



Industrial policies in France Developments and international comparisons

France, together with the United Kingdom, ranks among the major industrialised countries that has undergone the greatest degree of deindustrialisation in recent decades. Whether in productivity gains, employment, technological innovation, or trade deficit, this industrial decline has had an impact on the economy as a whole¹.

For many years, industrial policy was no longer considered a priority in France, yet the State continued to exert a major influence on industry. Towards the end of the first decade of the twenty-first century, France found itself subject to a level of taxes - social security charges, corporation tax, production taxes - that were far higher than those of some of its main competitors, especially in Germany. French companies decided to become the champions of relocation. At the same time, France chose demand side policies while Germany and other countries, sharing the single currency, resolved to strengthen their competitiveness through a supply-side policy.

There have been significant policy changes over the last ten years; an awareness of the handicaps affecting French industry has yielded a series of corrective measures. The *Crédit d'impôt pour la compétitivité et l'emploi (CICE)*, the responsibility pact, the transformation of the CICE into a social security contribution relief, the choice to bring the level of corporate tax closer to that of the main comparable countries, and the recent orientations towards a reduction in production taxes all underscore these changes. France has also reviewed its support for innovation and R&D, notably with the reform of the research tax credit (CIR) in 2008. The report published by France Stratégie thus presents an unprecedented overview of support for innovation, and an original quantification of the financial resources of the industrial policy in 2019.

The report focuses on seven industrial sectors - health products, aeronautics, automotive, space, rail, electricity, and telecoms - in which the state plays a particularly important role. In telecoms, public policies have not maintained an equipment industry of sufficient size. As for the drug policy, it has been characterised more by a concern to limit the costs of public expenditure than to strengthen the localisation of production in France. Moreover, the desire to limit nuclear power in electricity production has been at the detriment of industrial excellence in this domain. The automobile industry, despite frequent recourse to purchase subsidies, has suffered a rapid decline in its industrial presence in France. The railway industry, by contrast, retains a strong position and great technological mastery, yet it too faces challenges with the appearance of a Chinese giant. Aeronautics is a sector in which industrial policy has succeeded in recent decades, even if Airbus is hindered by the current crisis. Finally, the space sector in Europe is threatened by the emergence of new state players in Asia and large private manufacturers in the United States, benefiting from significant public support.

1. This note presents the summary of a report submitted by France Stratégie to the National Assembly on November 19 2020. See France Stratégie (2020), *Les Politiques industrielles en France. Évolutions et comparaisons internationales*, report for the National Assembly, November, 688 pages. General rapporteur: Vincent Aussilloux. Rapporteurs: Philippe Frocrain, Mohamed Harfi, Rémi Lallement and Guilhem Tabarly. Contributors: Étienne Beeker, Dominique Giorgi and Nicolas Meilhan.

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INTRODUCTION

In recent years, renewed trade tensions arising among the major powers have brought about a growing awareness in France and Europe of the necessity of an industrial policy to preserve the continent's sovereignty, and to acquire a greater measure of independence from the goodwill of other countries to satisfy its needs. The Covid-19 crisis has revealed Europe's dependence on a small number of third countries for a supply of certain basic molecules and medicines, even masks. In a world in which some of the largest economic powers are moving away from the principles of a framework negotiated by the international community, Europe cannot allow itself to become increasingly dependent on companies from these countries for vital matters such as health, communication, data storage, energy production equipment and batteries for electric vehicles, without having alternative sources.

The growing consequences of the ecological crises generated by climate change, and the collapse of biodiversity, amply justify a re-evaluation of the increased importance to be accorded to industrial policies to dramatically change production and consumption patterns, and this before it is too late.

In addition to these two fundamental reasons, the French industrial policy should aim at developing a prosperous industry on the national territory. Indeed, industry ensures productivity gains, which are the main source of income growth, quality jobs in the country, and innovations, comprising more than 70% of the country's private R&D expenditure. Moreover, such a trade deficit within the manufacturing sector in France creates a substantial employment deficit, amid the country's structurally high unemployment rate. From this perspective, France has had

the poorest performance among Western European countries since 2000, with a marked de-industrialisation.

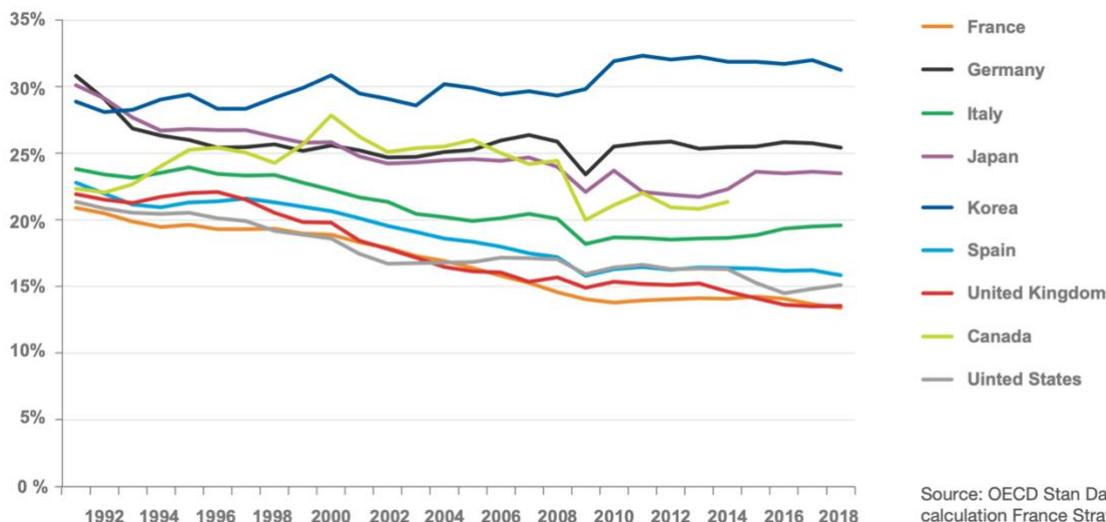
To carry out this renewal of industrial policy as effectively as possible, it is essential to study the lessons of the past to avoid reproducing mistakes and to foster good practices; this is the objective of the report by France Stratégie². With its retrospective and comparative analysis, this report examines the reasons for the sharper decline of industry in France compared with partner countries (see graph 1), and seeks to identify good practices in these partner countries, presenting sectoral focuses as well.

