More researchers doing less research ? The mysterious drift of French corporate R&D

François Métivier

October 2, 2017

The Frascati manual provides the consensus about the definition of a researcher's job. This definition is at the base of all surveys and comparative studies of the corporate R&D performed throughout OECD countries. "Researchers are professionals engaged in the conception or creation of new knowledge. They conduct research and improve or develop concepts, theories, models, techniques instrumentation, software or operational methods."[1]

Any business can only claim it does research if it employs researchers. However, as acknowledged by the Frascati manual, researchers need not be engaged full-time on R&D activities. Management, fund raising or reporting are all common tasks a researcher has to deal with. This dual activity raises questions: what proportion of their time do researchers devote to active research ? Is such a proportion specific to each country or does it supercedes cultural, political and economical differences ?

OECD Main Science and Technology Indicators (MSTI,[2]) provide a means to assess such questions. For each country the MSTI database records the researchers employed in business R&D in two ways: physical persons or headcounts (HC), and full time equivalent (FTE). If one researcher (HC) devotes 75% of his working time to do research he of she will account to 0.75 FTE. Furthermore, although they are not always complete, the MSTI database extends back in time to the early nineties. It is then possible to compare both statistics for all OECD coutries and all years available. Figure 1 compares the headcount to the full time equivalent of researchers in OECD countries for all years available. As can be seen the data gather around or a little below the one-to-one line of perfect concordance. Hence, at first order, researchers do research ! Well, most of their time and almost everywhere. If we look at Germany for example we can see that the coevolution through time of researchers and FTE's remains parallel to the general trend and close to the 1-1 line. Hence researchers spend most of their time doing research and have kept doing so continuously

If we now look at France the picture is different. During the 1990s France follows an evolution similar to Germany: the number of research FTE's grows almost in proportion to the number of researchers employed. Yet from the beginning of the 21st century onwards the country progressively drifts away from this correlation. More and More researchers are employed but the growth of FTEs does not follow. Hence French companies hire more researchers that do less research ! This trend being very continuous, and uncorrelated to known changes in the survey procedure, it is hard to imagine that it is related to statistical inconsitencies[1]. And it is significant: in 2013 the number of researchers employed in French companies equaled the number of researchers employed in German companies. But the comparison between headcounts and full time equivalent reveals that German researchers devoted $\sim 89\%$ of their time to research tasks whereas their French counterpart devoted $\sim 73\%$ of their time. By comparison in the early nineties these ratios where almost the same ($\sim 90\%$). Whatever the reasons behind this mysterious evolution it should better be explored. Although French corporate researchers are undoubtedly smart, firms most probably can't expect them do less research then their foreign competitors and have the same efficiency. And most of all, they probably can't afford it.

[1] In the case of Russia for example the ratio of FTE/HC is slightly above 1 which is impossible. Yet the researchers headcount is known to be approximative and therefore probably explains this inconsitency. As another example The headcount of UK researchers before 2010 is also approximative and therefore explains an observed abrupt change in the ratio FTE/HC after and before 2010.

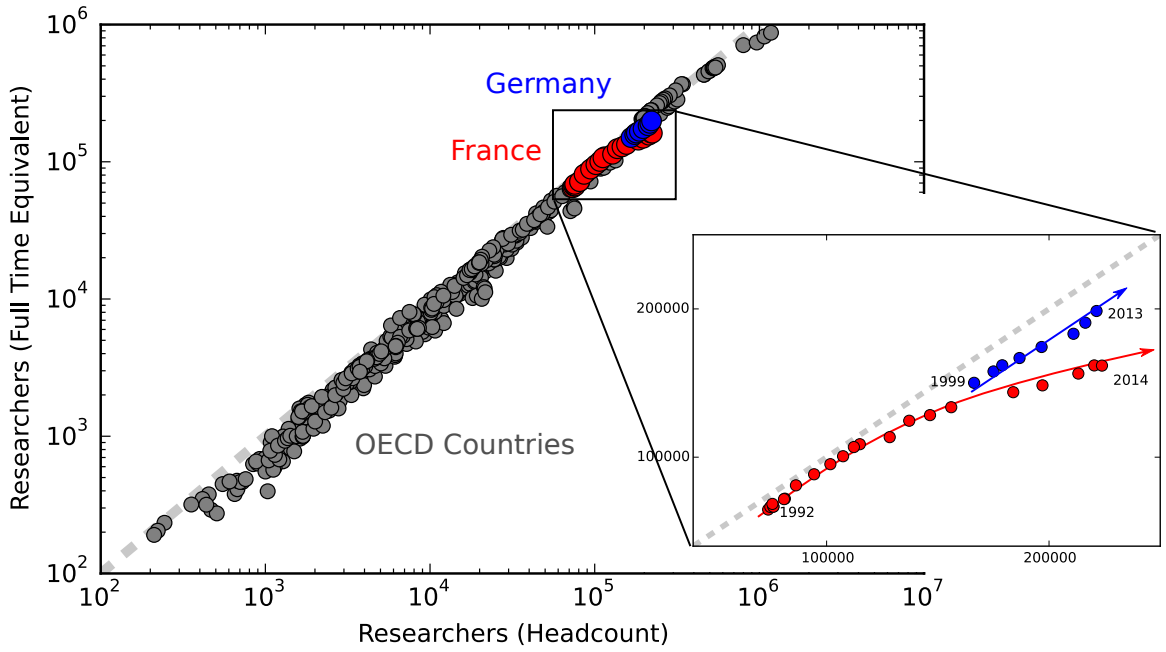

Figure 1: Researchers in the corporate R&D of OECD countries: comparison between headcount and full time equivalent. Blue: Germany; red: France; gray: other OECD countries plus Argentina, China, Romania, Russia, Singapore, South Africa, and Taiwan. In close-up view: trajectory of both France and Germany.

References

[1] OECD. Frascati manual 2015.

[2] Organisation for Economic Cooperation and Development. Main science and technology indicators. `http://stats.oecd.org/Index.aspx?DataSetCode=MSTI\_PUB`.