FRANCE STRATÉGIE
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Attractiveness factors of production and innovation sites and head offices in Europe

NOTE DE SYNTHÈSE

NOV. 2020

Globalization has greatly increased possibilities of serving a national market from foreign locations and thus, to optimize individual components' production costs, which has contributed to value chains fragmentation over the past decades. Competition has developed, including between European countries, in attracting foreign direct investment on their territory. Many surveys conducted with company managers exist, identifying key factors in company location choices, but the empirical literature remains inconclusive. The presently summarised study by France Stratégie[1] uses foreign direct investment data compiled by Business France in 27 European countries to conduct an econometric analysis to identify factors determining multinational companies' location choices.

This work focuses on the most mobile functions and, therefore, most influenced by production costs, the general business environment, and public policies: production units, innovation centres, and head offices. Although multinational companies place production costs reduction at the centre of their location choices, this dimension coexists with other considerations. In terms of attractiveness, the analysis confirms, for example, that production sites are more sensitive to labour costs than innovation centres and head offices. A 10% decrease in France's labour costs would thus lead to a 10% increase in the share of production investments received by France. However, this empirical work confirms the importance of two other factors in location choices:

- Given the resulting synergies, companies tend to co-locate their production units and innovation centres within the same territory. Indeed, for a company, the presence of a production centre in France increases the probability of setting up an innovation centre by approximately 74%. In return, the presence of an innovation centre in France increases the likelihood of setting up a production centre by about 62%.

- Another determining factor in the choice of location is the tax environment. France has a high corporate income tax and production tax rates. In return, it offers significant tax incentives for R&D through a generous research tax credit system. If France had the same production tax level as its partners, its share in the total number of production site creations by non-European multinationals in Europe would increase by 18%. If corporate tax rates were harmonized in Europe, France's share of company head offices would increase by 70% to achieve 13% of the total. If this were completed with the harmonization of production taxes, head offices' increase would be over 130%, reaching 17% of the total number. Conversely, its share in innovation centres set up by foreign multinationals could decrease by 30% if all European countries adopted the same level of R&D tax aid.

These results need to be confirmed and clarified by other studies, particularly in the aim to overcome two of the analysis limitations: on the one hand, the econometric study focuses solely on investments in Europe by non-European companies; on the other hand, the analysis takes into account each location decision in the same way, regardless of the amount of investment, since the latter is only provided in a limited number of cases.

1. The present note summarizes the working paper of A. Lachaux and R. Lallement (2020), Les facteurs de localisation des investissements directs étrangers en Europe. Le cas des sites de production, d'innovation et des sièges sociaux, *Working paper*, n°2020-16, France Stratégie, November.

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INTRODUCTION

Multinational companies are one of the main vectors of globalization, notably through their location choices which have increasingly transcended national borders for several decades. The resulting geographic fragmentation of their value chains has been the subject of much criticism in the recent years. This partial questioning corresponds to a context of recent trade conflicts and the growing need to better consider certain social, environmental or health dimensions. For example, the crisis that emerged in early 2020 during the coronavirus epidemic in China has sometimes been interpreted as accelerating the return to less global and more regional value chains[2].

In the same way, and for the sake of preserving their sovereign interests, public authorities in Europe are increasingly trying to protect themselves against the takeover of companies by non-European buyers in sectors considered to be strategic. Thus, the European Union (EU) adopted a regulation in March 2019, allowing member countries to carry out adequate foreign direct investment filtering (FDI) from third countries, regardless of the sector concerned. One year later, while the spread of Covid-19 in Europe has led to an increased risk of economic vulnerability, due in particular to the collapse of stock market prices, 14 member states have already established national mechanisms for such an a priori control of FDI. Similarly, the European Commission calls on member countries to be precautious, to preserve critical assets of their strategic industries[3].

Apart from these relatively new defensive provisions, EU principles remain the opening and free movement of capital, including from third countries. Even in times of crisis, attractiveness remains more than ever at the centre of public authorities' concerns, both at the national and regional levels. Regarding multinational companies that weigh the benefits of different location sites, what can be done to attract them and persuade them to set up mutually beneficial operations, i.e., to sustainably invest in business segments that generate significant economic benefits and job creation in the host region? In terms of beneficial impacts for the host country, three activity segments are particularly interesting: production units, innovation centres and head offices. To what extent do foreign direct investment (FDI) determinants differ according to these three functions? What co-location effects are observed between these functions? In particular, what is the degree of geographical coupling between production sites and innovation centres?