THE RETURN OF INDUSTRIAL POLICY

Beginning in the mid-1980s, and for some twenty years thereafter, the notion of an industrial policy became unpopular in advanced countries. It was often reduced to costly and ineffective discretionary interventions in favour of "national champions" or struggling firms. The flaws or limits inherent in these policies are very real: the risk of control by vested interests, especially those close to power, the impossibility of knowing with certainty the technologies or sectors of the future, the difficulty of ending measures once they have been introduced, and so on. But these considerations must not overshadow the many other cases - in civil and military aeronautics, space, Internet, GPS, TGV, and the pharmaceutical industry - that are not only of public interest, but of benefit to the private sector as well. Here, major advances, in addition to important industrial developments, would have been impossible without some form of active and targeted public support.

Until the early 2000s, many countries decided to dispense with explicitly formulated industrial policies. The notion that the growth of service jobs could replace industrial jobs

Figure 1 – Share of industrial value added in the economy



2. France Stratégie (2020), *Les Politiques industrielles en France*, op. cit.



was widespread in many advanced countries. This was the case in the United Kingdom during the Thatcher years and beyond, which developed services and finance to the detriment of its industry, or in the United States during the 1990s and 2000s, which favoured dematerialised digital. In pre-unification Germany, the strength of its socio-productive model freed it from having to reorient its industrial structures. At the beginning of the 2000s, when Germany was described as the “sick man of Europe”, it was by horizontal supply-side support policies that it restored its competitiveness in the industrial field rather than by a return to active industrial policies. During this time, France made the opposite choice of supporting demand. In parallel, the strengthened European framework of competition policy, the consolidation of the multilateral framework for international trade with the birth of the World Trade Organisation, and the multiplication of free trade agreements have reduced the room to manoeuvre for traditional industrial policies.

Over the last three decades, an analysis of the practices in France and similar countries shows, however, that none of them have ceased to implement an industrial policy, even if it was not called as such. It is striking that all advanced countries used comparable levers: support for private and public R&D and innovation, support for clusters and industrial cooperation, technical standards, public procurement, and so forth. France, in particular, has distinguished itself by a more active use of state equity investments in some companies, and by public intervention to support or counter certain merger-acquisition operations, though with little success. Germany, for its part, with an exceptionally active horizontal policy in the 1990s and 2000s, sought to restore its cost competitiveness, in decline since reunification, and at the same time, to control taxation as well as wage developments in the sector sheltered by far-reaching labour market reforms. These cross-cutting policies favourable to industry enhanced the competitiveness of the country, which gained significant market shares at European and world level, notably to the detriment of France, whose wage costs and corporate taxation by contrast were rising. The United States, in turn, opted to invest large amounts in venture capital, as well as having recourse to public intervention at both ends of the innovation cycle: on the one hand, by generous public support programmes for basic research, often with military objectives but with significant industrial dividends, on the other, by public financial support mechanisms to transform a technological advance into industrial solutions to meet societal challenges. These very active supports, which, coupled with a vast internal market that has enabled companies with breakthrough innovations to acquire a significant size before setting out to capture the other world markets, have promoted a strong renewal of the American productive fabric, and the creation of world leaders in new growth sectors.

European countries have suffered from the incomplete integration of their internal market, and from the insufficient coordination of aid to support the development of innovative industrial solutions. The only notable exceptions are in the aeronautic and space industries, in addition to telecoms until the 2000s, however, there was a conspicuous failure with the Internet. Europe has thus missed out on the digital technological revolution. It has also allowed itself to be surpassed by China in the telecoms industry, batteries, and electronics. While Europe has until now succeeded in preserving its strongholds in the traditional industrial sectors (chemicals, mechanics, automobiles, steel, textiles, and luxury goods in particular) better than the United States, these sectors could be challenged if European countries fail to exhibit necessary advances in the fields of batteries, biotechnologies, artificial intelligence, on-board computing in vehicles and machines...

Over the past decade or so, industrial policies or “strategies” have become more and more explicit – as so defined in all advanced countries. Public decision-makers now seem to consider that to announce an industrial policy is not an admission of weakness, it is rather a necessity to correct certain structural imbalances, and to mobilise the country’s vital forces confronted by major new challenges: a risk of loss of industrial leadership, especially with growing competition from China, a need to become competitive in cutting-edge technology, with breakthrough innovation, a need to decarbonise the economy, a decision to correct territorial disparities, and so forth. Hence, a relative consensus containing major objectives has emerged: a more competitive productive system, notably through innovation more attentive to environment and sustainable development, and more protective of sovereign interests and social and territorial balance... In France, the risk of not keeping up with industrial and technological developments has been regularly noted in numerous reports substantiated by alarming observations.

THE WORRISOME DECLINE OF FRENCH INDUSTRY

Deindustrialisation affects all advanced economies; this can be explained largely by structural mechanisms - faster productivity gains in industry than in services, a shift in the structure of consumption towards services that affect economies as they develop. Thus, the nature of industry has changed: it is increasingly intertwined with services, which can skew the measurement of the perimeter of the sector across countries. France is among the major industrialised countries that has undergone the greatest deindustrialisation in recent decades. Since 1980, the industrial branches have lost almost half of their workforce (2.2 million jobs), and industry now accounts for only 10.3% of

total employment. The role of industry in GDP has declined by 10 percentage points during the same period to 13.4% in 2018, compared with 25.5% in Germany, 19.7% in Italy, and 16.1% in Spain. The use of broader statistical perimeters covering part of the services linked to industry does not alter the fact that France, with the United Kingdom, has become the most deindustrialised economy in the G7. While in 2018 and 2019, the return to growth in industrial employment may have implied an interruption in the deindustrialisation process, the crisis related to the Covid-19 pandemic fundamentally questions this recent trend.

Deindustrialisation is creating several not insignificant problems for France. It has slowed down the country's productivity gains, which are one of the driving forces of income growth, because productivity is on average more dynamic and higher in industry than in services. It has also caused a chronic trade deficit only partially compensated by a surplus in services and net income from investments abroad; the latter is weak in job-creation, and not conducive to a wide distribution of income in France. It may also hamper France's technological development because the industrial branches carry out a substantial share of private R&D (71% in 2017). Finally, it may have a lasting effect on certain employment areas, and their inhabitants, following the closure or relocation of industrial companies that it implies, given the knock-on effect it has on local economies and the degree of specificity of its professions. Therefore, deindustrialisation, which has not been offset by a sufficient expansion of high value-added services, has far-reaching economic, social, and political consequences.

