting young firms are not effective, unless such firms operate in high-tech

[8] This section largely relies on the content of the presentation elaborated by Daniele Archibugi (Italian National Research Council, IT) with the contribution of other Members of the Scientific Committee, and used during his intervention at CONCORDi-2013 to summarize the scientific output of the Conference for this topic.

sectors. On the other hand, empirical evidence indicates that public venture capital may not be a policy solution in Europe. Private VC appears to be more conducive of firm growth than public VC funding. The "crowdfunding" scheme[9] - a potentially new disruptive way of financing new technological-based ventures – has several interesting characteristics: the existence of a large number of co-founders already indicates cases in which there will be eager consumers; it seems that *crowdfunding* is evolving along the same lines as venture capital. It could represent an interesting option for the public sector for selecting, with the help of citizens, the innovative projects to be funded.

The **implications for policy** deriving from these nine papers are related to the following issues. Tax credits help in increasing the R&D input of the business sector. However, an increase in R&D inputs does not necessarily lead to a concomitant increase in innovation output. Moreover, gradual tax credits schemes are better suited to helping to generate new knowledge. Furthermore, *when R&D subsidies are selective*, it is important to rely on an administration which is technically competent and able to understand the feasibility of the projects examined and their potential contribution to overall learning and competence-building.
This fact is particularly relevant given the evidence for a different impact of targeted R&D subsidies. For example, public support to research activities is positively transmitted to development investments, while the same does not necessarily hold true when the support for development activities is considered. In addition, attention should be paid to companies with more ability than others in obtaining R&D subsidies, as these are probably the ones that would have performed R&D and innovated without public subsidies (crowding-out effect). Policies to finance new fast-growing innovative firms should be focused firstly on reducing institutional rigidities, as these may have a greater impact on such firms than subsidies or VC policies. Finally, a stronger public effort should be allocated to creating knowledge to be used for commercial exploitation and for insuring that results associated to public subsidies are also properly disseminated.

Further research in this area may be addressed at disentangling sector and firm specificities in the effect of public intervention on improving corporate R&D and innovation performance. For example, investigating whether such improvement is attributable to incoming foreign firms may provide some guidance on the tax competition aspects of R&D tax credits. Additional analyses should be carried out to better investigate the new *crowdfunding* phenomenon, and to ascertain whether *crowdfunding* is a valid complement to /substitute for venture capital and "angel" investing or whether *crowdfunding* projects are as capital-intensive as VC ones. Furthermore, there is a general demand for more and better data to implement relevant analyses. For example, the availability of longitudinal data panels (tracking information on the same subjects at multiple points in time) would be useful in order to introduce a time-series dimension into the econometric setup able to properly assess what exactly the different R&D and/or innovation subsidies for different types of firms entail. In addition, appropriate data would allow researchers to disentangle sector specificities and to extend some of the analyses to other countries or clusters of homogenous regions. Finally, further studies should investigate the costs and benefits, related to both firms and governments, of putting in place different mechanisms for attenuating financial constraints in research and innovation activities.

[9] This is the collective effort of individuals who network and pool their money, usually via the Internet, to support efforts initiated by other people or organizations.

5. Best Paper Award

The CONCORDi-2013 Scientific Committee granted the CONCORDi-2013 Best Paper Award to the best selected work presented at the Conference: "Dynamic financial constraints and innovation: Evidence from the UK innovation surveys", authored by Henry Lahr and Andrea Mina (University of Cambridge, UK).
The paper was awarded the prize for the originality, scientific rigor and policy relevance with which the authors deal with the complex relationship between the firm's financial constraints and its innovation.
The main conclusion of the paper is that the financial constraints experienced by the firms analysed do not seem to dampen their R&D and innovation, while R&D activities and innovation, especially product and new-to-market ones, both make the firm more financially constrained. The attention of policy makers is drawn to the financial constraints that persist and is even more intensified when the firm innovates and enters the stage of innovation diffusion. Policy support at this stage is at least as important as that given to innovation as such, especially for SMEs, which often lack the ability to fully exploit their innovative outcomes
The prize was announced and awarded by Prof **Bronwyn Hall** (member of the Scientific Committee) during the social event of the Conference on the 26th of September 2013.

