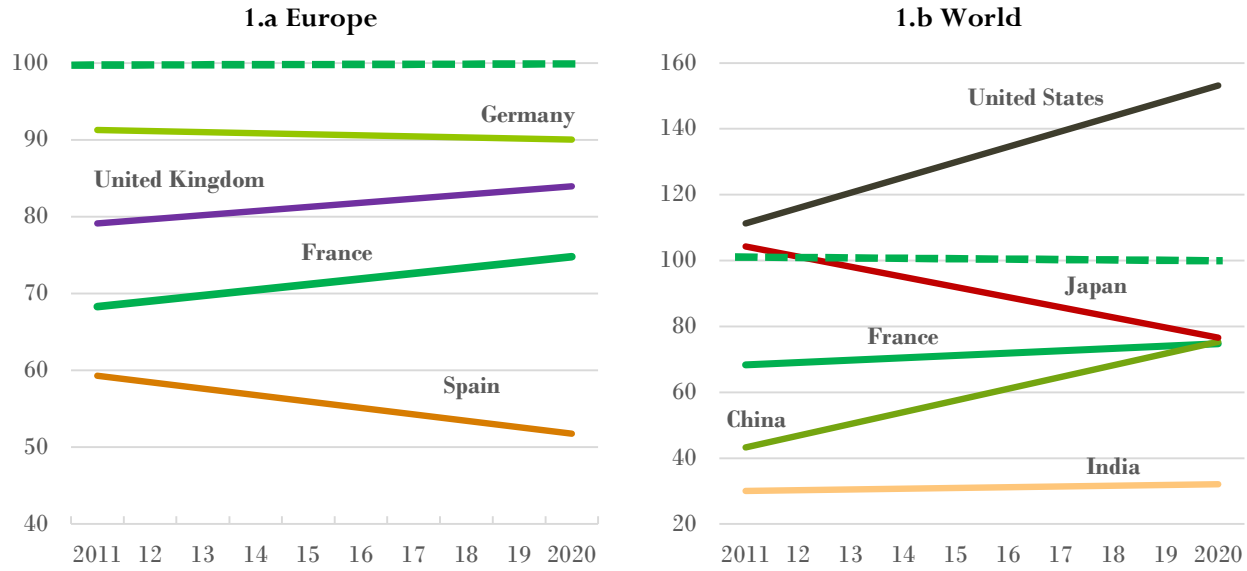
Now we're ready for some value-creating industrial relocation!

Despite deindustrialization and increased competition from R&D tax incentives all over the world, CIR (French Research Tax Credit) has helped to retain core business. In industry, research has seen a decade of growth, establishing favourable conditions to relocate manufacturing jobs. Closer location of production sites reinforced by vigilant, competent, wide-ranging R&D can trigger a virtuous circle. Yet the risk is high that that momentum might be broken.

Graph 1 – Ten years of observation, three key facts: France has acquired a position as a global industrial research hub by maintaining a competitive rate thanks to CIR ; Asian research nations are increasingly commonplace; the US bubble seems likely to implode.



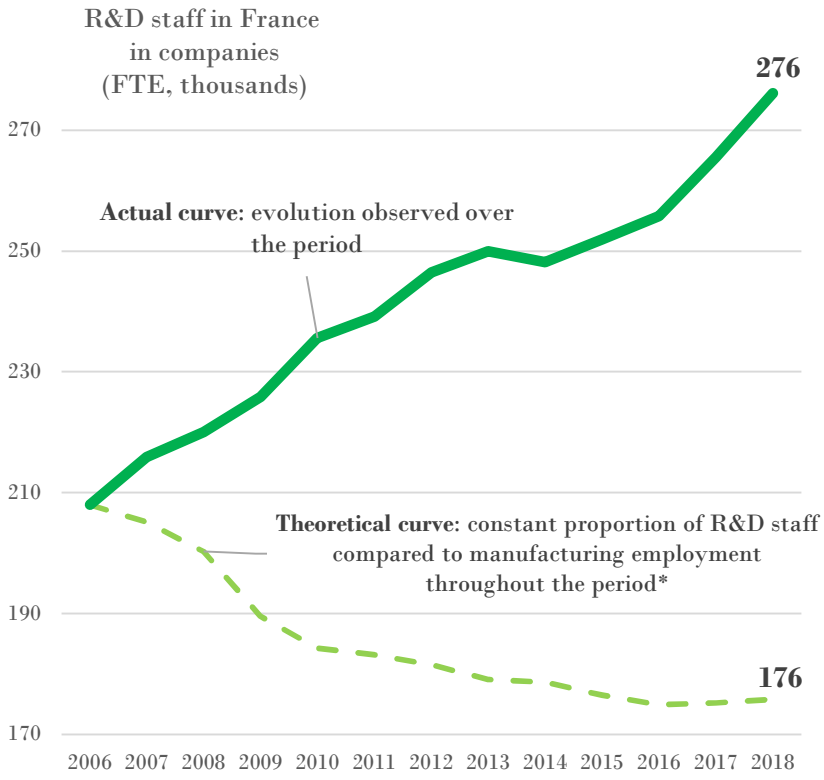
These graphs present a comparison of the evolution of researcher rates, established using data collected from the ANRT Panel over the last 10 years. The selection shown here indicates trends ("regression lines") for the countries considered.
The values on the y-axis correspond to the cost of researchers in the form of an index: the average cost of a French researcher with no tax credit or subsidies equals 100. The dotted line (- - -) shows the French researcher rate with no CIR or subsidies.