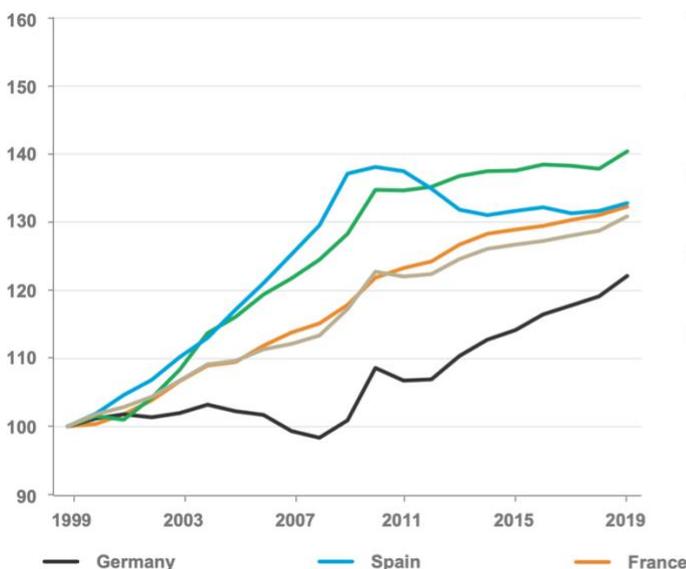
THE REASONS FOR THE DECLINE

French industry does not suffer from unfavourable sectoral and geographical specialisation. It has, however, suffered from a deterioration in its cost competitiveness related to a particularly high and, until recently, rising taxation on the factors of production. The deterioration in cost competitiveness cannot be explained by a slip in salaries in French industrial companies. For the latter, wage increases over the last twenty years have been similar to the average for other euro zone countries. But the consequent increase in indirect labour costs contained in the intermediate consumption of French industry has affected its cost competitiveness. The cost of indirect labour contributes at least as much as direct labour to the production costs of industry. Its rise is essentially explained by a sharp rise in unit labour costs in sectors sheltered from international competition: +35 % between 2000 and 2016, compared with +5 % in sectors exposed to international competition. The difference with Germany narrowed sharply in 2010 and afterwards. While the unit labour cost gap between France and Germany deteriorated by 17 points between 1999 and 2008 in the economy as a whole and by 5 points in industry, it narrowed by 7 points between 2008 and 2019 in the economy as a whole and by 5 points in industry (see graphs 2a and 2b).

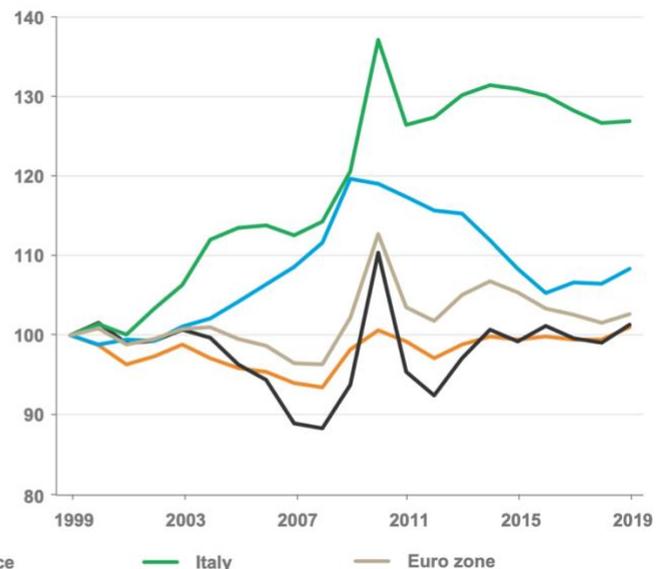
The other significant factor in the deterioration of the cost competitiveness of French industry stems from the importance of taxation, and its increase over the last few decades. Industry in France is subject to a higher rate of taxation than in other sectors, even though it is exposed to greater international competition: all taxes on manufacturing

Figure 2 – Changes in unit labour costs, base 100 = 1999

a. All sectors



b. Manufacturing industry



Source: OECD, calculation France Stratégie



industry amount to 28% of gross value added compared with 24% for other sectors (excluding finance). Production taxes affect industry more heavily than other sectors: while the manufacturing sector represents 15.4% of the gross value added of the market sector, it contributes more than 23% to the payment of production taxes corresponding to the C3S, the CFE and the CVAE³. Altogether the difference in tax levels with Germany amounts to 10.7 points of the value added of the manufacturing sector, more than half of which is due to production taxes⁴. After tax credits such as the CIR, this gap narrows to 7.8 points of value added, but the CIR is conditional on R&D expenditure and cannot therefore be fully assimilated to a general tax relief. Moreover, studies show that the companies that benefit from it have additional R&D expenditures equivalent on average to the tax credit received. In 2016, the total amount of taxes on industry represented twice the operating result in France compared with only 80% in Germany⁵.

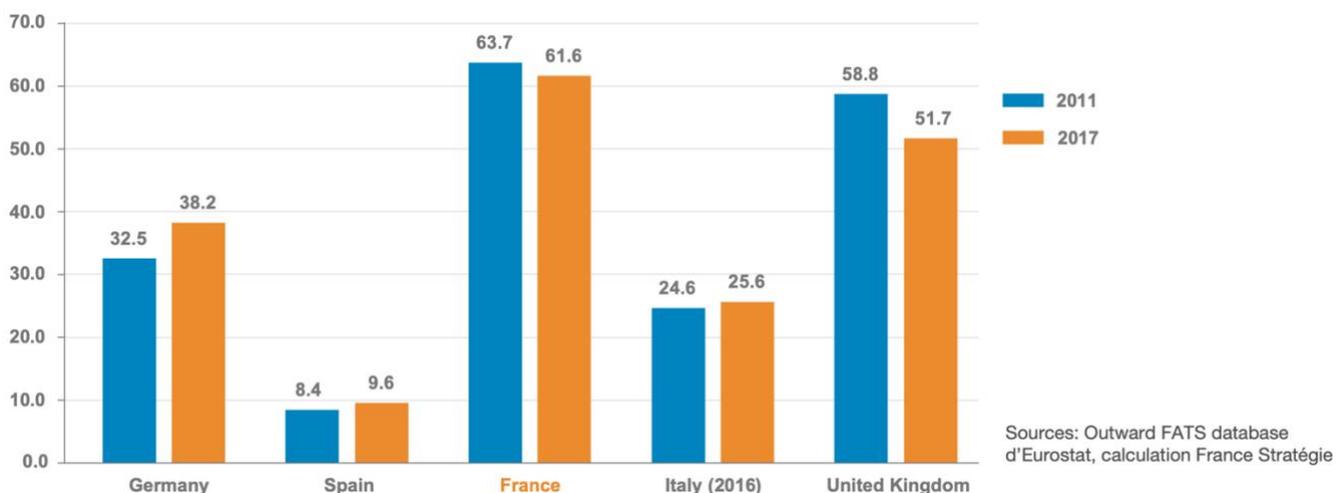
THE CHOICE OF RELOCATION RATHER THAN THE MOVE UPMARKET BY THE MAJOR FRENCH GROUPS

This deterioration in cost competitiveness has not been accompanied by an improvement in the average quality of products, either in range positioning or innovation content. Faced with rising production costs, the industry has chosen to pre-serve its price competitiveness by compressing its margins to the detriment of its move upmarket and, therefore, its non-price competitiveness (Gallois report, 2012). The deterioration in cost competitiveness caused a 21% drop in investment in machinery and equipment in France between 2003 and 2015, while it increased by 19% in Germany. It has also led to the relocation of a large number of production sites, causing deindustrialisation to occur more

rapidly than elsewhere. Considering that France's industrial fabric is made up of large companies, more than anywhere else, they have taken greater advantage of their ability to produce in low-cost countries as compensation for the drift in costs by France compared to their competitors.