Among the factors explaining FDIs, what is the tax framework's role, as a push or a pull factor, in the case of European countries and especially for France? What about the pressure of corporate taxes or production taxes, particularly for the attractiveness of production sites or head offices? To what extent are tax incentives for research and development (R&D) effective in attracting foreign multinationals projects?

The present study aims to identify, through an econometric analysis, the main factors underlying FDI location choices in Europe, with a particular focus on the case of France. In addition to the various statistical sources on explanatory factors, this econometric work is based on data from Business France's Europe Observatory[4]. This database covers FDI projects in 27 European countries and their 222 constituent regions over the 2007-2018 period, excluding merger and acquisition transactions.

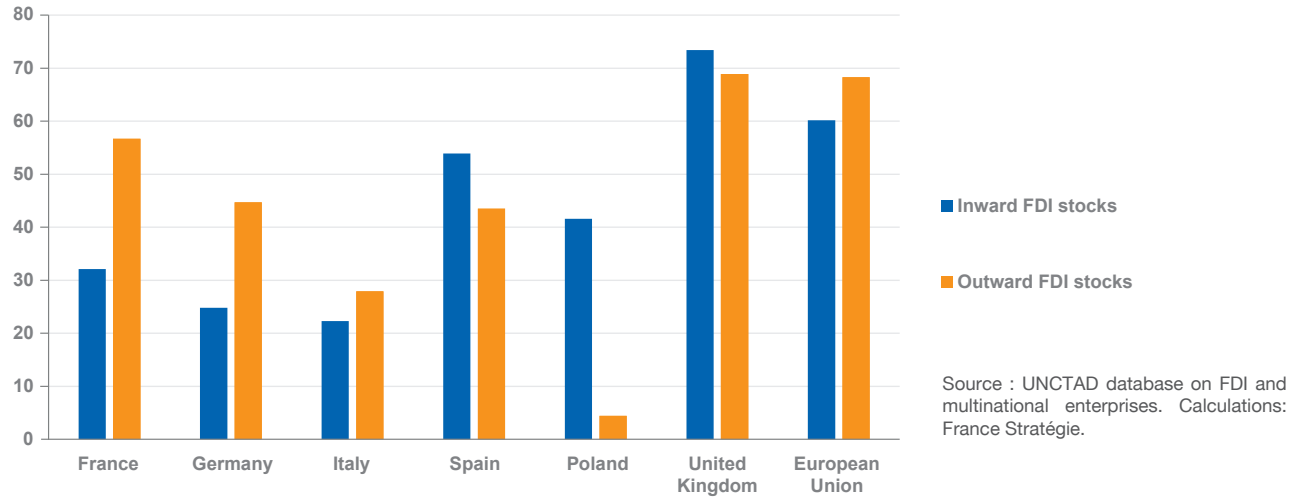
HOW ATTRACTIVE ARE EUROPEAN COUNTRIES?

What do we know about France's unique position as a host country for FDI? What do subsidiaries of foreign groups bring to the host country? In terms of employment, Business France agency estimates that FDI decisions have enabled our country to create or maintain 30,302 jobs in 2018, including 11,300 in the industrial sector[5]. In addition, French companies under foreign control are more productive, offer higher wages, but also export and import more, compared to domestic companies with similar characteristics[6]. However, this finding is partly explained by a *cherry-picking* effect. Therefore, foreign multinationals often establish themselves in France by acquiring French firms that are more efficient than the average[7]. Mergers and acquisitions thus raise specific questions that interfere with questions of attractiveness and are left aside in this study: we focus on site creations or extensions.

