

---

**Research Paper No. 78**

**EXECUTIVE SUMMARY**

**September 2019**

*(full paper link: <http://enterpriseresearch.ac.uk/publications/erc-research-papers/>)*

# **University Engagement and Productivity in Innovative SMEs: An Empirical Assessment**

**Andrew Johnston**

International Business and Economics Research Group,  
Sheffield Business School, Sheffield Hallam University  
[a.johnston@shu.ac.uk](mailto:a.johnston@shu.ac.uk)

**Daniel Prokop**

School of Geography and Planning, Cardiff University  
[prokopd@cardiff.ac.uk](mailto:prokopd@cardiff.ac.uk)

---

## EXECUTIVE SUMMARY

Current debates around the nature of the innovation process increasingly stress its open character, whereby firms utilise knowledge and expertise from outside organisations. From the perspective of Small and Medium Enterprises (SMEs), open innovation allows the leveraging of additional resources which they would not necessarily be able to develop alone. In the context of open innovation, universities are often cited as important sources of external knowledge and key nodes within innovation systems due to their ability to generate and transfer new, cutting edge, knowledge.

The close relationship between firms' innovation and productivity is often cited as evidence that performance and innovativeness are interdependent. Thus, more innovative firms are those that are more productive and vice versa. However, less is known about how productivity levels may determine firm strategy, particularly with regards to the open innovation activities of SMEs. This poses the question, does the productivity of SMEs influence the likelihood that they will collaborate with a university?

This paper, therefore, examines the effect of SME productivity on their propensity to collaborate with universities and their subsequent productivity levels in the period following the collaboration. Using data from the Longitudinal Small Business Survey on 4289 innovative SMEs in the UK, the paper not only tests for the existence of a relationship but also whether they may be linear or non-linear.

The paper presents several important results. Firstly, the productivity of innovative SMEs does not influence their propensity to collaborate with universities. Therefore, collaborating with a university is not driven by the firms' performance but can instead be understood as a process that embraces all innovative SMEs. Secondly, the results suggest that the propensity for SMEs to collaborate with a university is positively influenced by the size of the firms' workforce, exporting, engagement in social networks, and openness. Conversely, family firms and those located in regions with higher levels of R&D expenditure were less likely to collaborate with a university. Furthermore, the propensity to collaborate with universities varies according to the SMEs' sector with SMEs in the transport, retail, and food sector less likely to collaborate with universities than those in the business services and construction and production sectors.

---

Finally, the analysis suggests that the relationship between initial productivity and the subsequent productivity of innovative SMEs in the years after engaging with a university is curvilinear, or U-shaped. Therefore, we observe higher levels of subsequent productivity for those SMEs whose starting productivity was either high or low. Thus, we conclude that while collaboration with universities has a positive effect on the subsequent productivity of the firms involved, it has the greatest impact on productivity is observed for those firms with either very high or very low starting productivity.

There are several implications of these findings. Firstly, we note that all innovative SMEs can be regarded as potential collaborators regardless of their productivity levels. Therefore, policymakers, academics, businesses, and technology transfer personnel should take a broad approach to the facilitation of these links. Secondly, it may also be appropriate for policymakers to focus their efforts on those innovative SMEs that are less likely to collaborate with universities such as family firms, those with fewer employees, and those that are less open. Thirdly, policymakers in regions with higher levels of expenditure on R&D may need to further encourage SMEs to collaborate with universities as a complementary activity to other linkages they may have. Fourthly, it may be pertinent for universities to work more closely with export promotion personnel in order to seek potential partners as it is these firms that are more likely to engage in university collaboration. Finally, the results suggest that university collaboration can provide a significant boost to SMEs with relatively lower levels of productivity, providing a clear message as to the potential transformational nature of this type of engagement.