In the 1970s and 1980s, threatened with a cost-competitiveness loss, because of the competitive devaluations of Italy and France, German industry chose an opposite tact by moving up-market, thus enabling it to build a strong brand image, and consolidate its success in foreign markets in Europe and other continents. In the 2000s, faced with rising costs, French industry did not take the same path, probably because the strong positions on the top of the range were already well established by German industry and, therefore, difficult to challenge. The possibility of maintaining price competitiveness by relocating production sites to countries with low labour costs had become much more accessible in the 2000s for French industry, because of the integration of countries with low labour costs into the world economy and the European Union. This possibility was extremely limited in the 1980s when German industry was confronted with a similar drift in its cost competitiveness. Large French companies, therefore, became the champions of relocation, enabling them to maintain their competitiveness at world level, though at the expense of industrial employment in France. Thus, compared with its European neighbours, France has been more powerfully affected by the relocation of production sites. The consequence is noteworthy: the employment of the foreign industrial subsidiaries of French groups corresponds to 62% of employment in the industrial sector in France, compared with 52% in the United Kingdom, 38% in Germany, 26% in Italy, and 10% in Spain (see graph 3).

Figure 3 – Employment in foreign affiliates as a percentage of domestic employment, industrial sector



3. The social solidarity contribution of companies (C3S), the land contribution of companies (CFE) and the contribution on the added value of companies (CVAE).

4. The difference in compulsory levies is 7.1 points for the economy as a whole.

5. In 2016, source COE-Rexecode (2018), "La structure des prélèvements obligatoires sur les entreprises industrielles". The net operating surplus of the branch 27 billion, and compulsory levies after tax credits amount to €59 billion.

In the end, French industry today suffers from a lack of non-price competitiveness, which explains why French manufacturers are less successful than their German counterparts in selling the same product on the same market. By offering products generally positioned in the middle of the range and, therefore, with little differentiation, French manufacturers have become more exposed to price competition from emerging countries and part of the European Union.

TAXATION, THE MAIN FACTOR IN THE LACK OF ATTRACTIVENESS

Among the major factors in the location of production sites, France enjoys an advantageous position in market potential, because of the size of its economy, the quality of its infrastructures, and its position at the heart of the single market. France benefits from advantageous interest rates that translate into low borrowing costs for its companies. France also benefits from the quality of its institutions. Therefore, such factors cannot explain the trend in relocation of production sites outside its territory. France is ranked less favourably than some of its partners for its workforce's skill level and its business environment quality indicators. These indicators, however, did not deteriorate significantly in the 2000s, when the decline in industry was most conspicuous⁶. This cannot, therefore, be the major explanatory factors for the decline in industrial activities on French territory. Moreover, much of what makes for the quality of the business environment is common to other EU countries. This is equally true for trade and competition policy, and for the exchange rate for the countries of the euro zone. While these factors are common to European countries, they cannot explain France's more rapid deindustrialisation compared with its European partners. The level of the euro, which rose sharply in the 2000s and fluctuated around USD 1.40 from 2007 to 2014, has often been used to explain the deterioration of the trade balance. France, however, has lost most market shares to its European partner countries with the same currency, including Spain and Italy. What is more, the entire euro zone saw a distinct improvement in its trade balance with the rest of the world over the period.

With the sharp decline in the industrial base, jobs, and the expanding foreign trade deficit, measures have been implemented in the last decade, particularly the CICE and the Responsibility Pact. Established after the Gallois report of 2012 highlighting the risk of marginalisation of French industry given its costs, these measures have

contributed to closing the gap in unit labour costs (all sectors combined) in relation to Germany. This took place in a context of accelerated wage growth in Germany after the introduction of a minimum wage in 2015, and of the revaluations granted within the framework of branch agreements. In France, the targeting of labour cost reduction measures on low wages means that this aid benefits industry less directly, given the higher average wage in this sector. Still, industry has benefited indirectly from the fall in the cost of labour in the services sector, by a fall in the price of certain intermediate consumptions. The latest assessments indicate that the branches most exposed to international competition have moderated their prices thanks to the CICE. However, there is not yet a robust demonstration of a significant effect of CICE on exports, perhaps because of the limitations of micro-econometric evaluations which focus on direct effects only.

Since 2016, the faster development of hourly costs in France compared with those in Germany has been reversed. In 2000 the cost of an hour's work in industry was 24 euros in France and 28.5 euros in Germany, while it had risen to 36 euros per hour in both countries by 2012, an increase of 50% in France compared with a 26% increase in Germany⁷. Subsequently, the hourly cost increased by 7% in France against 16% in Germany to reach 38.6 euros and 41.8 euros per hour respectively⁸. In parallel with this partial rebalancing of the relative evolution of hourly labour costs, France's performance in industrial job creation and the attractiveness of production sites has improved, but remains below the country's potential in terms of other structural factors of attractiveness.

Today, the taxation on production combined with the nominal tax rate constitutes one of France's distinctive features among the factors that influence the choice of location for production sites: it could account for part of the country's still below-potential performance. A recent publication by the Conseil d'analyse économique⁹ reinforces this point, showing the negative consequences of certain production taxes on the probability of a company's survival as well as on its exports (see graph 4 on the next page). Recent work by France Stratégie further concludes that France attracts fewer production sites than indeed might be expected by its "natural" determinants because of production taxes¹⁰. Conversely, the research tax credit would explain France's high performance in terms of the attractiveness of R&D and innovation activities.

6. See in particular Crofils C., Roussel C. and Vermandel G. (2019), "Can better regulation reduce structural unemployment?" Working Paper, No. 2019-5, France Stratégie, November.

7. Here it is hourly costs and not unit labour costs because the relative evolution of productivity in the two countries is not taken into account. COE Rexecode (2020), "Les coûts de la main-d'œuvre dans l'Union européenne au 4^e trimestre 2019".