When comparing FDI stocks to GDP (see figure 1 next page), France is a net investor abroad, as is the average of EU countries, but even more so. However, this overall diagnosis of countries' relative position in terms of FDI is difficult to interpret in terms of attractiveness. Indeed, it can also

2. See Artus P. (2020), "Coronavirus in China: the coup de grâce for global value chains", Natixis, *Flash Économie*, No. 172-2020, February 6.
3. European Commission (2020), *Guidance to the Member States concerning foreign direct investment and free movement of capital from third countries, and the protection of Europe's strategic assets, ahead of the application of Regulation (EU) 2019/452 (FDI Screening Regulation)*, Communication C(2020) 1981 final, Brussels, 25 March.
4. As such, it follows up on Montout S. and Sami M. (2016), "Determinants for locating research and development activity in Europe", *International Economics*, vol. 145, p. 7-20.
5. Business France (2019), *Bilan 2018 des investissements internationaux en France*, April.
6. Fontagné L. and Toubal F. (2010), *Investissement direct étranger et performances des entreprises*, Rapport, n° 89, Conseil d'analyse économique, Paris.
7. Fontagné and Toubal (2010), *ibid.*

Graph 1 – Inward and outward direct investment stocks in 2019 (% of GDP)



Source : UNCTAD database on FDI and multinational enterprises. Calculations: France Stratégie.

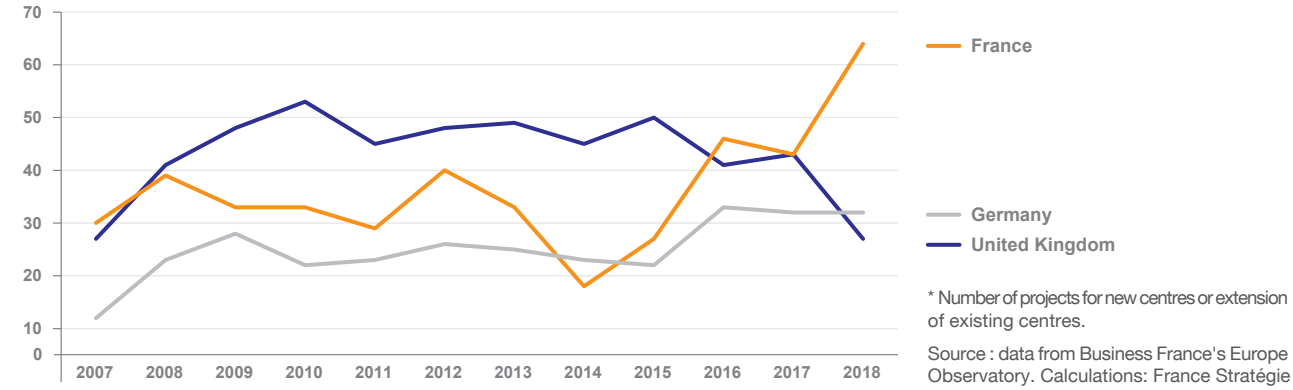
be explained by other factors. From the host country perspective, in particular, the relative importance of FDI is partly due to the countries' size, bearing in mind, for example, that in general, the relative weight of inward FDI is greater in a small country than in a large one.

If the geography of production activities is partly the result of multinationals' location choices, the same phenomenon also applies to innovation activities. However, globalization in this area came about later, in a less profound manner, and is still characterized by a very high concentration, especially within metropolitan areas[8]. This is the reason why globalization has been a significant factor in the development of innovation activities. In this respect, France has demonstrated an international attractiveness that is generally close to that of the United Kingdom and Germany. An improvement in France's relative position has been observed since 2014, to the point that in 2018 it ranked first among European host countries for the number of innovation centre projects, well ahead of Germany and the United Kingdom (see graph 2). This paper analyses the respective roles of tax incentives and other factors in foreign multinationals' investment choices in Europe to better understand these differences in attractiveness.

ECONOMETRIC ANALYSIS: CHOSEN APPROACH AND USED DATA

In our econometric model, a company considering investing must choose its destination from a set of distinct territories in Europe. It then compares its profit in each territory and selects the most profitable one. Thus, the investment destination indicates where the company is most profitable for the type of activity under consideration. The analysis uses each territory's data to explain the differences in profitability between the possible location choices. These are the attractiveness factors. Under certain hypotheses concerning other not considered factors, the model (conditional logit) makes it possible to estimate companies' sensitivity (or elasticity) to attractiveness fac-

Graphique 2 – The three main host countries for innovation centre projects in Europe between 2007 and 2018 (in number of projects*)



* Number of projects for new centres or extension of existing centres.

Source : data from Business France's Europe Observatory. Calculations: France Stratégie

8. Crescenzi R., Iammarino S., Ioramashvili C., Rodríguez-Pose A. et Storper M. (2019), *The Geography of Innovation: Local Hotspots and Global Innovation Networks*, WIPO, Economic Research, Working Paper, No. 57.

tors. Another econometric model (random parameter logit) is also considered to observe differences in companies' sensitivity to taxation variables.

