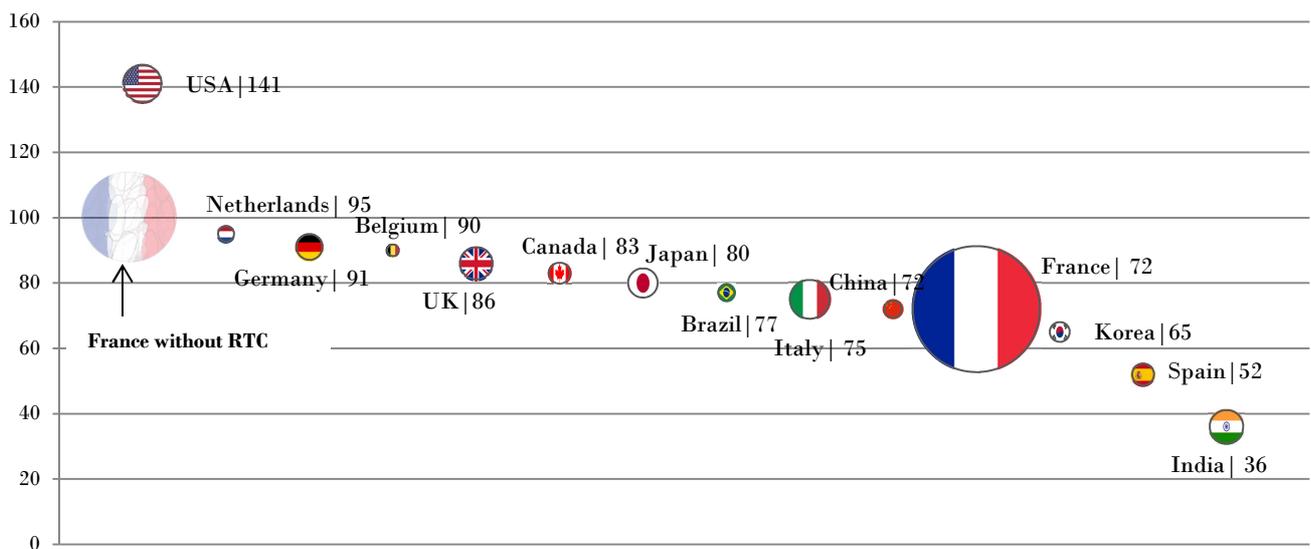


When research tax credit generates competitiveness and attractiveness

Ongoing French policy to support R&D in companies is starting to pay off. An international comparison shows that despite changes driven or endured by key research countries, France sustains a strong competitive advantage. As illustrated by our study, this makes the country more attractive. Research-innovation-development ecosystems in France are pursuing their transformation.

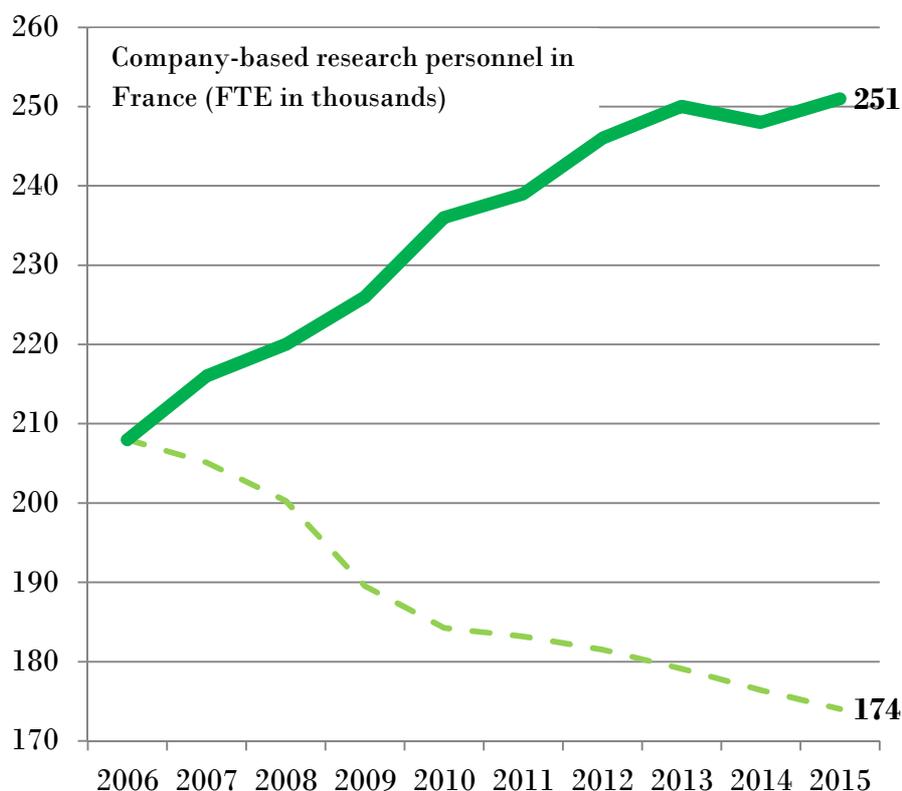
Graph 1 – In 2017, strong competitiveness and growing appeal