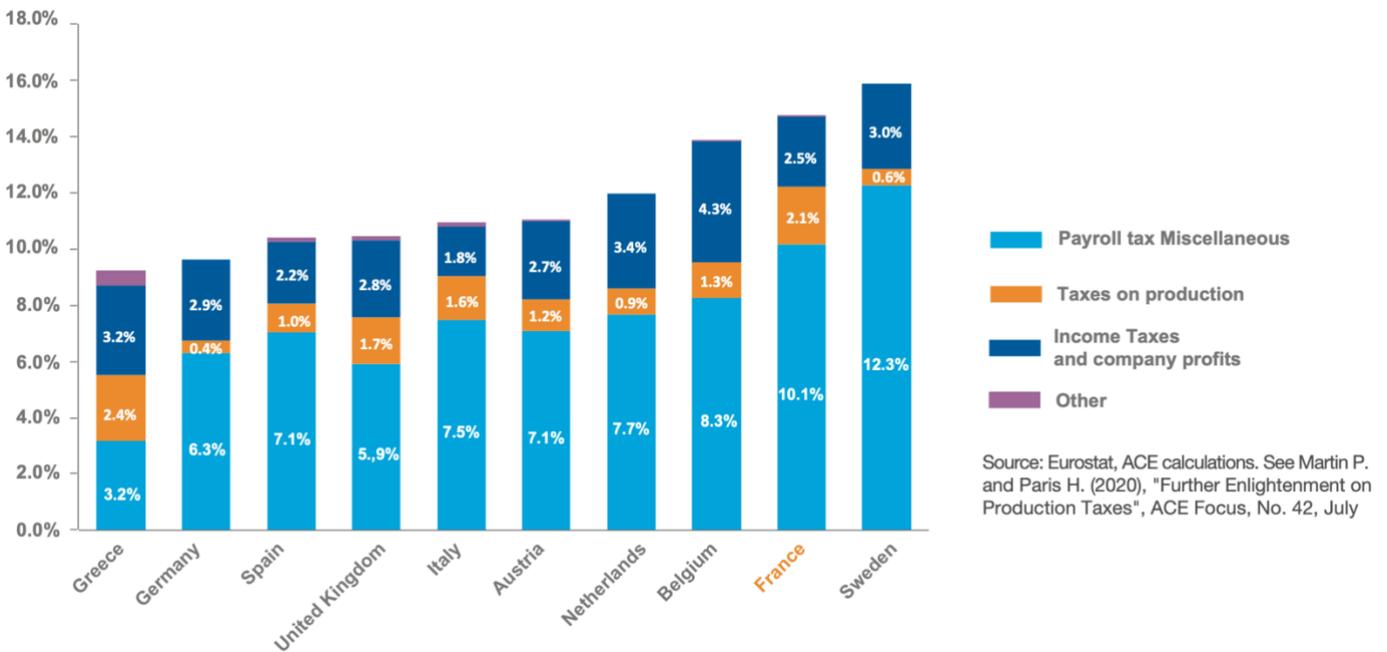
8. See Paris H. (2019), "Les coûts du travail des professions intermédiaires et qualifiées", ACE Focus, No. 29, January.

9. Martin P. and Trannoy A. (2019), "Les impôts sur (ou contre) la production", Les notes du Conseil d'analyse économique, no. 53, June.

10. Lachaux A. and Lallement R. (2020), "L'attractivité des investissements étrangers : le cas des activités de production, d'innovation et des sièges sociaux", Note de synthèse, France Stratégie, November.



Figure 4 – Taxes equivalent to operating expenses, as a percentage of GDP, 2018



FINANCIAL RESOURCES FOCUSED ON COST COMPETITIVENESS AND SUPPORT FOR R&D AND INNOVATION

The France Stratégie report¹¹ presents an original and exhaustive inventory of the financial resources mobilised for industrial policy purposes in the year 2019. Between 11.5% and 12.5% of the total financial interventions for Companies benefited the industrial sector that year; between 17 billion euros and 20 billion euros. In other words, industry receives a share of aid lower than its part in the private sector's added value, even though it is subject to a higher rate of tax and social security contributions than other sectors (28% of gross value added compared with 24% for companies in other non-financial sectors).

Indirect aid aimed to promote competitiveness by reducing labour costs, and stimulating employment alone accounts for 41.3% of total interventions in favour of industry. This reflects the reduction of social contributions on low wages (14.2%) and the importance of the CICE (20.5%) created in 2012. Aid for R&D and innovation, which can be described as non-cost competitiveness aid because it encourages the upgrading of production, accounts for a quarter of aid to industry, while it only represents between 5.3% and 6.6% of total aid to companies. In total, half of the €10 billion of annual aid for R&D and innovation benefits industry. A single tax mechanism, the research tax credit (CIR), a major aid to non-cost competitiveness (research and innovation) and also a factor contributing to lowering costs by significantly reducing those of research activities, has

alone mobilised 58% of these resources since its in-depth reform in 2008. In total, out of 100 euros of aid to companies in the industrial sector, 40 euros are aid for employment and training (mainly social security contributions relief and CICE), 25 euros are aid for R&D and innovation, 10 euros are reduction or exemption of TICPE (electricity), 6 euros are equity investments and subsidised loans. The remainder is made up of various types of aid, mainly from local authorities or the European Union.

SUPPORT FOR INNOVATION HAS RECENTLY BEEN CHARACTERISED BY THE CREATION OF A LARGE NUMBER OF SCHEMES

In addition to the increase in the research tax credit after the 2008 reform, new measures have been introduced as part of the deployment of the Programme d'investissements d'avenir (PIA). The few available impact assessments show that the increase in business R&D spending is globally equivalent to the amount of aid granted with the research tax credit (CIR) or higher with other R&D aid (aid from Bpifrance, funds allocated via competitiveness clusters, etc.). However, the existing evaluations, especially with the CIR, do not always make it possible to identify perceptible impacts on the economic performance of companies. There would, however, be a positive impact on the introduction of new products, as well as on the productivity of beneficiary companies¹².

11. France Stratégie (2020), *Les Politiques industrielles en France*, op. cit.

12. Lopez J. and Mairesse J. (2018), Impacts of the CIR on the main innovation indicators of the CIS surveys and business productivity, report for the CNEPI, December.

Moreover, the R&D expenditure carried out on French territory by large companies may, in fact, have an effect on the goods manufactured in their subsidiaries abroad, improving their productivity and innovation content. This is not reflected in the performance of industry located on French territory, but rather in the good health of large French companies.

The horizontal dimension of aid to industry has increased and now predominates. The proportion of indirect aid (57% in 2017) to R&D has, for example, been multiplied by five since 2000. Yet, this does not mean that France has repudiated all financial support of a sectoral nature. Direct aid explicitly targeted at industry represents 25 % to 30 % of the total economic interventions in its favour. Sectors like pharmaceuticals, automobiles, and aeronautics receive significant State aid to support research and innovation in the form of subsidies or repayable advances (see graphs 5a and 5b).