These graphs (1.a and 1.b) give a dynamic illustration of the impact of CIR on the relative cost of a researcher, seen from France. The dotted green line, with an original value of 100, shows that in Europe, without CIR, the rate of a French researcher would have remained 10 percentage points higher than the German rate and 45 percentage points higher than in Spain. Around the world, only the United States would have maintained a positive difference to their

disadvantage vis-à-vis the French rate. Instead, cost motives did not work to the detriment of the presence of R&D teams in the country. Multinational companies based in France, averaging out good years and bad years, have thus continued to consolidate their R&D activities on French soil while developing a considerable international presence (cf. Graph 4.).

Ten years of observation, with the help of the comprehensive, reliable barometer provided by the ANRT CIR Panel (cf. the methodological overview at the end of this text), point to a first virtuous effect: CIR is accompanying the shift towards the knowledge economy taking place in our ecosystems. Its reassuringly stable form and generic, open character have made the tax incentive a standard management tool that supports stronger R&D teams and activities. The lifting of scientific and technical uncertainty is accompanied by a growth in knowledge as a result of R&D projects. Year on year, CIR plays a knowledge-boosting role and fosters companies' competitiveness. This increased knowledge is not obtained "like for like" with R&D resources. Graph 2 below illustrates this point. If companies had maintained the same proportion of research staff on their payroll as in 2006, they would have created almost 100,000 fewer FTEs in company R&D than the actual figures for 2018. CIR has very clearly modified the approach of big and not-so-big companies to their R&D centres, R&D activities, and researchers.

Graph 2. – CIR accompanies a shift in our ecosystems towards the knowledge economy (update 2020)



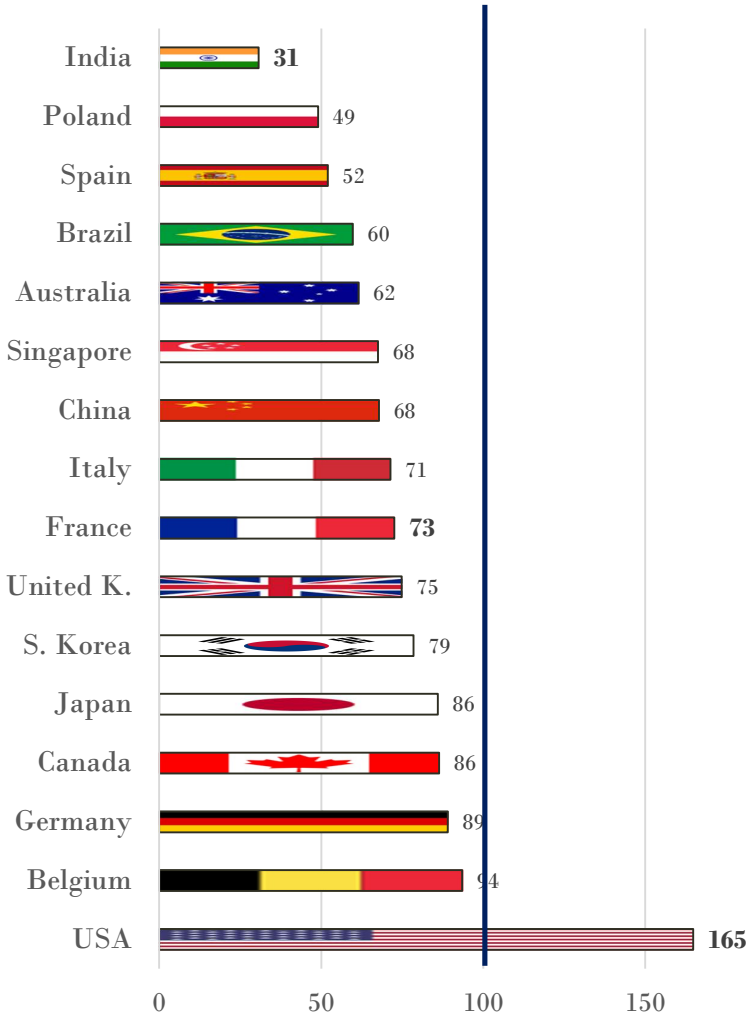
If industrial companies had continued to hire in R&D as they did in 2006*, R&D employees in France would total 176,486 instead of the **276,130 jobs observed in 2018**