To determine attractiveness factors to be selected *a priori*, the study starts with reviewing the theoretical and empirical studies available on the determinants likely to exert the most influence on multinationals' location choices abroad. The attractiveness factors selected are of two types. First, there are factors specific to a territory and shared by all firms. These are the macroeconomic determinants. These factors include market size, labour costs, education levels, regulatory barriers to investment and trade, and taxation. Three tax variables are considered here: corporate taxes (legal and effective rates), taxes on production, and tax incentives for research. In addition, EU membership or non-membership of the countries in the study and the vote on Brexit in the case of the United Kingdom are also taken into account.

Second, the importance of specific determinants to a territory and a firm or a small group of firms is assessed. In particular, we observe the effects of functional and sectoral agglomeration and the effects of functional co-location. Agglomeration effects correspond to several firms' economies of scale in the same sector or operating in the same function within a territory. Co-location effects concern the economies of scale achieved by a company that groups together the different stages of the value chain within the same territory. Finally, the cultural distance between the country of origin and the country of destination of the investment is taken into account *via* a variable indicating the existence of a common language between these two countries.

The foreign direct investment data used is provided by Business France and relates to the number of projects of creation or extension of pre-existing sites. There were 38,615 investment projects[9] in Europe over the 2007-2018 period, involving 23 sectors and more than 18,000 different companies. 27 countries of destination are selected: 25 members of the European Union and Norway and Switzerland. This FDI data concerns only cross-border investments. For example, domestic country choice (investing in France for a French company) is therefore not included in the database. To avoid possible selection bias in the estimates – because firms' investment decisions in their home country cannot be taken into account due to lack of data, the econometric study is limited to investments by firms whose domestic base (home country) is outside Europe.

At the regional level, since 2012, the database specifies the region of destination of the investment in 90% of cases. This allows for a breakdown into 222 regions, most of which correspond to Eurostat's NUTS 2 regions (Nomenclature of Territorial Units for Statistics, level 2). Estimates are made at two levels. The first level comprises 27 European countries and the second level includes their 222 regions. For econometric estimates at the regional level, a distinction is made between regions within the same country according to variables relating to agglomeration, co-location, market size and education level. Map 1 shows the number of investments received by each European region. The geographical distribution of investments highlights the great differences in attractiveness between European regions and between regions within the same country. In particular, there is an intense concentration of investment in certain urban regions.

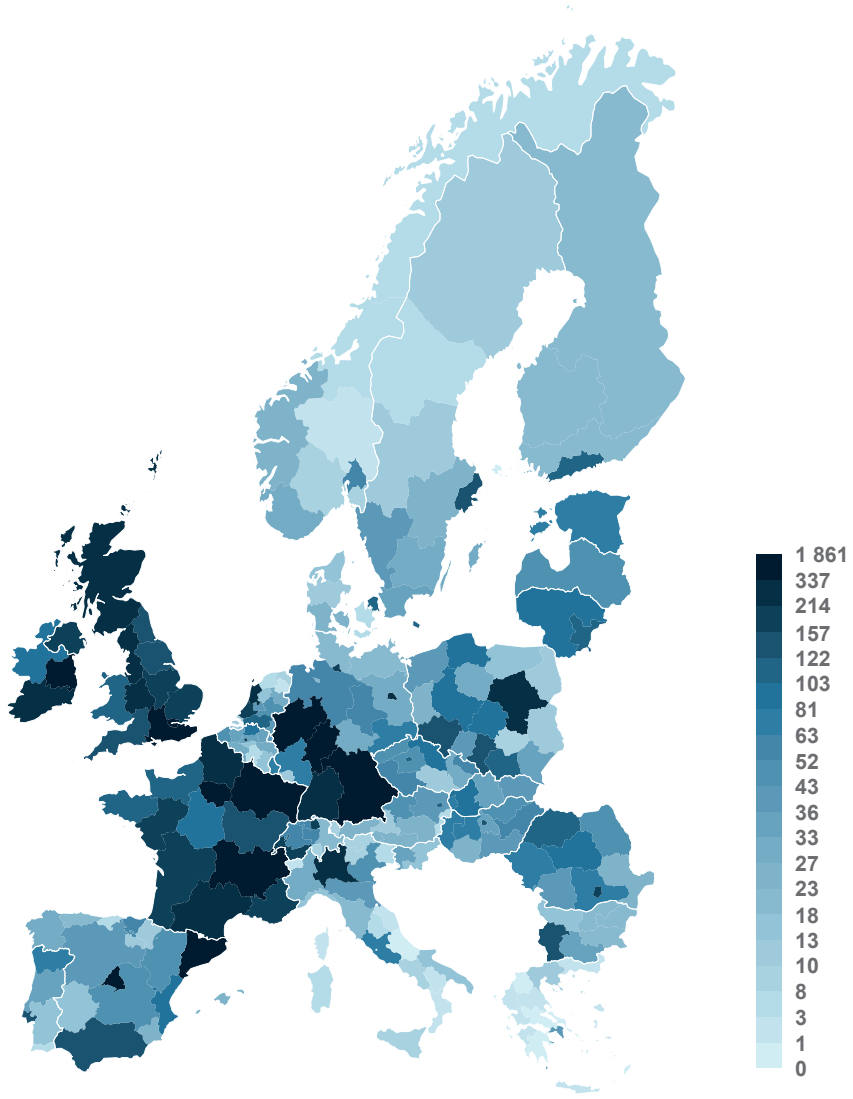
Business France's data differs from the data usually considered about FDI, i.e. balance of payments data. Indeed, the latter is only partially internationally comparable for the intra-group loan component, which is highly volatile and corresponds largely to tax optimization considerations, leading to a statistical bias. The Business France database also ignores mergers and acquisitions, whose motivations go beyond the attractiveness of the country of the companies involved. Despite these differences, the two types of data overlap quite widely (correlation of 0.79 between the two distributions).

