

# Universities in external knowledge networks: Particular roles for particular universities?

---

Keywords: higher education, research impact, university profiles, university-society engagement.

Taran Thune\*‡, Magnus Gulbrandsen\*, Paul Benneworth† & Julia Olmos Peñuela<sup>§</sup>

\* Center for Technology, Innovation & Culture, University of Oslo, Norway

† Center for Higher Education Policy Studies, University of Twente, the Netherlands.

<sup>§</sup> CSIC INGENIO-UPV, Valencia, Spain

‡ corresponding author [t.m.thune@tik.uio.no](mailto:t.m.thune@tik.uio.no)

## Abstract

The paper addresses the key issue within the special track “One size does not fit all”: are there distinct ways that different kinds of universities interact with their environments at local, regional and national levels? In this paper, we begin from the critique in the call for papers in this track of what is termed a simplistic model of the universities’ regional enhancement role. The session seeks to explore how universities (or different tertiary level/higher education institutions) relate with other organizations in their environment in particular ways, depending on the particularities of both the regions and the universities.

## Introduction

In this paper, we seek to contribute to these debates by posing the research question of whether there are distinct roles for different kinds of universities that can be observed in terms of how academic staff interacts with external organizations in their environments. In order to answer that question, our paper specifically asks three sequential operational questions:

- To what extent can different HEI profiles be distinguished in terms of with whom their academics participate in different kinds of external engagement activities?
- Do academics in HEIs with differing external interaction profiles kinds of interact with the same kinds of external organizations? and
- To what extent can these observed differences be accounted for in terms of these institutions’ subject field profiles?

In general, organizational factors – characteristics of higher education institutions – have been less explored when it comes to interaction between universities and external organizations (Perkmann et al. 2013), partly because individual level and scientific field level variables account for a substantial element of variance in external engagement. Several empirical studies have found that academics in different fields of science differ with respect to the level of external engagement and kinds of

external engagements (*inter alia* Schartinger et al 2002; Perkmann et al 2013, Ramos-Vielba & Fernandez-Esquinas 2012, Abreu & Grinevich 2013; Olmos Penuela *et al.*, 2013a; b).

However, organizational level factors, such as the profile of the higher education institution (applied/professionally oriented vs general academic institution, research university versus polytechnic/regional college and so on; cf. Bishop et al. 2011), location, age, quality of universities, and commercialization policy have also been found to influence academics external orientation in some studies (Audretsch & Lehmann 2005, Perkmann et al. 2013, Bishop et al. 2011, Wright et al. 2008, Abreu & Grinevich 2013). Some recent studies indicate that the effect of organizational level characteristics (such as the scientific quality of the institution) on academics external engagements differ systematically by fields of science (Perkmann et al. 2011, Bishop et al. 2011). As a consequence, it is critical to also account for the relative importance of organizational variables (size, location, kind of institutions, quality of institution, leadership, IPR policy, etc.) when controlling for differences between scientific fields and profile of academic staff.

A methodological problem is, however, that samples of higher education institutions in many countries most often are small and that one would need a range of variables to distinguish institutions at academic field and institutional level characteristics in the same analysis. . We develop a classification of universities' engagement with external partners based on two main variables, firstly the type of partner with which they engage (business/ government/ third sector/ other knowledge user), secondly, the formality of the transaction and degree of resource exchange involved in the engagement, and thirdly, the underlying purpose of the activity (teaching, research, outreach, consultancy, community service). To look at different institutional profiles, we create a relatively simple but meaningful classification of higher education institutions reflecting both institutional characteristics (type of higher education institution and location) and subject field profiles. Finally, we explore whether academics participate in external engagement activities in different ways, when controlling for the disciplinary affiliations of the academic staff.

