

Introduction to special issue: Interactions between public research organisations and industry in Latin America: a study on channels and benefits from the perspective of firms and researchers

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This special issue discusses the relative effectiveness of different channels of interaction between public research organisations (PROs) and industry in driving specific types of benefits for researchers and firms in Latin American countries (Argentina, Brazil, Costa Rica and Mexico). The empirical evidence comes from original micro-data collected through similar questionnaires sent to the managers of firms and PRO researchers in each country. The richness of this special issue results from its origin: it emerges as a joint motivation to understand a key aspect of PRO–industry interactions through the relationship between channels and benefits.

THERE IS PLENTY OF EVIDENCE regarding the benefits that interactions between public research organisations (PROs), including universities and research centres, and industry generate for both actors. These interactions are seen as one of the key elements of a country's national system of innovation. Partly resulting from this, research on this issue has drawn the attention of many academics who have approached different aspects of the interactions, such as: drivers and motivations, barriers, channels and benefits. Authors usually focus either on PROs (institutions or researchers) or on industry (firms and occasionally on industrial researchers), and a few approach the topic from both perspectives. More attention has been paid to those channels of interaction that are related to research and development (R&D) activities, such as collaborative and contract R&D, than others, such as train-

ing, consulting or hiring graduates. Although there are reasons to believe that some channels may be more effective in driving specific types of benefits for each agent, and that this information would be useful for policy-makers seeking to design policy selectively, very little research has been done along this line. This special issue of *Science and Public Policy* is an attempt to fill the gap.

Since 2007 a set of researchers has been connected through the Global Network for Economics of Learning, Innovation and Competence Building Systems (Globelics) and has developed an international, comparative project titled 'Interactions between universities and firms: Searching for paths to support the changing role of universities in the South'. This project is sponsored by the Canadian International Development Research Centre, and compares the PRO–industry interactions of 12 countries from Latin America, Asia and Africa, based on surveys of firms and researchers in PROs. The questionnaires used in both surveys were elaborated as a result of several interactions between all the national teams. The questionnaire for the firms drew on the Carnegie Mellon (Cohen *et al.*, 2002) and Yale (Levin *et*

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al., 1983) surveys, while the questionnaire used for the PROs was an original design, but particular attention was paid in order to make them comparable in terms of channels and other topics.

This special issue is one of the results of this project. It aims to discuss the relative effectiveness of different channels of interaction between PROs and industry in driving specific types of benefits for researchers and firms in Latin American countries. In particular, it assesses the relative effectiveness of channels in triggering different benefits in four Latin American countries (Argentina, Brazil, Costa Rica and Mexico) from the perspective of both agents. The empirical evidence on which the analysis is based comes from original micro-data collected through similar questionnaires sent to the managers of firms and researchers in PROs in each country.

The approach followed in this special issue prioritises comparisons between countries in order to extract some features of the PRO–industry interactions; hence, all the papers share a conceptual framework regarding channels and benefits and a methodology to test these relationships, which is developed in Arza (pp 473–484). Based on the direction and type of knowledge, more than a dozen forms of interaction are grouped into four channels of interaction: traditional, bi-directional, services and commercial. Benefits for researchers are grouped into intellectual and economic, and benefits for firms into those related to short-term production activities and long-term innovation strategies. The four country papers discuss the specific evidence related to this framework (Arza and Vazquez (pp 499–511) for Argentina, Fernandes *et al.* (pp 485–498) for Brazil, Orozco and Ruiz (pp 527–540) for Costa Rica, and Dutrénit *et al.* (pp 513–526) for Mexico).

The final paper compares the results for the four countries, extracts a set of common features and explores policy implications (Dutrénit and Arza, pp 541–553). In this sense, this special issue is internally consistent.

Hence, the richness of this special issue results from its origin, it emerged as a joint attempt to understand a key aspect of PRO–industry interactions: the relationship between channels and benefits. The country papers empirically discuss the evidence, taking into account the specificities of their national systems of innovation.

Policy-makers are willing to foster successful PRO–industry collaboration. However, they have barely recognised that both agents respond to different incentives. In fact, researchers and firms collaborate from different motives and obtain different types of benefits. In this sense, differences between the perspectives on the impact of channels of interaction on benefits from collaboration, discussed in this special issue, are important in order to understand the evolution of PRO–industry interactions and to promote specific policies to strengthen such interactions.

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