These data also have the advantage of distinguishing investment projects according to the main functional activity concerned (production, innovation, decision centre, logistics, etc.). This breakdown corresponds to the different stages of the value chain. We focus on three functions considered more mobile: head office, production and innovation. Three other functions (logistics, business services and personal services) are not covered in this analysis because their location is primarily determined by the need to serve the local demand. On the contrary, the functions considered more mobile can serve demand in a much larger market, often to a continent scale, and are thus a more relevant measure of attractiveness.

The study shows that European countries have different specializations in terms of attractiveness. The relative share of investments received within each country for each function is calculated compared to the average share for all countries. Map 2 shows the functions for which a country's share is higher than the European average. In this sense, this map indicates the comparative advantages of countries concerning the functions of investments that they attract in priority. It can thus be seen that countries

9. 40% of investments are made, 23% are triggered, 25% are decided. For the remaining 12%, the progress of the project is not specified in the database.

Map 1 – Number of incoming FDI projects by region (2012-2018)



Note: Investments come from European and non-European countries and cover all functions. Belgium and the Netherlands are not very dark on the map for two main reasons: 1) both countries have a large number of NUTS2 regions (11 and 12, respectively) in proportion to their size, because their population is large in a limited area; 2) the share of foreign direct investment entering the Netherlands appears lower than in the balance of payments data because a large proportion of it corresponds to intra-group loans rather than "real" investment (share capital).

