

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

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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 not short-term but persist at least 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.

- 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: firms prioritising jobs growth should focus on product innovation; those seeking efficiency improvement should focus on organisational or process change.

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## Pathways to productivity, pathways to growth

Differential impacts of R&D and innovation on growth and productivity 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 innovation is the only type of innovation which has unambiguously positive and significant effects on both sales and efficiency growth). These effects are robust over both 2 and 4 year lags.

**Figure 1: Innovation effects on productivity and growth**

|                      | <b>Innovation type</b> | <b>Efficiency growth</b> | <b>Turnover growth</b> | <b>Employment growth</b> |
|----------------------|------------------------|--------------------------|------------------------|--------------------------|
| <b>Two year lag</b>  |                        |                          |                        |                          |
|                      | <b>Product</b>         | - ***                    | - ***                  | + **                     |
|                      | <b>Process</b>         | + ***                    | + ***                  | +                        |
|                      | <b>Organisational</b>  | + ***                    | + **                   | - ***                    |
|                      |                        |                          |                        |                          |
| <b>Four year lag</b> |                        |                          |                        |                          |
|                      | <b>Product</b>         | - ***                    | - ***                  | + ***                    |
|                      | <b>Process</b>         | + ***                    | + ***                  | - ***                    |
|                      | <b>Organisational</b>  | +                        | + **                   | +                        |

**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

In policy terms our results emphasise the value of matching innovation policy priorities and support to broader policy objectives. Currently, UK policy using innovation grants or loans, focuses on 'supporting excellence' with a concentration on novel product or service development. Our analysis suggests that this focus on product or service innovation is consistent with an emphasis on firm growth or scaling while, at the same time, risking negative efficiency effects. Harnessing innovation to more directly address the UK's productivity challenges would require a focus instead on supporting process and/or organisational change. Process innovation in particular, which is largely ignored in current policy frameworks, has strong and unambiguous growth and scaling benefits.

Full paper link: <https://www.enterpriseresearch.ac.uk/our-work/publications/>