Public interventions in favour of industry have also increasingly taken into account the territorial dimension. The regions have seen their competence in economic matters asserted, and have taken numerous initiatives even if their total amount of resources is still much lower than the State interventions. The importance of interaction between local actors has been recognized, and has prompted the introduction of a series of instruments aimed at mobilising them and inducing them to cooperate on projects such as "competitiveness clusters" and "industrial territories". Several of these instruments have been the subject of evaluations, with encouraging results for certain types of companies or actions.

THE BALANCE BETWEEN COMPULSORY TAXES AND FINANCIAL SUPPORT IS UNFAVOURABLE TO THE INDUSTRY

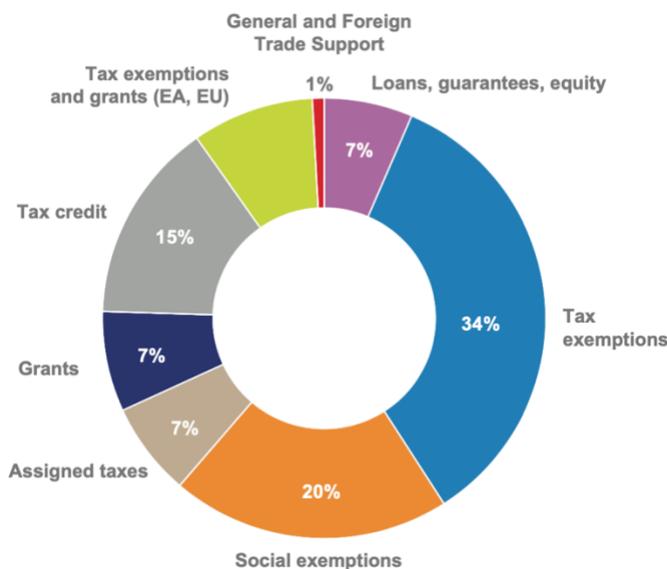
While politicians of all persuasions regularly show their support for the industry, the country has made the collective choice to tax this sector more than others. The amount of public support is far from compensating for this handicap, especially because this sector is less aided than the average in the economy. It is not surprising that the industrial sector has seen its relative importance in the economy decline more sharply than in other countries; a tax generally causes a reduction in the tax base, or at least its lower growth. As for innovation, industry's share of public funding has declined, reflecting its decline in total business R&D expenditure.

OTHER LEVERS OF INDUSTRIAL POLICY: FEW PROVEN RESULTS

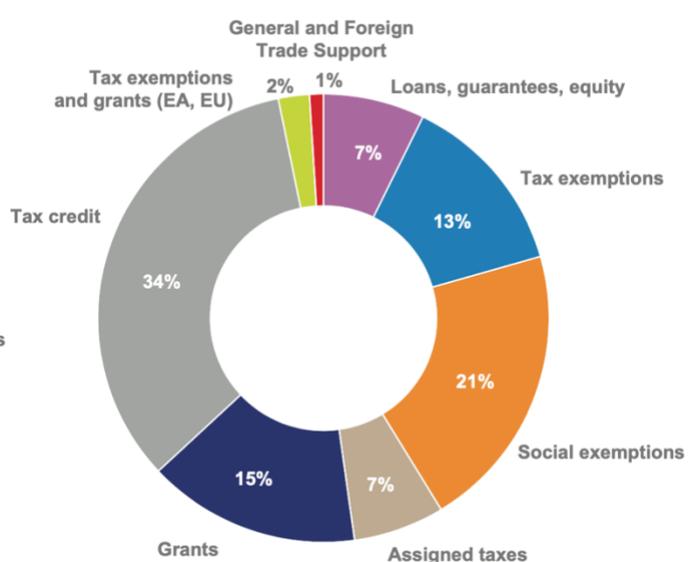
France differs from comparable countries in terms of state equity investments in industrial companies, and in the amount and diversity of financial supports to companies (see graph 6 on the following page). Yet, a large part of its action in the field of industrial policy is nonetheless carried out through non-financial mechanisms, by various legislative, regulatory, or administrative channels. Some of these mechanisms are mainly regulatory, particularly in the areas of public procurement, licences, industrial property, standardisation (technical standards), certification, and, of course, in sectors "regulated" by a public regulator (CRE, Arcep). Others refer more to the role of a strategist State.

Figure 5 – Economic interventions in favour of industry and all companies by type of instrument, in 2019

a. All companies



b. Industry



Note: here we take into account direct support (targeted at companies or sectors) and indirect support to companies (lower tax or social security contributions than those owed by companies in the absence of a more favourable system), i.e. 175 billion euros. However, this excludes the so-called "downgraded" tax expenditure (20.1 billion) and State aid corresponding to the cost of La Poste and France Télécom pensions (4.1 billion).

Source: France Stratégie calculations



The regulatory framework for industrial property is crucial for enabling businesses to benefit from the fruits of their innovative efforts. But companies' strategic use of patents remains chronically lower in France compared with that in many similar countries. This observation was one of the reasons for the PACTE law (2019), which aims to strengthen the legal security of French industrial property rights. Moreover, intellectual property issues often remain a source of tension between private companies and public research laboratories. The reforms implemented since 1999 have only partly remedied this by improving the transfer of technology from public research to businesses, still a weak point in France compared with the most advanced economies.