Sources: "L'état de l'emploi scientifique en France", *MESRI-SIES, October 2020;* "Les dépenses intérieures de R&D en 2018", *Note Flash MESRI n°15, September 2020 ;* "Marché du travail - Séries longues – 2015", *Insee Résultats, March 2016;* "Emploi salarié par secteur, Données trimestrielles du T1-2014 au T2-2020", *Insee, September 2020; Design, treatments et presentation ANRT, November 2020.*

The growth of the R&D payroll in industrial companies over the last decade is the result of the increased knowledge-intensity of business products and services. This competition is global, meaning that CIR arrived at the right time to alter the calculations made by decision-makers, by making cost differences relatively favourable for French sites.

Graph 3 below provides a snapshot of the 2020 researcher rate based on 2019 data. These data underlie decision-makers' reasoning concerning the impacts of support systems in the countries of location. The difference between India and the United States, at the top and bottom ends in our sample, is a factor greater than 5; in Europe, a factor of almost 2 separates Poland from Belgium.

Graph 3. – France, "global standard"



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

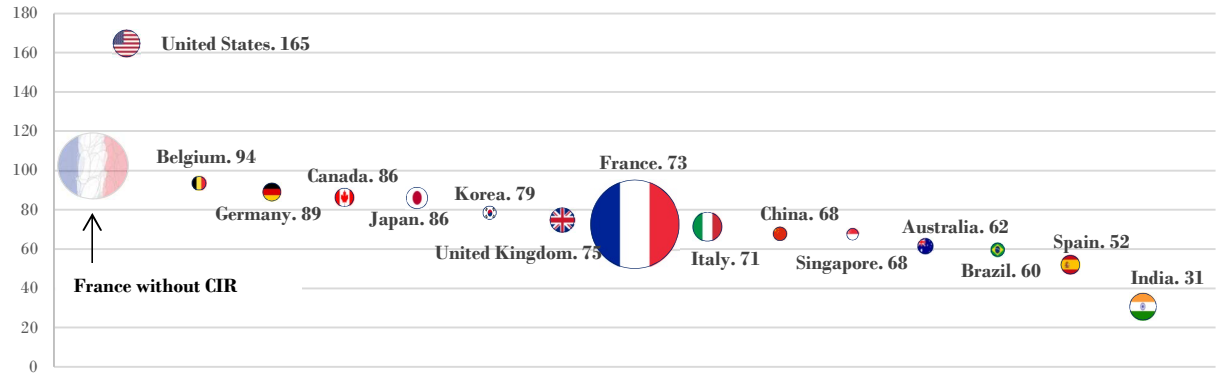
With a value of 73, this year French researchers are at an average position among the 16 countries featured in our sample.

The closer countries are geographically, the greater the impact of the differences. The French rate has a comparative advantage of 16 points compared to Germany, and 21 points compared to Belgium.

The penalty is even higher for the US rate, which has moved up once again to 165. A scarcity of researchers in some fields under pressure and the non-renewal of staff make the presence of researchers in the US a luxury that few multinationals can afford: gaps that no R&D support system proves effective enough to close.