Key: The size of each flag is proportional to R&D staff in the panel companies. The position on the y-axis shows the cost of researchers in the form of an index: the 100 mark is the cost of a French researcher with no tax credit or subsidies.

This year, over 60% of research staff in member companies of the ANRT 2018 panel are located in France (cf. size of French flag). This proportion has been growing for the last three years (from 48% in 2016 to 62% this year). The companies on our panel, which come from varied and highly competitive sectors, prefer to carry out their R&D in France. At the same time, they continue to build up a “research presence” for adaptation or inspiration purposes in places where their turnover is growing. In Europe, investing in France is still advantageous, given the high level of accumulated skills in scientific and technical frontier research. Research tax credit is one of the main nudges to constitute an attractive, value-generating ecosystem.

Graph 2 – Research tax credit favours the shift in our ecosystems towards an economy of knowledge (1)



If industrial companies had carried on hiring R&D staff at 2006 levels¹, research personnel in France would total 174,032 instead of the 251,444 observed in 2015.

Sources: “L’état de l’emploi scientifique en France”, MESRI-SIES, October 2018; “Marché du travail - Séries longues – 2015”, Insee Résultats, March 2016. Adaptation and presentation ANRT, October 2018.

In retrospect, the acceleration of research tax credit in 2007-2008 could not have come at a better time. RTC fostered the shift of firms in France towards an economy of knowledge. Companies in the industrial manufacturing sector have significantly intensified their R&D efforts, progressively taking on bigger research teams. According to the results of our counterfactual analysis (cf. **graph 2**), companies are convinced that this investment in knowledge is worthwhile: they have progressively boosted their growth potential by as much as 77,000 additional researchers and scientists in 2015. The positive research tax credit signal has been received loud and clear by companies that have chosen France as their R&D hub.

Research tax credit favours the shift in our ecosystems towards an economy of knowledge (2): R&D teams feature more PhD holders

Thanks to RTC, research and development teams are differentiating and specializing more. We note the presence on the panel of nearly three times more PhD holders than in French companies as a whole.

The latest official surveys² show that an average 12% of R&D personnel working in firms in France have a doctorate. According to our figures, the main beneficiaries of RTC on the ANRT Panel³ feature 33% PhD holders in their R&D teams.

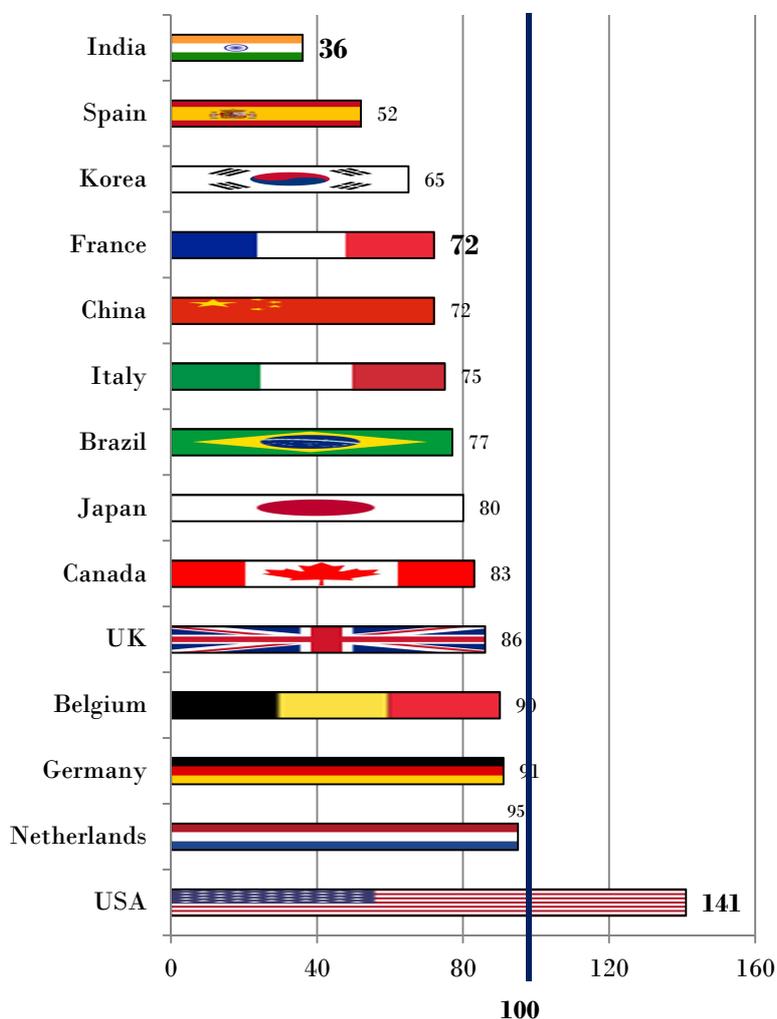
¹ With a constant proportion of R&D staff compared to industrial manufacturing employment throughout the period.