6. Policy Stakeholders' Arguments

Policy stakeholders from the European Commission participated in a round table discussion chaired by **Xabier Goenaga** (Head of Knowledge for Growth Unit, European Commission – JRC-IPTS) during the closing plenary session of the Conference. The following is a short summary of their most salient contributions.

Vladimir Bilek (Financing of Innovation, Competitiveness and Employment Policies Unit - Directorate General for Economic and Financial Affairs). Bilek's unit of the Directorate General for Economic and Financial Affairs designs innovative financial instruments used for financing EU policies. It also provides advice on financing mechanisms to other Commission services. Furthermore, it manages and monitors financial instruments facilitating the access of SMEs to finance. During his intervention, Mr Bilek argued for good valuation studies to assess the effectiveness of policies, which should include a comparative policy perspective; to consider the relevance of other financial constraints such as those posed by framework conditions; and to anticipate possible future constraints and needs, not only studying past trends.

Bonifacio Garcia Porras (Innovation Policy for Growth Unit - Directorate General for Enterprise and Industry). The mission of the unit led by Mr Garcia Porras is to assist in the definition and implementation of the innovation policy strategy to foster economic growth and the creation of jobs. In the effort of facilitating the access of firms to finance, the stimulation of internal demand for innovation, its exploitation and diffusion are only some of the topics addressed by this unit. Mr Garcia Porras suggested increasing efforts to identify external barriers to financial innovation, and more precisely, to find better ways of monitoring demand-side actions, for instance, by identifying appropriate demand-side indicators for the Innovation Union Scoreboard. Furthermore, he underlined the relevance of assessing the interaction between financial constraints and innovation efforts in the framework of state aids, along with the effectiveness of projects such as COSME or those of the EIB.

Gaetan Nicodeme (Economic Aspects of Taxation Unit - Directorate General for Taxation and Customs Union). Mr Nicodeme's unit is in charge of economic analysis, evaluation and impact assessment support regarding EU-tax policy making. The unit is also in charge of coordinating all the European Semester activities for the Directorate General for Taxation and Customs Union and of developing the relevant policies. Therefore, he argued, his unit is highly interested in the debate concerning the direct and indirect effects of taxation on innovation. Mr Nicodeme recommended the implementation of more research into the design of tax incentives for innovation and their efficiency. He supported the idea of improving coordination and of establishing a network of researchers for the evaluation of financial policy for innovation. In this framework he suggested looking at EUROMOD, a network of researchers who have built up a tool to assess tax policy measures.

Viorel Peca (Innovation Unit - Directorate General for Communications Networks, Content & Technology) briefly introduced some of the objectives of the unit of which he is in charge, relating to access to finance, prizes, pre-commercial procurement and procurement of innovative solutions, ICT entrepreneurship, ICT innovation vouchers, and standardisation. Mr Peca found the issue of demand as a financial constraint relevant, and argued for more empirical work to evaluate the effectiveness of financial and fiscal instruments for innovation (which instrument/combination of instruments under which local/national circumstance should be used?), their macro-economic effects, and the identification and assessment of new instruments and their combinations (e.g. *crowdfunding* with grants, loans, taxes ...).

Bernd Reichert (Research and SMEs Unit - Directorate General for Research and Innovation) His unit is responsible for contributing to: the elaboration of current or new EU policies, the co-ordination and implementation of the activities within the Research and SME area, the elaboration of work programmes, strategies and new approaches to the programme. Furthermore the unit contributes to the definition, planning and implementation of measures for the participation of SMEs in research activities under the Seventh Framework Programme. Mr Reichert underlined that there will be a particular emphasis on policy implementation, as well as on how/how many SMEs will benefit (impact, effectiveness) from the EU financial schemes. Finally he indicated some areas where policy makers need to get more information and analysis, such as new business and management models in SMEs undertaking the financing of R&D and innovation and their consequences; comparisons of EU experiences with those of other countries in the world; and how to assess the new programmes that the Commission is going to put in place.

7. Conclusions and further considerations

The main conclusions of the Conference are summarised in the following paragraphs[10].