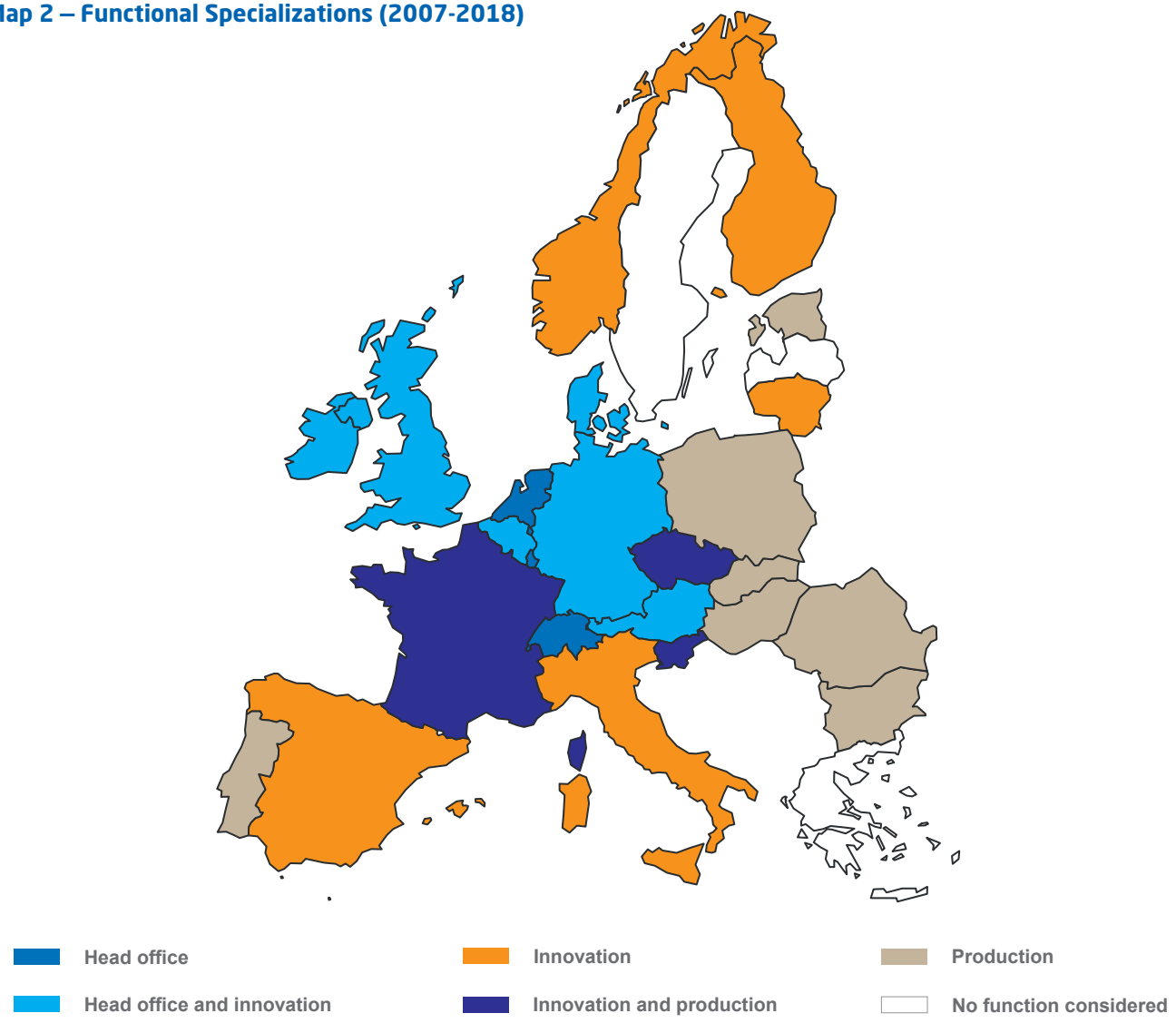
Source: Business France. Calculations: France Stratégie.

assimilated to tax havens (Luxembourg, Switzerland, etc.) tend to specialize in head offices; Central and Eastern European countries tend to specialize in production, while Western countries (including France) tend to specialize in innovation.

The results show that the coefficients associated with attractiveness determinants are most often of the same sign for the three functions considered (see Table 1 on the next page). However, in line with what most empirical works show, the level of sensitivity to these determinants and the degree of significance of the coefficients differ according to the functions. Regarding macroeconomic determinants, and in a classical way, investment decisions depend largely on market size, while regulatory barriers to investment and trade negatively affect a territory's attractiveness. Moreover, sectoral agglomeration, functional agglomeration and the sharing of a common language seem to have a significant and positive impact on investment decisions in the three functions under consideration.

Differences in economic sensitivity between the various functions are apparent. For example, a high level of labor compensation has a negative effect in the case of production activities. On the other hand, in the case of head

Map 2 – Functional Specializations (2007-2018)



Note: Investments come from European and non-European countries and cover all functions.

Source: Business France. Calculations: France Stratégie.

offices, the impact of wages is, on the contrary, positive. This is no doubt explained by the fact that the salary level in the head offices is without comparison with regional average salary levels and that a high average salary reflects the presence of a large number of managers and favourable amenities to the installation of this type of functions. On the other hand, the non-EU membership of Switzerland and Norway does not seem to affect their attractiveness for production activities and head offices. This reflects the fact that these countries are highly integrated within the European Area. Finally, the variable representing the referendum's result on Brexit seems to negatively affect the United Kingdom's attractiveness for innovation centres and headquarters.

