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Estimating policy mix effects: Grants and tax credit complementarities for R&D and innovation outcomes

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ABSTRACT

This study provides empirical evidence on the input and output additionality achieved by UK firms receiving R&D tax incentives only, R&D and innovation grants only, and a combination of both incentives. Four key findings emerge. First, we find strong evidence of input additionality from each type of public support but also some attenuation or substitution effects between the input additionality of grants and tax-incentives. Second, innovation output additionality is consistently positive from tax-incentive-only, and the related policy-mix. However, grant-only output additionality effects are notably smaller in scale and statistically much weaker. Here, we also observe complementarity between tax and grant measures leading to stronger policy-mix output additionality. Third, we find a, perhaps surprising, difference in the scale of input and output additionality effects for tax incentives-only and the related policy mix: input additionality effects are consistently larger – 2-3 times – the scale of output additionality effects. Fourth, the relationship between input and output additionality varies between groups of firms. In terms of productivity, input (output) additionality is stronger (weaker) among low productivity firms, while input (output) additionality is weaker (stronger) in high productivity enterprises. Our results suggest that: (a) policy evaluation or targeting based on input additionality alone may significantly over-estimate or mis-represent long-term policy benefits; and (b) that 'average' estimates for additionality effects may provide a misleading indication of additionality profiles for different types of firms.