(i) Financial constraints are major obstacles to R&D and innovation in European firms, and the importance of these obstacles depends on factors that are both internal and external to the firms. For example, the lack of a firm's internal liquidity together with the lack of collateral assets (typical of SMEs) dampens corporate R&D and innovation activities. On the other hand, strong competition and the lack of demand are almost as important as obstacles as are financing constraints. Actually, financial constraints can be seen in a new light, that is: as selection mechanisms, rather than merely innovation barriers (the relevant role in this process is played by the demand for innovation). Therefore, the phenomenon is bi-directional

[10] The conclusions have been elaborated thanks to the input provided by the Members of the Scientific Committee of CONCORDi-2013, and in particular from the following: Daniele Archibugi, Michele Cincera, Marianne Guille, Bronwyn H. Hall, Ari Hyytinen, Gustav Martinsson, Pietro Moncada-Paternò-Castello, Debora Revoltella, Reinhilde Veugelers. They also benefited from the interventions of the policy stakeholders from the European Commission, as mentioned in the preceding chapter 5, as well as by Lena J. Tsipouri (Chair, European Commissioner's Geoghegan-Quinn's "High Level Economic Policy Expert Group Innovation for Growth – i4g"). The complete list of members of Scientific and Steering Committees as well as the affiliations of their members can be found in Annex II of this document.

as far as innovation is concerned. In particular new-to-market and product innovations are also associated with the financial constraints of the firm.

(ii) The reduction of information asymmetries can considerably lower the barriers to access financial resources for corporate R&D and innovation activities: high level (in both quality and quantity) rules/practices of financial disclosure, patenting and publications are positive information signals to investors and have been proved to positively affect the investment of firms in R&D/innovation as well as their speed of growth. There are positive interactions among the finance availability, productivity, R&D, export, and cooperation in R&D of firms; however, when firms are credit constrained, the last two activities are likely to become substitutes instead of complementary activities.

(iii) The difficulty of accessing finance and its limited availability may apply especially to bank loans, as banks generally do not possess the scope, financial products and competencies to deal with investment in high-tech projects (especially by young firms). Hence, venture capital is considered (still) a suitable external financing mechanism as it reduces the time needed to establish in the market and commercialize new ideas, especially for high-tech start-ups operating in capital-intensive industries[11]. Nonetheless, there are concerns that private venture capital is ultimately the proper instrument for financing R&D and innovation projects (often with medium/long term perspectives), especially given that the former has a short-time horizon for harvesting returns (the VC exit time is usually around the third year) and the latter the opposite. This in turn may produce a detrimental effect on the ability of VC-backed companies to produce real value for the economy, i.e. new products and jobs. New emerging instruments, such as *crowdfunding*, should be considered, possibly in combination with other financial sources.

(iv) Policy remedies to financial shortages and barriers are not affected by crowding-out, but their *additionality* is very sensitive and not yet systematic. They should be accurately designed and coordinated to exploit in full their complementarities and synergies to maximize their effectiveness. One policy mean that fits all the cases would be an ideal approach but is not fully suitable. In fact, tax incentives, subsidies and grants have different impacts depending on the size of the firm, group belonging, project specificities (riskiness, newness), growth phases (financial constraints persist and are even intensified when the firm innovates and enters the stage of its innovation diffusion), industry (there are differences in the effectiveness of policy instruments depending on whether high- or low-tech industries are addressed), and on whether product or service characteristics are taken into account. Moreover, public venture capital or public use of *crowdfunding* are issues to be further investigated and analysed.

(v) The great heterogeneity of companies and framework conditions across countries and regions calls for much more systematic and comprehensive empirical evidence and proper indicators, as well as policy analyses and the monitoring of instruments. Accordingly, both scientists and policy-makers participating in CONCORDi-2013 called for the establishment of a stronger network of R&D and innovation policy evaluators, to support the proper implementation of the upcoming European financial support instruments agreed for the period 2014-2020.

Prof **Lena J. Tsipouri** (Professor in the Department of Economic Sciences at the University of Athens, GR, and Chair, European Commissioner's Geoghegan-Quinn's "High Level Economic Policy Expert Group Innovation for Growth – i4g") in drawing the conclusions of the Conference, offered the audience some additional reflections which reinforce the above-mentioned findings and are worth mentioning[12]. First, the messages of CONCORDi-2013 are

[11] About 75% of the SMEs need external capital; however only around 1% of all SMEs are VC-fundable.