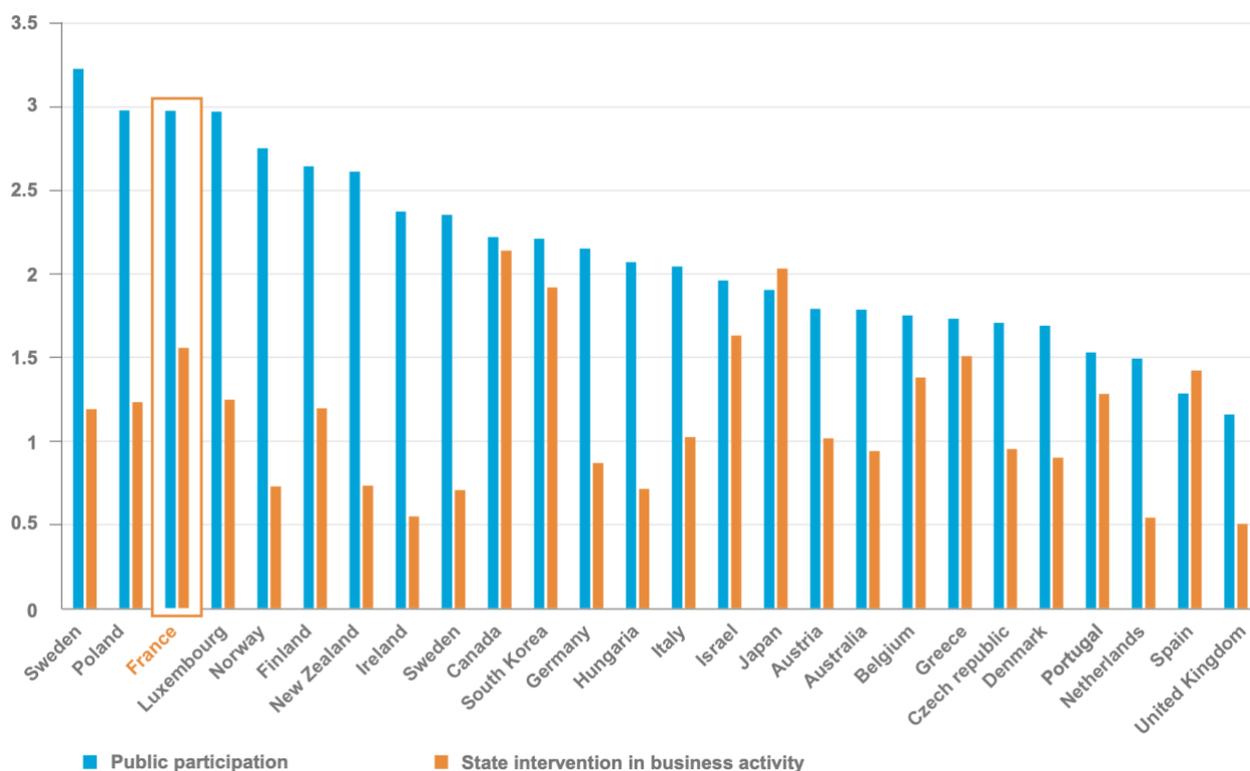
The importance of the national regulatory framework is well illustrated by the issue of public procurement, especially innovative public procurement. Public procurement has largely ceased to be considered in France as a potential tool for industrial policy, yet, the United States uses it very actively to bring about the industrialisation of innovative solutions. Germany has succeeded in coupling the use of standards and public procurement to underpin the development of its SMEs and new technologies. Recently, in France, several attempts to give innovative SMEs privileged access to innovation-oriented public procurement have been made, notably in 2008 and 2012. However, public procurement in France remains very little innovation-oriented. More than the regulatory framework, which

is largely the same in Europe for public procurement, there are other factors specific to France, possibly because of the risk aversion of public procurement signatories contracts or constraints specific to French SMEs.

To develop the breakthrough innovations allowing a country to boost its industrial strengths, regulatory frameworks and processes must be flexible and fast enough to allow experimentation, and strict enough to offer protection against major risks. Yet, for all the simplification effort conducted in France since 2013, innovation is still impeded by a set of legal and mental standards (regulations, designs, practices, etc.) that fail to take into account the needs of businesses on many levels, and that create obstacles between the world of research and that of industry, as a recent expert report has shown¹³.

As a guarantee of compatibility or interoperability between new goods and services, standardisation is an important issue for innovation and inter-national competitiveness. The country's international position in this area remains strong, but it has weakened over the years, particularly in the technical committees and working groups of the International Organization for Standardization (ISO). Generally, and above all in the emblematic case of the electric vehicle, French manufacturers are less successful than their German counterparts in presenting common positions and making them prevail through standardisation.

Figure 6 – Public participation in companies and state intervention in company activity



Source: France Strategy based on the OECD 2018 Product Market Regulation database

13. Lewiner J., Stephan R., Distinguin S. and Dubertret J. (2018), Les aides à l'innovation, report of the Inspection générale des finances.

A RETURN OF THE STRATEGIST STATE?

For several years, the State has attempted to recover a leading role, particularly with sectoral policies and the “Industry of the Future” plan. Through the National Conference of Industry since 2010, and the National Council of Industry since 2013, the State has sought to establish an industrial policy constructed collectively through dialogue between companies, employee representatives, and public authorities, an effort that has resulted in sector contracts. The work conducted within this framework has also contributed to the design of certain schemes, including the CICE and the “New Industrial France” programme launched in September 2013. The programme was tightened from spring 2015, with nine “industrial solutions” structured around the theme of “Industry of the Future” presented as a matrix for industrial strategy, and a vector for the digital transformation of companies. A new impetus for the CNI and the sector policy was given in November 2017, but there is no thorough assessment of the effects of this revival by the State of its role as facilitator and coordinator for the past decade. Thus, it is difficult at this stage to offer an opinion on the impact of this policy.

The State also aspires to direct various studies in technological foresight that, at times, lead to strategic roadmaps drawn up jointly with various experts, particularly from Industry. As with the recurring “Key Technologies” exercise, this may also involve identifying prospects for development to guide public and private decision-makers in their choice of medium-term priorities. Since 2019, a technology foresight exercise has also guided the choices of the Innovation Council set up in July 2018. The role of this council is to establish strategic priorities of French innovation policy, and to steer the investments to be financed within the framework of the Innovation and Industry Fund (IFI) launched in January 2018, and endowed with €10 billion with an annual commitment capacity of €250 million.

The state still has the ambition to shape the capital structures of industry. It strives to orient them towards a long-term perspective, for example by the Florange law of March 29, 2014 or the PACTE law, which in 2019 extended the system of golden shares. In these instances, the State intervenes less from an asset management perspective or a financing provider than as a regulator. This ambition of “capitalist regulation” also corresponds with the measures taken by the State for several years to control foreign direct investment to protect national interests against the risk of predatory takeovers in certain strategic sectors.

The State as a shareholder lacks a clear doctrine on the proper use of its holdings. The State, though increasing its role as a fund manager such as with the IFI, has for more

than thirty years largely separated itself from its traditional role in France as a shareholder. While the State remains much more involved in the capital of companies than in comparable countries, this does not seem to have helped counter the relative decline of the industry in France.

THE SECTORAL APPROACH OF FRENCH INDUSTRIAL POLICY

Beyond the quality of the general business environment determined by cross-cutting policies - taxation, regulation, infrastructure, training, monetary policy - industrial policy brings together public interventions specifically designed to encourage the development of industry. Old-style industrial policy endowed the State with a key role as a shareholder or producer. Today, and in normal times, industrial policy relies on a more indirect role for the public authorities. Hence a wide variety of instruments, and of aid, but also the diversity of non-financial instruments: attraction and control of foreign investment, regulation, industrial property rights, standardisation (technical standards) and certification, and so on.

