

## The effect of R&D subsidies and tax incentives on employment: an evaluation for small firms in France\*

Vincent Dortet-Bernadet and Michaël Sicsic

### Key question

Between 2003 and 2010, the amount of aid granted by French public authorities to support small firms' R&D activities fourfold. This very sharp increase is linked to reforms of the research tax credit (RTC), particularly in 2008, the creation in 2004 of a "young innovative business" status and an increase in subsidies over the period. This paper sets out an evaluation of the effect of increases in several R&D support schemes on highly qualified employment (managers, higher intellectual professions and CEOs) in small firms.

### Methodology

The methodology combines a labour demand equation (in which R&D support corresponds to a reduction in the labour cost) and a matching method based on a propensity score (firms receiving aid are compared with those which have 'similar' characteristics but not receiving aid). The evaluation is based on a panel of 'small firms' (i.e. they employed, during at least one year between 2000 and 2010, fewer than 10 workers) from R&D-intensive sectors.

### Main results

We show, particularly for the period 2008-2010, that:

- Compared to 2007, the supplementary R&D support received by small firms appears to have had a positive effect on highly qualified employment in small firms: from + 210 full-time equivalent (FTE) jobs in 2008 to + 830 FTE jobs in 2010 (column 1).
- However, each year, this increase was well below the increase in the number of highly qualified jobs financed by the supplementary aid (column 2): from + 1,920 FTE jobs in 2008 to + 2,140 FTE jobs in 2010; highly qualified employment financed by the firms themselves (column 3) is thus estimated to have fallen significantly.

Estimated effect (in terms of FTE jobs) of the supplementary R&D aid to small firms (compared to 2007)  
on highly qualified employment

	Effect on highly qualified employment (1)	Highly qualified employment financed by the supplementary R&D support (2)	Effect on highly qualified employment financed by firms themselves (3)
2008	210 ***	1,920	- 1,710 ***
2009	440 ***	2,100	- 1,660 ***
2010	830 ***	2,140	- 1,310 ***

Note: The results differ significantly from zero for level tests at 1% (\*\*\*). Column (3) = column (1) - column (2). Coverage: small firms that had highly qualified staff in 2007 and which received aid at least once over the period 2007-2010 (4,117 firms, unbalanced panel). Source: Gecir, *R&D Survey* (MENESR), JEI database (Acos), Ficus/Fare, Lifi and *DADS* (Insee), authors' calculations.

### Main messages

Our estimations suggest that the effect of public support to R&D on highly qualified employment in small firms is positive and led to growth in such employment between 2004 and 2010. However, the increase in R&D public funding, especially as of the RTC reform of 2008, was accompanied by a crowding-out effect: only between 18 and 34% of the supplementary R&D aid received by small firms between 2008 and 2010 compared to 2007 served to finance new highly qualified jobs. This result differs from those obtained in other studies on French data, where small firms, poorly covered in R&D surveys, are neglected. However, our results must be interpreted essentially in a short term perspective and not as an indication of long-term effects of R&D support. Note also that changes in the rules used to calculate the RTC since 2011 are not taken into account.