The long-term sacrifices in French tax revenues would have been in vain if we had observed an erosion in the relative proportion of R&D staff in the country over the years. For the companies on the Panel, this proportion has tended to evolve positively (cf. the preceding years). This is clear, in any case, in graph 4 below for 2019, where the size of the French flag represents about 53% of the total.

Graph 4. – France maintains its prime position in the 2020 Panel's location strategies for industrial research



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.

Europe remains the primary region for locating R&D for the companies on the Panel, followed by Asia, then the Americas. Like last year, this result is confirmed by two attractiveness "barometers" published in June 2020. According to these studies, French R&D became even more attractive in 2019.

According to the Business France[1] barometer, R&D and engineering account for 22% of foreign investments in France, with 157 investment decisions (compared to 129 in 2018). Employment associated with creations or extensions of R&D centres rose significantly by 35%, with 3,775 jobs. According to Business France, this steady progression in R&D projects can be put down to the constant commitment of public authorities to support innovation, and the associated tax incentive (CIR). According to their survey, 84% of foreign investors judge France to be an innovative economy. Two-thirds of the new R&D jobs created are related to European investments, although the United States is the country that invests the most, with 238 projects (16% of the total). In Europe, Germany comes just behind with 228 projects, which is 15.5% of the total. Investments from the United Kingdom have increased by 142%, in concrete anticipation of Brexit.

According to the Ernst & Young[2] barometer, for the first time France takes top place in the ranking for production and R&D sites. The strong policy to support innovation appears to be the main explanation. According to the ranking, 1,197 projects were announced for France, ahead of the United Kingdom at 1,109, and Germany with 971 projects. Two-thirds of these projects will be carried through, according to the estimations put forward, despite the economic fallout due to the health crisis.

Caution, attractiveness is fragile: proof by example (bis)

The attractiveness of a country is a fragile affair. During its ten-year existence, the ANRT Panel has identified how changes in researcher cost differences have a significant impact on the size of R&D teams, in particular between geographically close countries. Attractiveness results from a shifting combination of characteristic conditions, and not only from the exposure to Research Tax Credits of companies' R&D expenditure. For these businesses, the key factor in the decision to set up in a country is usually access to the market (including via a local production site). Second comes access to skills. Lastly, come cost differences, of which staff costs are only one of the components.

[1] Bilan 2019 des investissements internationaux en France, Business France, June 2020.
[2] Baromètre de l'Attractivité de la France 2020, Ernst &Young, June 2020.

This year once again, we sound the alarm: ostensibly minor secondary cut-backs have the effect of undermining confidence, and bring a batch of financial consequences that are detrimental in the midterm. The 2021 Finance Bill once again brings bad news. **Following an average estimated drop of 3.5% in the CIR rate in 2021** (consequence of the 2020 Finance Act) resulting from a reduction in the coverage rate of personnel expenditure from 50% to 43%, **2022 (CIR 2023) will once more see a decrease in CIR.**

The clause that authorises companies to double the figure they declare for expenditure corresponding to R&D entrusted to their public partners (capped at 12 million euros) is to be withdrawn by a government amendment[3]. Unlike the previous cut-back which indiscriminately affected all beneficiaries, this withdrawal will turn out to be highly detrimental in a targeted way, hitting hard on research partnership relations. While the **average global amount of CIR lost can be estimated at 2%**, the particular dynamics of this doubled tax credit risk putting **a sudden stop to the most sensitive part of research, i.e. public-private research**. For the vast majority of the 4,000 companies that use it every year, this "doubled CIR" is a decisive factor in the decision whether or not to invest in R&D. To make an investment decision, company leaders think in terms of cash flows. Viewed this way, pro-research, partnership-focused tax credit drastically reduces the financial risk associated with the decision to launch into an R&D project. The net cost of investment in the case of a doubled CIR is 6 times lower than with CIR at 30%. Without the implementation of some powerful financial engineering, which is under negotiation at the time of writing, **we can therefore expect a total collapse of partnership relations for a large share of companies, i.e. SMEs, which have already been considerably weakened by the financial consequences of the health crisis**.

[3] The same amendment also includes the suppression of the 2 million-euro increase on the rate of expenditure corresponding to operations entrusted to these same partners, bringing the threshold down to 10 million euros.

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Twelve 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 & development h in the world; this year more than ***71,000 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).

ANNEX

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.