[12] The following paragraph relies on part of the visual aids elaborated by Prof Lena J. Tsipouri which she used during her intervention at closing plenary session of CONCORDi-2013.

important for the broad economic policy, not just for R&D/Innovation. In fact, R&D/Innovation has (or can have) very high private and social returns on investment but, disappointingly, public resources are often reduced in this area in time of crisis. Secondly, *smart consolidation*[13] should be enhanced to protect, where possible, investments in R&D and innovation, and other growth-enhancing areas. In order to enhance *smart consolidation*, it would be necessary to differentiate policies in terms of strategies, geographical scope and measures. However this type of policy is difficult to implement and brings the risk of government failure, requiring the courage of policy-makers' to pilot and peruse the main objective. The successful implementation of *smart consolidation*, in turn, requires adequate knowledge and a strong position with respect to research results, political resolution, and technical competence of the administration. Finally, policy makers should consider new policy strategies and means, such as those to ensure paybacks in cases of outright commercial success of public R&D/innovation, encouraging risky R&D in firms, and improving institutional capabilities.

Finally, **John Bensted-Smith** (Director, European Commission - JRC-IPTS) in his intervention at the closing plenary session manifested his conviction that CONCORDi-2013 has contributed to improving dialogue and exchange between the scientific community and policy makers on a crucial issue, and offered evidence and conclusions to policy makers, so they might improve the design and implementation of policies and support instruments to facilitate the financing of R&D and innovation for corporate growth in the EU. The timing, he underlined, is appropriate as the European Commission and Member States are programming the use of the funds available under the new framework programme *Horizon 2020* and under the new generation of cohesion instruments for the period 2014-2020. In this context, support to innovation and to the innovative activities of firms is one of the priorities of the EU cohesion policy.

The 5th edition of the European Conference on Corporate R&D and Innovation was announced as planned for 2015.

[13] Smart consolidation is meant to be a 'growth-friendly consolidation' where each EU Member State aims at fiscal consolidation, protecting to the greatest extent possible the growth-friendly expenditure, coupled with structural reforms in view of strengthening competitiveness and knowledge infrastructure, research & innovation. In implementing it, the EU Member State does it 'smartly', i.e. choses which pathway of 'growth-friendly consolidation' to follow by integrating place-based economic transformation strategies/agendas.

References

Hervás, F., Moncada-Paternò-Castello, P.,, Montresor, S. and Vezzani, A. (2013) "4th European Conference on Corporate R&D and Innovation: Financing R&D and Innovation for Corporate Growth in the EU (CONCORDi-2013) Background Note" - European Commission EUR 26138 EN– Joint Research Centre – Institute for Prospective Technological Studies - Scientific and Technical Research series - Luxembourg: Publications Office of the European Union, September 2013 -http://iri.jrc.ec.europa.eu/documents/10180/14016/CONCORDi-2013%20Background%20Note

Mazzuccato, M. (2013) - Finance for *Innovation* and *Inclusive* Growth - Keynote Speech at the 4th European Conference on Corporate R&D and Innovation: "Financing R&D and innovation for corporate growth in the EU: Strategies, drivers and barriers" (CONCORDi-2013) - European Commission, JRC-IPTS –Seville (Spain) 27 September 2013. Unpublished ppt document.

Popov, A. (2013) – Venture Capital and Creative Destruction: The European Evidence - Keynote Speech at the 4th European Conference on Corporate R&D and Innovation: "Financing R&D and innovation for corporate growth in the EU: Strategies, drivers and barriers" (CONCORDi-2013) - European Commission, JRC-IPTS –Seville (Spain) 27 September 2013. Unpublished ppt document.

Tsiopuri, J.L., Conclusions of the 4th European Conference on Corporate R&D and Innovation: "Financing R&D and innovation for corporate growth in the EU: Strategies, drivers and barriers" (CONCORDi-2013) - European Commission, JRC-IPTS –Seville (Spain), 27 September 2013. Unpublished ppt document.

