

Internationalization of Public Research Organizations. Context, strategies and effects

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Context Over the last two decades the internationalization of research, development and innovation (RDI) has attracted increasing interest from industrialists, researchers and policy makers alike. The empirical literature has contributed a lot to our current understanding of the internationalization processes, the related motives (Ambos, 2005; Archibugi and Michie 1995, Cantwell and Piscitello, Edler et al., 2002; Florida, 2002; Gulbrandson and Godoe, 2008; 2005; Kuemmerle 2001, Le Bas and Sierra 2002, Thursby and Thursby, 2006), potential effects and dynamics (Cantwell / Iammarino 2001, Carlsson 2006, Criscuolo/ Narula 2007; Ito/ Wakasugi 2007, Edler 2008, Dachs et al. 2008). Yet, the empirical analysis has primarily focused on the internationalization of corporate RDI activities. In this paper, we focus on Non-University public research organisations (PRO).

Aim and contribution: This paper analyses (1) the context conditions of PRO and their roles in the (national) innovation systems, (2) the internationalisation strategies and (3) the effects of international activities on the performance and roles of PROs, whereby effects occur on the level of the organisations and on system's level. The paper thus contributes to the literature on the role of public research in the growing internationalisation of science and innovation. It also, more fundamentally, discusses the changes in the roles and functions of PROs more generally through internationalization.

Methods The analysis bases on a unique dataset of 188 publicly funded research organizations in Germany (Edler 2007). The sample comprises of 59% of the population of the non-University research institutes belonging to the four major research organizations. It is distributed across all scientific fields and covers well the whole spectrum from basic to applied research. The data was collected by means of self administered survey questionnaires which focused on the top management of the research institutes. The data set contains information on the extent and the mode of internationalization activities, the strategies, targets and motives and the assessed costs and benefits of internationalization. We use factor analysis to condense the information in the sample. We employ multivariate regression to investigate the effect of certain factors on the overall effect of internationalization. In addition to the quantitative analysis of the sample context interviews with 50 decision makers from industry, academia and policy were used to contextualize the findings.

Results We find distinct pattern of internationalization among institutes. These patterns as well as strategies are more driven by the focus of the research (basic vs. applied) than they are driven by differences in the organizations or the scientific fields. Concerning the motives we find that tapping into foreign scientific excellence, securing funding by the EU-commission, increasing the institutes own reputation rank among the first and motives for internationalization. We find that in contrast to the long run strategies the top short run

motives for internationalization are remarkably consistent across institutes, although we find differences in the underlying driving factors. In organizations involved in applied research internationalization is more driven by economic and external factors. In organizations pursuing basic research scientific attractiveness and quality are the main driving factors. Internationalization of research organizations also reveals rather consistent effects across the types of research, the scientific field and the particular research organizations. Better embedding in the research community, increasing research competencies and improved competitiveness of the research institutes are the main effects of internationalization. The analysis of the positive and negative effects of internationalization activities yields that applied research institutes share a more negative overall assessment of internationalization than institutes do which are pursuing basic research.

Discussion International activities of PRO have, by and large, strong positive effects on their performance. To understand and improve those effects, one has to differentiate. The paper finds that the different context conditions and roles of PRO (such as application orientation vs. basic research, level of institutional funding etc.) impinge upon the pattern, motives and effects of internationalization. Moreover, PRO enlarge their role by connecting local actors – especially SME – to global knowledge sources. These findings call for a differentiated strategy both by the management of the research organization and by the incentives set by policy measures. It has to be noted that certain hampering factors which shape the internationalization pattern are caused within the organizations and can be improved by individual management decisions based on a detailed assessment (which, however, itself is largely missing). Yet, other factors shaping the internationalization of public research organizations are determined through the national institutional setting and policy framework. This calls for more profound changes and adaptations in the system which will eventually not only lead to easier and more flexible internationalization within the research organizations but also to a spread of benefits more broadly in the innovation system. The paper concludes with a set of clear policy and management messages, linking the result to other (albeit limited) related work on internationalisation in public research.

Literature.

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