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Policy Brief

Financial resources for research and innovation in small and larger firms: Is it a case of the more you have, the more you do?

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Summary

Firms' levels of internal financial resources are considered, by academics and policymakers alike, to play a vital role with respect to their engagement in research and innovation (R&I) activities. However, the empirical evidence supporting the importance of such resources for firm-level R&I remains highly inconclusive. Generating a more comprehensive understanding of this topic is paramount for enhancing our knowledge about the drivers and barriers of firm-level R&I. This is also critical for informing the design of more targeted innovation policy interventions.

Using panel data on firms in Ireland, our study examines how the levels of internal financial resources of firms of different sizes impact their engagement in a comprehensive set of R&I activities. Firms' levels of internal financial resources are measured as the ratio of Net Operating Surplus to turnover. We find that larger-sized (i.e. 50+ employees) firms' levels of internal financial resources positively impact their engagement in explorative research (defined here as research activities that generate new knowledge), process innovation, and product innovation. However, small-sized (i.e. 10 to 49 employees) firms' levels of internal financial resources may have a negative impact on their engagement in service innovation, and organisational innovation.

From a policy perspective, our findings indicate that supporting R&I in small-sized firms may require policy interventions that extend beyond financial instruments that increase liquidity in firms. More specifically, our findings suggest that policy interventions that enable firms to build innovative human capital (e.g. more qualified and motivated employees) and collaborative networks for R&I, may be required.

Focus of the study

Our study provides an in-depth understanding of the relationship between firms' levels of internal financial resources and their engagement in research and innovation (R&I) activities. This is achieved by considering a comprehensive set of R&I activities in the context of firms of different sizes, as follows:

- Firstly, we analyse whether firms' levels of internal financial resources drive their engagement in: (a) explorative research activities that generate new knowledge; and (b) research activities that exploit existing knowledge (i.e. exploitative research), separately.
- Secondly, we examine how firms' levels of internal financial resources impact their engagement in: (i) process innovation; (ii) product innovation; (iii) service innovation; (iv) radical product and service innovation (defined here as the introduction of products and services that are new to the market); and (v) organisational innovation.
- Thirdly, we compare whether the relationships between levels of internal financial resources and the above R&I activities are similar across small and larger-sized firms.

Key Findings

The study uses a novel unbalanced panel dataset with 2,531 observations from 1,446 firms in Ireland, covering the period from 2008 to 2016. The dataset comprises detailed information on firms' internal financial resources and their research and innovation (R&I) activities. Our analysis focuses on understanding causal relationships, by using robust econometric techniques, including instrumental variables (IV), panel data models, and multivariate models. These models enable us to address potential unobserved effects, such as firms' innovation orientation, which could affect our results.

Our key findings can be summarised as follows:

- A 10% increase in larger-sized firms' levels of internal financial resources increases their probability of engaging in explorative research activities by around 2%.
- A 10% increase in larger-sized firms' levels of internal financial resources increases their probability of engaging in process innovation and product innovation by around 1%.
- Larger-sized firms' levels of internal financial resources are not found to drive their engagement in: (a) exploitative research activities; (b) service innovation; (c) more radical forms of service and product innovation; and (d) organisational innovation.
- Small-sized firms' levels of internal financial resources are not found to result in more R&I in this cohort of firms.
- A 10% increase in small-sized firms' levels of internal financial resources reduces their probability of engaging in service innovation, and organisational innovation by around 1%.
- R&I in small-sized firms is predominantly driven by non-financial resources, such as the size of their R&D human capital base, and the number of collaborators (e.g. clients, suppliers, other firms, and universities and research centres) they engage with.

Implications for policy

From a policy perspective, our findings suggest two potential implications. The first implication is that increasing liquidity in firms by means of financial policy instruments for research and innovation (R&I), may further stimulate larger-firms' engagement in explorative research activities, process innovation, and product innovation. The support, however, should target R&I projects with high social rates of returns, so as to avoid substituting private investment, and minimise deadweight spending effects.

The second implication is that financial support instruments may not be sufficient for encouraging more R&I in small-sized firms. Achieving this goal may also require complementary types of government policy interventions (i.e. beyond financial policy instruments). Such interventions might usefully target, for example, the development of innovative human capital, and other means to inspire and enable small-sized firms to further engage in R&I activities. Policies to accelerate new models of collaboration amongst small-sized firms, and with public knowledge providers, may also support these firms to innovate.

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