Papers presented at CONCORDi-2013[14]

TOPIC 1. FINANCIAL SOURCES, CONSTRAINTS AND FIRMS' GROWTH STRATEGIES

Alex Coad, Gabriele Pellegrino and Maria Savona (2013) "The Long Good-Bye: A Longitudinal Analysis of Barriers to Innovation" (*)

Markus Simeth and Michele Cincera (2013) "Corporate Science, Innovation and Firm Value"(*)

Maria Elena Bontempi Investment-uncertainty relationship: differences between intangible and physical capital"

Gabriele Pellegrino, Maria Savona (2013) "No Money, No Honey? Financial versus Knowledge and Demand Constraints to Innovation" (*)

Henry Lahr and Andrea Mina (2013) "Dynamic financial constraints and innovation: Evidence from the UK Innovation Survey panel" (*)

Hans Lööf and Pardis Nabavi (2013) "How to Finance Innovation Persistently? A Panel Data Study on Exporting Firms in Sweden" (*)

James R. Brown and Gustav Martinsson (2013) "Financial Disclosure, Tax Policy and Innovation (*)

Dirk Czarnitzki, Bronwyn H. Hall and Hanna Hottenrott (2013) "Patents as Quality Signals? The Implications for Financing Constraints on R&D" (*)

Carlo Altomonte, Maria Luisa Mancusi and Andrea Vezzulli (2013) "R&D investments, Financial Constraints and Export" (*)

TOPIC 2. PUBLIC POLICIES, POLICY MEANS AND FINANCING FACILITATORS

Hanna Hottenrott, Cindy Lopes-Bento and Reinhilde Veugelers (2013) "Direct and Cross-Scheme Effects in R and D Subsidy Programs: Theory and Evidence"

Dirk Czarnitzki and Julie Delanote (2013) "R&D subsidies to small young companies: should the independent and high-tech ones be favoured in the granting process?" (*)

Tanja Tanayama and Anna-Leena Asikainen (2013) "R&D Subsidy Allocation – What's the Role of Firm Size?" (*)

Peter Teirlinck, Daniel Neicu and Stijn Kelchtermans (2013) "Differentiating behavioural additionality effects of R&D tax credits"

Antoine Bozio, Delphine Irac and Loriane Py (2013) "The impact of the research tax credit on R&D and innovation: evidence from French firms"(*)

Elena Huergo (2013) "Impact assessment of R&D subsidies in Spain: some preliminary results" (*)

Luca Grilli and Samuele Murtinu (2013) "New technology-based firms in Europe: market penetration, public venture capital and timing of investment" (*)

Irem Guceri (2013) "Impact of R&D Tax Incentives: Evidence from UK Micro BERD Data"

Alessandro Cordova, Johanna Dolci and Gianfranco Gianfrate (2013) "The Bearable Lightness of Crowdfunding: International Evidences from High-tech Projects" (*)

[14] Most of the papers - specifically, those signalled with (*) - presented at the Conference can be accessible at http://iri.jrc.ec.europa.eu/concord/2013/papers.html

ANNEX I – PROGRAMME OF CONCORDi-2013

4th European Conference on Corporate R&D and Innovation: "*Financing R&D and innovation for corporate growth in the EU: Strategies, drivers and barriers*" (CONCORDi-2013)

European Commission, JRC-IPTS – Calle Inca Garcilaso No. 3, 41092 Seville (Spain)
26 – 27 September 2013

PROGRAMME

Thursday, 26 September 2013

OPENING PLENARY SESSION

8h30 – 9h00 Registrations

9h00 – 9h15 Welcome – **John Bensted -Smith** (Director, European Commission - JRC-IPTS)

9h15 – 9h45 Keynote speech – **Mariana Mazzucato** (University of Sussex, United Kingdom)

9h45 – 10h15 Keynote speech – **Alexander Popov** (European Central Bank, EU)

10h15 – 10h45 Open discussion

10h45-11h15 Coffee break

11h15 – 13h00 **PARALLEL SESSIONS (I)**

TOPIC 1 - FINANCIAL SOURCES, CONSTRAINTS AND FIRMS' GROWTH STRATEGIES

CHAIRPERSON: Uwe Cantner (Friedrich Schiller University Jena, Germany)
DISCUSSANT: Werner Hölzl (Austrian Institute of Economic Research, Austria)
RAPPORTEUR: Ari Hyytinen (University of Jyväskylä, Finland)

▸ **THE LONG GOOD-BYE: A LONGITUDINAL ANALYSIS OF BARRIERS TO INNOVATION**

Alex Coad, Gabriele Pellegrino and Maria Savona (University of Sussex, United Kingdom; University of Barcelona, Spain; Catholic University of Milan/Piacenza , Italy)

