

Pathways to efficiency, pathways to growth: Evidence from the UK Innovation Survey

Research Paper 83

March 2020

Previous studies have suggested there is little correlation between efficiency and growth at firm level. Here, using data from successive waves of the UK innovation Survey we consider two questions. First, do different types of innovation have different effects on efficiency and growth? Secondly, does the source of firms' R&D finance matter?. Is there a difference between the innovation effects of publicly-supported and wholly-privately-funded R&D?

Key findings

Using data from consecutive observations on the same firms in the UK Innovation Survey we examine the links between publicly-supported and wholly-privately-funded R&D and innovation and its subsequent links to growth and efficiency (sales per employee). Two groups of results emerge. The key linkages are:

- Product or service innovation has a positive relationship to employment growth but a negative effect on sales growth and efficiency growth after two years. These effects are short-term, becoming weakly positive four years beyond the date at which innovation is measured.
- Organisational innovation has a positive sales-growth effect, a negative employment-growth effect and a positive efficiency-growth effect.
- Process innovation has a positive effect on both efficiency growth and turnover growth in the short term.
- Firms receiving public R&D support are no more likely to undertake process and organisational innovation than those paying for all of their own R&D costs. Additionality is greater in terms of product or service innovation.

In strategic terms our results suggest the importance for firms of having a clear view of what they are trying to achieve through their innovation investments: in the short term, firms prioritising jobs growth should focus on product innovation; those seeking efficiency improvement should focus on organisational or process change.

Authors



Joanne Turner

Enterprise Research Centre
and Warwick Business School
Joanne.E.Turner@wbs.ac.uk



Stephen Roper

Enterprise Research Centre
and Warwick Business School
Stephen.ropor@wbs.ac.uk



Nola Hewitt-Dundas

Enterprise Research
Centre and Queen's
University Management
School, Belfast
Nm.hewitt@qub.ac.uk

Pathways to efficiency, pathways to growth

Differential impacts of R&D and innovation on growth and efficiency are perhaps unsurprising. Previous studies have suggested the weak correlations between different performance metrics such as sales and employment growth and sales and productivity growth. Previous studies have also suggested that innovation may either have positive or negative growth/productivity effects.

Figure 1 below illustrates the effects of organisational, process and product innovation on different growth metrics two and four years after innovation is measured. Process and organisational innovation have positive and significant effects on both sales and efficiency growth in the short term. The effects of process and organisational innovation become negative, although insignificant, on efficiency growth and turnover growth, respectively, after four years. Product or service innovation has negative short-term efficiency and turnover-growth effects which become positive, although insignificant, after four years.

Figure 1: Innovation effects on productivity and growth

	Innovation type	Efficiency growth	Turnover growth	Employment growth
Two year lag				
	Product	- ***	- ***	+ **
	Process	+ ***	+ ***	+
	Organisational	+ ***	+ **	- ***
Four year lag				
	Product	+	+	+ *
	Process	-	+	+***
	Organisational	+	-	-***

Notes: * denotes significance at the 10 per cent level, ** denotes significance at the 5 per cent level and *** denotes significance at the 1 per cent level.

Implications for policy and practice

Firms also need to be aware that before generating longer term performance benefits, innovation can cause short-term disruption effects leading to a fall in both growth and efficiency. This type of short-term disruption effect has been noted elsewhere in the adoption of quality improvement mechanisms and aspects of process innovation.

Our results suggest the strongly dynamic nature of the relationship between innovation and aspects of business performance. Short-term disruption effects are significant with the potential for longer-term gains in terms of growth and productivity, four or more years after innovation is measured. This suggests the necessity of a medium to long-term perspective in any evaluation of innovation policy as measuring effects after two years would provide a misleading picture of potential longer-term gains.