

# Understanding the role of IP protection in UK firms' growth, productivity and innovation 1998-2016: Patents, trade marks and registered designs reconsidered

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Based on new intellectual property (IP) protection histories for around 110,000 UK firms from 1995-2018, we examine the contribution of UK registered patents, trade marks and registered designs to growth, productivity and innovation outcomes. Our analysis emphasises the strong sectoral differences in the use of IP protection mechanisms, and for the most IP-intensive sectors, suggests a positive association between IP protection use and growth and productivity. We find strong causal registered design-to-innovation relationships but weaker patent-to-innovation and trade mark-to-innovation relationships.

### Key findings

We develop two new matched databases linking the Business Structure Database (1998-2018) and firms' IP protection histories, and the UK Innovation Survey (2002-2016) and firms' IP protection histories. For the first time, we are able to include registered designs in these datasets. We find:

- Non-parametric tests suggest a strong positive association between the use of IP protection and firm performance. Use of IP protection is more consistently linked to productivity (turnover per employee) than to either turnover or employment growth.
- We find no significant relationship between firms' patent holdings and either the propensity to innovate or the returns to innovation.
- Trade marks have a significant and positive effect on the probability that manufacturing firms introduce new product/service innovations. Effects in other sectors are weaker.
- We find strong design effects. Firms holding registered designs are more likely to undertake new-to-the-market innovation and to have higher innovative sales than firms which do not have registered designs.

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## IP protection effects on innovation

We consider how firms' use of IP protection influences both the probability of innovating and the returns to innovation (innovative sales). We allow for a wide range of other influences on firms' innovation activity using variables derived from the UK Innovation Survey.

Figure 1 below provides a summary of the key results. UK registered patents have generally insignificant effects for all groups of firms in our analysis. Trade marks have positive effects on innovation but have a negative relationship with innovative sales. This is a portfolio effect related to the differential impact of trade marks on sales of new and more established products. UK registered designs have a strong and positive effect both on the probability of innovating and innovative sales. Effects are largely consistent across groups of firms.

**Figure 1: IP protection effects on innovation**

	Patents	Trade Marks	Registered Designs
<b>Product/service innovation (% firms)</b>			
All firms	(-)	(+)	+
Manufacturing	(-)	+	+
Services	(-)	(+)	(+)
High-tech/Knowledge intensive	(-)	(+)	(+)
Low-tech/Less knowledge intensive	(+)	(+)	+
<b>Innovation sales (% sales)</b>			
All firms	(-)	-	+
Manufacturing	(-)	-	+
Services	(-)	(-)	+
High-tech/Knowledge intensive	(+)	-	+
Low-tech/Less knowledge intensive	(-)	(-)	+
(+) denotes a positive but insignificant relationship; (-) negative and insignificant; '+' positive and significant; '-' negative and significant.			

## Implications for policy

Policy attention has often focussed predominantly on patenting as a driver of innovation, paying significantly less – if any – attention to the role of registered designs. This perspective seems mistaken, particularly where interest focuses on supporting innovation across the whole (service dominated) economy. For example, investments in technological development and patenting are currently prioritised in measures such as the UK R&D tax credits while other investments in intangibles are excluded. This means that in one recent study, while more than half of firms in the creative industries report conducting R&D, only 1:4 of these firms are eligible for tax credits under the current HMRC regulations. Our results suggest the potential role of extending this support to firms' investments in developing registered designs which would have significant and positive innovation benefits.

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