▸ **CORPORATE SCIENCE, INNOVATION AND FIRM VALUE**

Markus Simeth and Michele Cincera (École Polytechnique Fédérale de Lausanne, Switzerland; Université Libre de Bruxelles, Belgium)

▸ **INVESTMENT-UNCERTAINTY RELATIONSHIP: DIFFERENCES BETWEEN INTANGIBLE AND PHYSICAL CAPITAL**

Maria Elena Bontempi (University of Bologna, Italy)

TOPIC 2 - PUBLIC POLICIES, POLICY MEANS AND FINANCING FACILITATORS

CHAIRPERSON: Sandro Montresor (European Commission)

DISCUSSANT: Saul Lach (The Hebrew University, Israel)

RAPPORTEUR: Gustav Martinsson (Swedish House of Finance, Sweden)

▸ **DIRECT AND CROSS-SCHEME EFFECTS IN R AND D SUBSIDY PROGRAMS: THEORY AND EVIDENCE**

Hanna Hottenrott, Cindy Lopes-Bento and Reinhilde Veugelers (Catholic University of Leuven, Belgium; Centre for European Economic Research, Germany; Bruegel, Belgium)

▸ **R&D SUBSIDIES TO SMALL YOUNG COMPANIES: SHOULD THE INDEPENDENT AND HIGH-TECH ONES BE FAVOURED IN THE GRANTING PROCESS?**

Dirk Czarnitzki and Julie Delanote (Catholic University of Leuven, Belgium; Centre for European Economic Research, Germany)

▸ **R&D SUBSIDY ALLOCATION – WHAT'S THE ROLE OF FIRM SIZE?**

Tanja Tanayama and Anna-Leena Asikainen (European Investment Bank; Public Research Centre Henri Tudor, Luxembourg)

13h00-14h00 Lunch

14h00 – 15h45 **PARALLEL SESSIONS (II)**

TOPIC 1 - FINANCIAL SOURCES, CONSTRAINTS AND FIRMS' GROWTH STRATEGIES

CHAIRPERSON: Bronwyn H. Hall (University of California at Berkeley, US)

DISCUSSANT: Kristian R. Miltersen (Copenhagen Business School, Denmark)

RAPPORTEUR: Michele Cincera (Université Libre de Bruxelles, Belgium)

▸ **NO MONEY, NO HONEY? FINANCIAL VERSUS KNOWLEDGE AND DEMAND CONSTRAINTS TO INNOVATION**

Gabriele Pellegrino, Maria Savona (University of Barcelona, Spain; Catholic University of Milan/Piacenza, Italy)

▸ **DYNAMIC FINANCIAL CONSTRAINTS AND INNOVATION: EVIDENCE FROM THE UK INNOVATION SURVEY PANEL**

Henry Lahr and Andrea Mina (University of Cambridge, United Kingdom)

▸ **HOW TO FINANCE INNOVATION PERSISTENTLY? A PANEL DATA STUDY ON EXPORTING FIRMS IN SWEDEN**

Hans Lööf and Pardis Nabavi (Royal Institute of Technology, Sweden)

TOPIC 2 - PUBLIC POLICIES, POLICY MEANS AND FINANCING FACILITATORS

CHAIRPERSON: Debora Revoltella (European Investment Bank, EU)

DISCUSSANT: Otto Toivanen (Catholic University of Leuven, Belgium)

RAPPORTEUR: Marianne Guille (Université Panthéon-Assas, France)

▸ **DIFFERENTIATING BEHAVIOURAL ADDITIONALITY EFFECTS OF R&D TAX CREDITS**

Peter Teirlinck, Daniel Neicu and Stijn Kelchtermans (Hogeschool-Universiteit Brussel, Belgium)

▸ **THE IMPACT OF THE RESEARCH TAX CREDIT ON R&D AND INNOVATION: EVIDENCE FROM FRENCH FIRMS**

Antoine Bozio, Delphine Irac and Loriane Py (Paris School of Economics, France)

▸ **IMPACT ASSESMENT OF R&D SUBSIDIES IN SPAIN: SOME PRELIMINARY RESULTS**

Elena Huergo (University Complutense of Madrid, Spain)