We answer our three research questions by utilising data from a survey administered to 8500 tenured/permanently employed academic staff in all public higher education institutions in Norway (the survey received 4440 useable responses, giving a response rate of 52,5 percent). The survey included a range of questions about external engagement (frequency, kinds of external contacts/modes of interaction, kinds of external organizations that academics mainly interact with, academics' motivation for external engagement, drivers for external engagement and level of external funding of research activities among academic staff). The survey also includes data on academics' teaching and research activities, as well as information about the academics and their institutional and disciplinary affiliation, as well as a range of individual level characteristics.

Norway has for a long time had a two-pronged policy towards higher education institutions (i.e. not a "one size fits all" policy), with different roles for larger research universities and more regionally based colleges with e.g. a stronger emphasis on bachelor level teaching. Specialized scientific colleges have been seen to have particular roles for specific sectors (such as agriculture) or training programs (such as architecture). On the other hand, the number of universities has increased from four to eight in a decade, and mergers have created larger and more scientifically ambitious colleges. There are worries among policymakers and others that the sector as a whole is characterized by a convergence process where the higher education institutions become more similar to one another

also when it comes to their external engagement, contrary to the official policies. This will also be discussed in the paper.

The descriptive analysis shows relatively modest differences between different kinds of higher education institutions but much larger differences between academic subject fields with respect to modes of interaction and main collaborating partners of academic staff. A factor analysis of interaction modes identifies four main patterns in how academics interact with external organizations: community/communication based, education/competence oriented, research collaboration and commercialization. We find that besides community based interaction forms which is equally prevalent in all fields of science, the use of the three other modes varies significantly between fields of science. Education/competence based modes of interaction are particularly prevalent in health sciences/medicine and the social sciences; research collaboration is particularly common in technology/engineering and agriculture/veterinary sciences, and commercialization is (relatively speaking) most prevalent in the natural sciences. There are also significant differences between subject fields when it comes to the main collaborating partners (public sector, industry or third sector).

In the next step of the analysis we will use the results of the factor analysis in a regression analysis looking at differences in external interaction profile by institutional affiliation (type of higher education institution) controlling for disciplinary affiliation. We will explore different institutional-level variables and possibly also include overall characteristics of the regional dimension (large versus small city, for example). The results contribute to the ongoing discussion about the nature of university profiles for societal engagement – particularly at the regional scale – as well as contributing to a more nuanced understanding of the sources of heterogeneity in the role of higher education institutions in regional development.

## References

- Abreu, M. & Grinevich, V. (2013): The nature of academic entrepreneurship in the UK: Widening the focus on entrepreneurial activities. *Research Policy*, 42 (2013)
- Audretsch, D. & Lehmann, E. (2005): Do university policies make a difference? *Research policy*, 34 (2005)
- Bishop, K. , D'Este, P. & Neely, A. (2011): Gaining from interaction with universities: Multiple methods for nurturing absorptive capacity. *Research Policy*, 40 (2011)
- Olmos-Peñuela, Julia, Jordi Molas-Gallart, and Elena Castro-Martínez. (2013a): "Informal collaborations between social sciences and humanities researchers and non-academic partners." *Science and Public Policy* sct075.
- Olmos-Peñuela, J., Benneworth, P., & Castro-Martínez, E. (2013b). Are 'STEM from Mars and SSH from Venus'? Challenging disciplinary stereotypes of research's social value. *Science and Public Policy*, sct071.
- Perkmann, M. , King, Z. & Pavelin, S. (2011): Engaging excellence? Effects of faculty quality on university engagement with industry. *Research Policy*, 40 (2011)

Perkmann, M. et al (2013): Academic engagement and commercialization: A review of the literature on university-industry relations. *Research Policy*,

Ramos-Vielba, I. & Fernandez-Esquinas, M. (2012): Beneath the tip of the iceberg: exploring multiple forms of university-industry linkages. *Higher Education*, 64 (2012)

Wright, M. (2008): Mid-range universities' linkage with industry: Knowledge types and the role of intermediaries. *Research Policy*, 37(2008)