² Cf. MESRI – SIES, Note flash No. 16 - October 2017.

³ They represent around 23,000 researchers in France.

Graph 3 – Researcher rates 2018

Average researcher cost after incentives (2018)



| 100 = Cost in France with no RTC or subsidies |

With a researcher cost of 72, the French hub ranks extremely well compared to Asian countries.

Spain remains near the top thanks to its strong and contrasted regional positions: astute fiscal engineering and public-private partnerships in selected domains, like environmental processes, are an attempt to put Spanish centres on the world map. Yet the hoped-for massive comeback is proving slow to take hold, beset by risks and unpredictability.

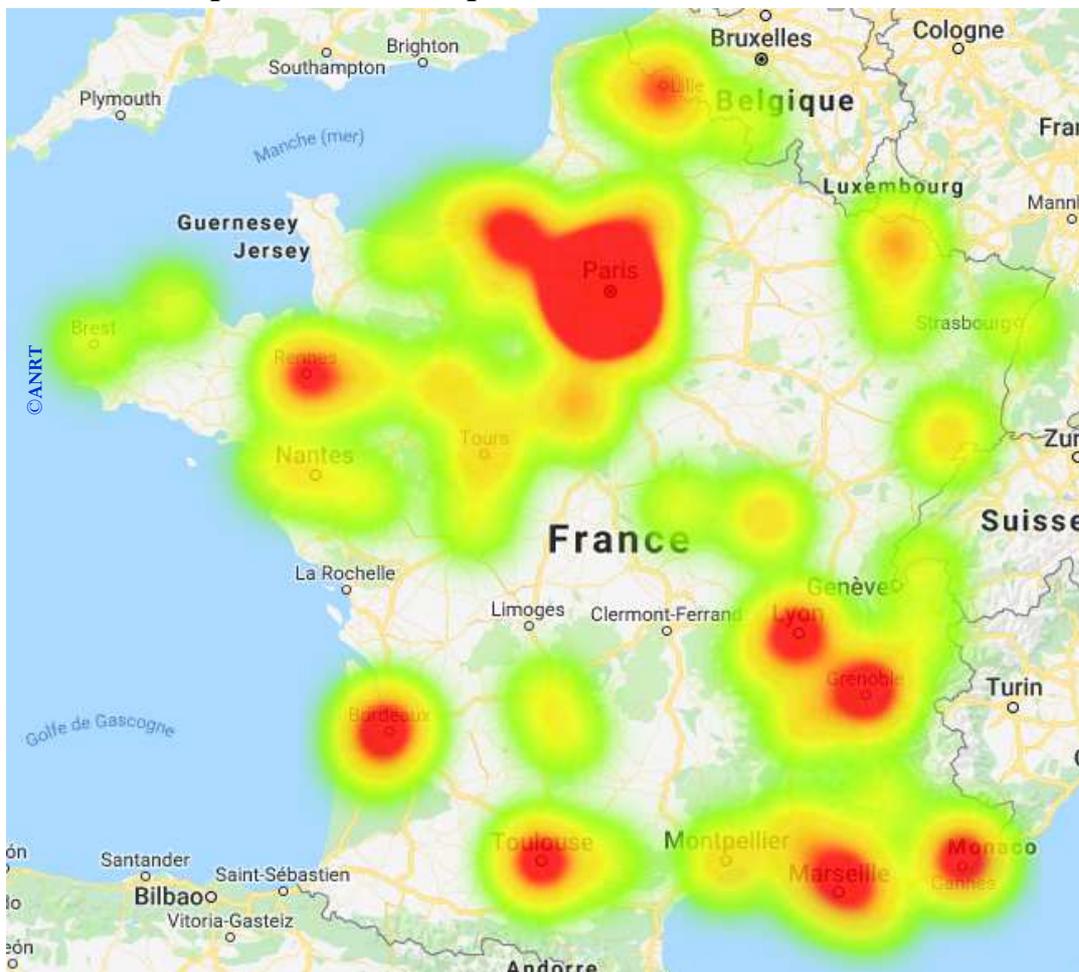
The rate for the United States remains at a stable high level (141). The combination of aggressive tax policies and increasingly scarce researchers in sectors subject to shortfalls marks the start of an uncertain period.