15h45-16h15 Coffee break

16h15 – 18h00 **PARALLEL SESSIONS (III)**

TOPIC 1 - FINANCIAL SOURCES, CONSTRAINTS AND FIRMS' GROWTH STRATEGIES

CHAIRPERSON: Marco Vivarelli (Catholic University of Milan/Piacenza, Italy)

DISCUSSANT: Pierre Mohnen (University of Maastricht, The Netherlands)

RAPPORTEUR: Pietro Moncada-Paternò-Castello (European Commission, EU)

▸ **FINANCIAL DISCLOSURE, TAX POLICY AND INNOVATION**

James R. Brown and Gustav Martinsson (Iowa State University, US; Institute for Financial Research, Sweeden)

▸ **PATENTS AS QUALITY SIGNALS? THE IMPLICATIONS FOR FINANCING CONSTRAINTS ON R&D**

Dirk Czarnitzki, Bronwyn H. Hall and Hanna Hottenrott (Catholic University of Leuven, Belgium; University of California at Berkeley, US; Catholic University of Leuven, Belgium)

▸ **R&D INVESTMENTS, FINANCIAL CONSTRAINTS AND EXPORT**

Carlo Altomonte, Maria Luisa Mancusi and Andrea Vezzulli (Bocconi University, Italy; Catholic University of Milan, Italy; Technical University of Lisbon, Portugal)

TOPIC 2 - PUBLIC POLICIES, POLICY MEANS AND FINANCING FACILITATORS

CHAIRPERSON: Reinhilde Veugelers (Catholic University Leuven, Belgium)

DISCUSSANT: Valerie Revest (University Lumière Lyon II, France)

RAPPORTEUR: Daniele Archibugi (Italian National Research Council, Italy)

▸ **NEW TECHNOLOGY-BASED FIRMS IN EUROPE: MARKET PENETRATION, PUBLIC VENTURE CAPITAL AND TIMING OF INVESTMENT**

Luca Grilli and Samuele Murtinu (Polytechnic University of Milan, Italy)

▸ **IMPACT OF R&D TAX INCENTIVES: EVIDENCE FROM UK MICRO BERD DATA**

Irem Guceri (St. Peter's College - University of Oxford, United Kingdom)

▸ **THE BEARABLE LIGHTNESS OF CROWDFUNDING: INTERNATIONAL EVIDENCES FROM HIGH-TECH PROJECTS**

Alessandro Cordova (Bocconi University, Italy), Johanna Dolci and Gianfranco Gianfrate (CMC Capital, Ireland; Bocconi University, Italy)

18h00 END OF THE FIRST DAY

Friday, 27 September 2013

CLOSING PLENARY SESSION

9h00-9h10 **OPENING OF THE SECOND DAY**

John BENSTED-SMITH (Director, European Commission - JRC-IPTS)

9h10 -9h45 **SUMMARY OF THE SCIENTIFIC OUTPUT OF THE CONFERENCE**

- **Ari HYYTINEN** (University of Jyväskylä – FI) - Rapporteur of Conference's topic 1: Financial sources, constraints and firms' growth strategies
- **Daniele ARCHIBUGI** (Italian National Research Council – IT) - Rapporteur of Conference's topic 2: Public policies, policy means and financing facilitators

9h45-10h30 **ROUND TABLE DISCUSSION – BY MEMBERS OF THE SCIENTIFIC COMMITTEE**

Chair: **Pietro MONCADA-PATERNÒ-CASTELLO** (European Commission - EU)

- **Michele CINCERA** (Université Libre de Bruxelles – BE)
- **Marianne GUILLE** (Université Panthéon-Assas – FR)
- **Bronwyn H. HALL** (University of California at Berkeley – US)
- **Gustav MARTINSSON** (Swedish House of Finance – SE)
- **Debora REVOLTELLA** (European Investment Bank - EU)
- **Reinhilde VEUGELERS** (Catholic University Leuven - BE)

10h30-11h00 Coffee break

11h00-12h30 **ROUND TABLE DISCUSSION BY EUROPEAN COMMISSION'S POLICY STAKEHOLDERS**

Chair: **Xabier GOENAGA** (Head of Knowledge for Growth Unit, European Commission – JRC-IPTS)

