DISCUSSION PAPER

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EXECUTIVE SUMMARY

UNIVERSITY-ENTERPRISE INTERACTION IN BRAZIL: THE ROLE OF THE PUBLIC RESEARCH INFRASTRUCTURE

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An extensive and modern scientific and technological research infrastructure along with its interaction with the industrial sector is one of the basic requirements to knowledge production in a given country and might be considered one of the pillars of the national innovation system. In Brazil, in spite of the recent growth of public resources for the expansion and modernization of the research infrastructure in universities and public research institutions during the last years, there seems to be no comprehensive database on the main characteristics of the national research institutions as well as on its main strengths and weaknesses.

Most analyses about the Brazilian case register low levels of interaction between the local research infrastructure and the industrial sector. The reasons for this low interaction can be found, firstly, in the characteristics of the Brazilian industrial sector, mostly concentrated in low-tech sectors. As a result, the demand for the knowledge produced by research institutions is not particularly high. Some authors, on the other hand, focus on the policy instruments that have been used to encourage this kind of interaction. The existing research infrastructure of the country – that corresponds, in this paper, to the set of public assets destined to research and development activities (R&D) that exists in universities and research centers – has not been, however, a recurring object of the analyses that intend to contribute for a better performance of the Brazilian innovation system. The lack of analyses of that nature can be blamed, at least in part, on the lack of systematic information about the research physical infrastructure available in the country.

This paper discusses the university-enterprise interactions in the Brazilian innovation system by focusing on the way the characteristics of the research infrastructure affect its propensity to interact with the industrial sector. The focus of this paper is set on institutions related to the Brazilian Ministry of Science, Technology and Innovation (MCTI) about which there are systematic available data. The data were collected from a survey carried out in nineteen institutions linked to the MCTI and the final sample is formed by 196 laboratories. The results show that 120 (or 61% of the sample) laboratories provided some kind of technological or scientific service and, among them, 82 (42%) laboratories provided services to firms. The most common services are "consulting and advising" (44 labs) and "testing and trials" (forty labs), as shown in graph 1.

- Logistic regressions have been used to identify, in a wide set of explanatory variables, the characteristics of the research infrastructure which increase its probability of supplying technological services to firms. The main findings of these regressions show that:
- the size of the laboratory (as measured by the number of affiliated researchers) and of the qualification of its research team positively and significantly affects its propensity to interact with the industrial sector;
- multidisciplinary laboratories tend to interact more with the industrial sector than laboratories focused on a single field of expertise; and
- there seems to be a tradeoff between scientific publications and market oriented research, since the number of papers published by the affiliated researchers is negatively correlated to the probability of supplying technological services to firms.

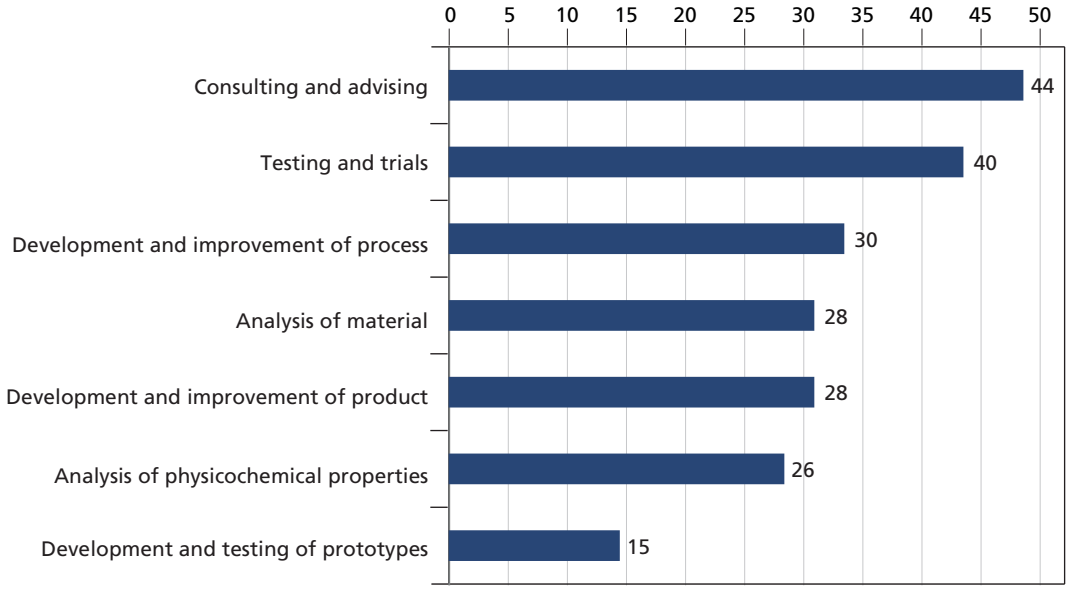
1. This paper summarizes the contents of the book of the project "Modeling complex systems for public policies".

Given the "idiosyncratic" nature of the laboratories included in the survey, these results cannot be extrapolated to the remaining of the research institutions in Brazil. However, they reinforce the perception that the interactions between research infrastructure and the industrial sector could also be explained by the organization and characterization of the research infrastructure.

The deepening of this research agenda requires additional information on the research institutions in the country as well as on their research infrastructure in order to analyze the factors that explain their interactions with the industrial sector. Besides, the identification of those bottlenecks is essential for the formulation of innovation policies able to leverage the production of technologies and the country's economic development in the long term.

GRAPH 1

Number of laboratories that provided scientific/technological services to firms according to the type of service provided (2011)



Elaborated by the authors.

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