Attractiveness: “caution fragile”

The attractiveness of a country is a fragile affair. When asked, major research employers on the ANRT panel suggest that differences in researcher costs have a significant impact. We observe a relative rising trend in the proportion of staff numbers in France. Maintaining effective R&D in specialized technical areas requires recurrent, high-level demand for R&D. Within groups, research teams located in France, which are often interconnected, actually compete internally with other teams located elsewhere. The cost of researchers is a crucial factor for central decision-makers deciding whether to keep a research activity in a given geographic area (i.e. Europe, Asia, North America, South America).

Graph 4 – Research in operation: the impact of research tax credit in France

With 136 sites carrying out R&D, the 13 companies on the ANRT Panel leave their mark on the French map.



In 2017, 44% of researchers on the ANRT Panel were located in the Paris region on 38 R&D sites.

Depending on the density of their presence, these 136 sites have a more intense (red) or less intense (green) impact on research and innovation ecosystems

A more detailed, comprehensive measure of the socioeconomic impact of R&D centres would, in addition to staff costs, include R&D outsourcing, non-R&D outsourcing, and CAPEX R&D. As an example, if the collective impact of panel companies corresponded to a generalization of Arcelor-Mittal’s impact in 2017, it would amount to nearly 1.7 billion euro injected into French local ecosystems. Especially given that investment into equipment for R&D remains a determining factor in ensuring a company’s long-term presence.

Thirteen international groups, members of ANRT (National Association for Research and Technology) that carry out part of their research in France, this year accepted once again to calculate and communicate to ANRT the comparative cost price of their researchers (including direct aid and tax credit) in the countries where they invest in research.

These groups invest over 14 billion euros in research in the world; this year more than 67,000 researchers were included in this comparison, with a wide variety of areas of application.

They have R&D teams in over 30 countries and yet on average over half of their employees are based in France! And the reason is not just habit or patriotism. The simple explanation comes down to one word: competitiveness (cost and non-cost).



Reliable, comprehensive barometer

International groups have every reason to view France as a favourable host country for their research investments. The quality of research and the proximity of large markets, along with favourable researcher prices and research costs for domestic propositions of comparable quality, carry the decision in favour of one or other of the research sites and in particular the company's development.

Researchers

This study only concerns company researchers. These are employees whose task is research & development and who have contributed to at least one research project during the considered period.

Methodological approach with an emphasis on domestic consistency

Taking as a reference the average price of a researcher in France before any subsidy and research tax credit (base 100), ANRT aggregated the compatible data specific to each group to produce the researcher rate by country.

For a given country, the average cost of a researcher is only included if two conditions are fulfilled:

- The ANRT panel has at least two averages of charge-inclusive costs from two different companies
- The research centres considered employ more than 20 people

The different accounting entries were pooled in order to standardize the information, while considering differences between the groups' accounting systems. The information is thus homogeneous at group level, making international gaps highly representative.

Virtuous tax measures

An adequate tax incentive policy involves creating conditions in a country whereby the public resources mobilized produce the desired effect, no more and no less. In the absence of sound information from the field, the legislator cannot know the impact of policies in place elsewhere in the world and attempts to strike the right balance. Studies carried out on research tax credit, in particular by the OECD, quantify theoretical impacts at a macro-economic level. Despite their intrinsic qualities, these studies do not have the capacity to describe the actual cumulated effect on company accounts of all public policies, direct aid and tax incentives.

Accounting is the only real barometer of major companies, taking all advantages and charges into account. Multinational groups' accounting and tax systems are obliged to be robust and consistent; financial control and business intelligence can be used to extrapolate decision-making data. Information is therefore highly sensitive: it reflects the strategy of both companies and governments through subsidy regimes specific to sectors, locations, or intellectual property registration in a country.

No upper limit means no windfall effect

An upper limit defines the optimum expected by public authorities. A cap indicates the maximum research investment that the country expects. As a result, it is more favourable to those that make a small share of their research investment in France; it is less favourable to those that make French sites their main global research hubs.