- **Vladimir BILEK** (Financing of Innovation, Competitiveness and Employment Policies Unit - Directorate General for Economic and Financial Affairs)
- **Bonifacio GARCIA PORRAS** (Head of Innovation Policy for Growth Unit - Directorate General for Enterprise and Industry)
- **Gaetan NICODEME** (Head of Economic Aspects of Taxation Unit - Directorate General for Taxation and Customs Union)
- **Viorel PECA** (Head of Innovation Unit - Directorate General for Communications Networks, Content & Technology)
- **Bernd REICHERT** (Head of Research and SMEs Unit - Directorate General for Research and Innovation)

12h30-13h00 **CONCLUSIONS**

Lena J. TSIPOURI (Chair, European Commissioner's Geoghegan-Quinn's "High Level Economic Policy Expert Group Innovation for Growth – i4g")

John BENSTED-SMITH (Director, European Commission - JRC-IPTS).

13h00 END OF THE CONFERENCE

POSTERS[15]

Author(s)	Affiliation	Title of the Poster
Giovanni Cerulli, Roberto Gabriele and Bianca Potì	Ceris-CNR - University of Trento (IT)	The Role of Firm R&D Effort and Collaborations as Mediating Drivers of Innovation Policy Effectiveness
Michele Cincera, Claudio Cozza, Alexander Tübke and Peter Voigt	Université Libre de Bruxelles (BE), Fondazione Formit (I), and European Commission	Spending on R&D in times of a crisis: A reflection of business strategies
Michele Cincera , Julien Ravet , Reinhilde Veugelers	Université Libre de Bruxelles, Katholieke Universiteit Leuven (BE)	R&D, financing constraints of young and old innovation leaders in the EU and the US
Karel Haegeman and Mathieu Dossineau	European Commission (EU)	Bridging the innovation gap: Private sector involvement in public-to-public R&D funding co-operation
Stijn Kelchtermans, Daniel Neicu and Peter Teirlinck	University of Leuven, and Hogeschool-Universiteit Brussel (BE)	Thanks, but no thanks: companies' response to R&D tax credits
Antoine Renucci	CREG, Université de Pau et des Pays de l'Adour (FR)	Bargaining with Venture Capitalists: When Should Entrepreneurs Show their Financial Muscle?
Filipe Silvaa and Carlos Carreira	University of Coimbra, Portugal (PO)	Financial constraints: do they matter to R&D subsidy attribution?

[15] The posters presented at the Conference can be accessible at http://iri.jrc.ec.europa.eu/concord/2013/papers.html

ANNEX II – MEMBERS OF SCIENTIFIC AND STEERING COMMITTEES

SCIENTIFIC COMMITTEE

- Daniele Archibugi (Italian National Research Council – IT)
- Michele Cincera (Université Libre de Bruxelles – BE)
- Marianne Guille (Université Panthéon-Assas – FR)
- Bronwyn H. Hall (University of California at Berkeley – US)
- Ari Hyytinen (University of Jyväskylä – FI)
- Gustav Martinsson (Swedish House of Finance – SE)
- Pietro Moncada-釣Paternò-Castello (European Commission - EU)
- David C Mowery (University of California at Berkeley – US)
- Bruce C Petersen (Washington University in St Louis – US)
- Debora Revoltella (European Investment Bank - EU)
- Reinhilde Veugelers (Catholic University Leuven - BE)

STEERING COMMITTEE (European Commission, Joint Research Centre)

- Xabier Goenaga
- Fernando Hervás
- Pietro Moncada-Paternò-Castello, *Coordinator*
- Sandro Montresor
- Rosy Rueda
- Maria Del Sorbo
- Antonio Vezzani

European Commission
EUR 26307 – Joint Research Centre – Institute for Prospective Technological Studies

Title: 4th European Conference on Corporate R&D and Innovation: Financing R&D and Innovation for Corporate Growth in the EU (CONCORDi-2013) Summary Report

Authors: Pietro Moncada-Paternò-Castello, Fernando Hevás, Sandro Montresor and Antonio Vezzani

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Abstract
The document intends to summarise the main results of the CONCORDi-2013 Conference. Session 1 introduces the rationale and the objectives of the Conference; section 2 summarises the contribution of the keynote speakers; section 3 and 4 will sum up the main results of the Parallel Sessions; session 5 introduces the Best Paper Award, whereas section 6 briefly reports on the discussion made by the policy stakeholders, and, finally section 7 recapitulates the main conclusions

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