Some industrial sectors are marked more than others by the importance of public decisions, whether or not they are presented as being part of industrial policy. Seven of them are the subject of detailed analyses in the report: automotive, aeronautics, space, telecommunications, railways, electricity, medicines, and medical devices. These sectors have experienced various fates over the last few decades.

The automobile sector has lost its foothold in France, it now represents less than a sixth of what it is in Germany. The decline of this sector accounts for nearly half of the loss in the balance of manufactured products in France since 2000, and this loss has had negative effects in a number of other industrial sectors, given the structuring role of the automobile industry in France.

Overall, this situation is a consequence of the deterioration in the general competitive position of the French territory (relative costs, taxation), and no less of specific public decisions. After the tax incentives for small diesel, and the acceptance of European carbon standards favourable to large, imported cars, France has been wrong-footed by the evolution of regulations and the market. The developments linked to decarbonation have not been fully exploited by French and European manufacturers. It is only recently, with the battery projects and incentives to advance the electric vehicle industry, that France, in cooperation with Germany, has been mapping a path to halt the decline in light of the Chinese electric vehicle and battery industry that has assumed world leadership. This is an undeniable



reality that poses a major threat to the European industry as a whole. The success of the national manufacturers should not be confused with the development of the sector in France, they have largely relocated their production, in fact, more so than elsewhere.

Despite the acute economic crisis, the aeronautics sector offers an opposite example of success in the constitution of a European scale leading group-- Airbus, and several major companies such as Safran, Thales, and others. France reaped the benefits derived from quality jobs on its territory, as well as trade surpluses. The State played a decisive role in their creation, and it created the conditions allowing them to develop without keeping capital control in a rapidly growing global market.

The global space sector has undergone rapid change over the last decade. Traditional players have been shaken in the launcher segment by new private competitors in the United States and state-owned in Asia. The European model is handicapped by the instruments that made it successful (in particular the rules of "juste retour" between European states). The game remains open but difficult in the much larger satellite segment. On services, which are already, and in the future even more so, the core of added value, Europe and France in particular are only moderately present.

The telecommunications equipment manufacturers have been confronted with extremely intense global competition. Having contributed to the beginnings of the Chinese industry to access a very fast-growing market, they have witnessed the emergence of a world leader - Huawei - which has become pre-eminent in equipment, particularly for 5G. Operators cannot easily diversify the source of the equipment needed for infrastructures at the risk of malfunctions. They are, therefore, highly dependent on a small oligopoly of manufacturers, which tends to reinforce Huawei's dominant position. The domination of the large digital platforms - which pay nothing or almost nothing to operators while benefiting from their infrastructures - has contributed to a strong shift in the value in the industry to the detriment of operators. Moreover, the mobile operating systems (OS) which largely dominate the market (Google's Android and, to a lesser extent, Apple's iOS) give the monopoly of user data exploitation to the creator of the operating system, the applications, and the platform. However, the management of personal data is today an essential source of economic value creation, which is beyond the reach of national telecoms players in Europe. All in all, it is GAFAM and BATXH¹⁴ that derive most of the profits, while also largely escaping corporate tax. One of the essential challenges today is for France to become

once again an attractive territory for manufacturing activities, and to maintain or develop its place for R&D activities. It seems essential to support initiatives in favour of "open source" and open interface technologies such as Open RAN, which can help reduce monopoly powers, and restore a balance in the sharing of the value created.

The railway industry is rapidly becoming concentrated in a market that has become globalised, and which has seen the emergence of a potentially dominant Chinese player. Technological mastery is still strong, but, the years to come, with great uncertainty as to the extent of the benefits that the railway industry will be able to derive from decarbonisation policies, will be decisive for its future. Public procurement remains crucial for this industry.

The sector of the equipment industries for the production of electricity has long been an enormous French success story based on the choice of nuclear power. This success has not been maintained on the long term: France's gradual disengagement from nuclear power is limiting its domestic market, and the development of new generations of reactors has encountered major industrial difficulties. All in all, the French nuclear industry is in serious difficulty, and the relay has not been taken in photovoltaic, where France, like its European neighbours, has seen Chinese domination assert itself, nor in wind energy, where French players have not built leadership positions.

The drugs and medical devices sector remains fairly robust, but under the constraint of public procurement policies aimed at limiting the increase in the cost of treatment, it has been led to seek optimisation of its production costs, which has weakened it. It is currently, with the health crisis, at the heart of the debates on European and French industrial sovereignty.

All in all, in these sectors, which are among those most marked by public intervention, whether in the form of norms, sectoral regulations, public procurement or fiscal instruments, success has been limited. The industrial sectors in which France's position in international competition has declined slightly less, or has even been maintained, are not those that have received the most attention from public policies, with the notable exception of aeronautics and space until now. However, the analysis of success factors is limited by the fact that there is no causal evaluation of the industrial policies of sectors in France and abroad. Apart from horizontal measures such as the CIR or the CICE, or targeted studies on certain very specific schemes of limited scope, industrial policy measures, and in particular those aimed at developing a particular industrial sector, have generally not been subject to ex-post evaluations.

14. Google, Apple, Facebook, Amazon and Microsoft ; Baidu, Alibaba, Tencent, Xiaomi and Huawei.

CONCLUSION

Three main types of issues will mark industrial policy for the next ten to twenty years.

First of all, the public policies with the greatest impact on industry will be by far those related to the ecological transition, first and foremost of which will be decarbonisation. The sectors of electricity production equipment, automobile, aeronautics, and railways will be directly affected. Concern for their future must never be neglected in the choices made to implement the National Low Carbon Strategy and European policy. Competition between a Europe that has chosen to decarbonise very rapidly and the rest of the world will be unequal if carbon adjustment mechanisms at the borders are not implemented. This is undoubtedly one of the main challenges for industrial policy in the years to come.

In addition, the digital transition, particularly the development in the use of artificial intelligence, will be at the centre of issues of productivity and competitiveness, notably in the manufacturing sector. Since French companies lag behind similar countries in digital technology, policies to encourage innovation and support companies must be accorded the upmost importance.

Finally, the slowdown in the pace of integration of global value chains, and the development of international trade has fostered a heightened awareness of the challenges of sovereignty, which the health crisis has done much to accentuate. This context should not lead to the raising of trade barriers in Europe, but rather to focusing strongly on a real level playing field. Such a situation encourages all economic and social players in Europe to take a renewed interest in issues related to industrial development.

The ability of French industry to seize the opportunities of this new competitive environment will largely depend on measures adopted by public authorities to continue improving the fiscal environment, to implement relevant training policies, to create means to promote innovation, and to set up mechanisms to redirect savings towards productive and competitive jobs, above all through the financing of venture capital.

Keywords: industrial policy, French industry, public intervention, strategic state, sectoral policies, deindustrialisation, re-locations



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