MAIN RESULTS OF ECONOMETRIC ESTIMATES

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Table 1 – Location factors for foreign investment in Europe

Factor	Innovation	Head Office	Production
EU Membership	+	0	0
Brexit	−	−	0
Market Size	+	+	+
Cost of labour	0	+	−
Education	+	−	0
Regulatory barriers	−	−	−
Common language	+	+	+
Sectoral agglomeration	+	+	+
Functional agglomeration	+	+	+
Co-location Innovation		0	+
Co-location Decision centres	+		+
Co-location Production	+	0	
Corporate income tax	0	−	0
Taxes on production	0	−	−
Tax support for R&D	+		

Note: + positive effect, - negative effect, 0 no significant effect at the 10% threshold. Significant effects at the **1%**, **5%**, 10% threshold. Estimates with the conditional logit model at the national level for site creation investments only. The dependent variable is the choice of investment destination.

agglomeration and the sharing of a common language seem to have a significant and positive impact on investment decisions in the three functions under consideration.

Differences in economic sensitivity between the various functions are apparent. For example, a high level of labor compensation has a negative effect in the case of production activities. On the other hand, in the case of head offices, the impact of wages is, on the contrary, positive. This is no doubt explained by the fact that the salary level in the head offices is without comparison with regional average salary levels and that a high average salary reflects the presence of a large number of managers and favourable amenities to the installation of this type of functions. On the other hand, the non-EU membership of Switzerland and Norway does not seem to affect their attractiveness for production activities and head offices. This reflects the fact that these countries are highly integrated within the European Area. Finally, the variable representing the referendum's result on Brexit seems to negatively affect the United Kingdom's attractiveness for innovation centres and headquarters.

Regarding the effects of co-location, i.e., the economies of scale enjoyed by firms that unify certain stages of their value chain within the same territory, we observe that firms are particularly sensitive to these incentives in their decision to locate production and innovation activities.

Indeed, the prior existence of a production centre in France increases the probability of setting up an innovation centre by about 74%. In return, the previous presence of an innovation centre in France increases the likelihood of setting up a production centre by approximately 62%. However, the difference between these two effects is not significant. In other words, location decisions concerning innovation and production activities influence each other and in a relatively symmetrical way, without having one of the two effects outweighing the other.

The random parameter logit model specification allows evaluating the economic sensitivity dispersion of firms to tax variables. Therefore, firms seem to react heterogeneously to R&D tax incentives for their innovation centres, potentially due to some firms' non-use of these incentives. The heterogeneity of reactions is also true with respect to production taxes and corporate income tax, for production activities, and with respect to the effective corporate income tax rate, for head offices. Differences in profitability, capital structure or tax avoidance may explain these results. Indeed, a company practising tax avoidance is not affected in the same way by the taxation of a country as a company not practising tax avoidance.

In addition, tax variables affect location choices differently, depending on the function under consideration. For innovation activities, the only significant effect (with the expected positive sign) concerns R&D tax incentives. For production activities, production taxes seem to have a significant impact but not the corporate tax rate. For head offices, both production taxes and effective corporate taxes seem to affect location choices significantly negatively. The fact that corporate taxes have a significant negative impact only on head offices can be interpreted as a sign of tax optimization.

Thus, estimates suggest that a €5bn[10] reduction in production taxes would lead to a 2.3% increase in the probability of a company locating a production centre in France (see Table 2). Reaching the production taxes level in Germany (0.6% of GDP in 2018) with a 2.3 GDP point drop in production taxes in France (€54bn in 2018) would increase this probability by about 25%. As for labour costs, a €5bn decrease[11] would increase the likelihood of production sites being located in France by 0.6%. An equivalent increase in R&D tax incentives (€5bn)[12] would result in a 43% increase in the share of innovation investments received by France. Finally, a €5bn[13] cut in corporate income tax would lead to an 8% increase in the likelihood of choosing France for locating their headquarters by non-European multinationals. By comparison, a 25% reduction in the index of barriers to trade and investment in France (i.e., Switzerland's level) would increase the probability of investing in France for production, innovation and headquarters activities by 7%, 8% and 15%, respectively.

TAX HARMONIZATION EFFECTS: LESSONS LEARNED FROM A SIMULATION EXERCISE

To provide an overview of tax variables' effects on European countries' attractiveness, a simulation exercise is presented, based on the assumption that European countries have a harmonized tax environment. In this scenario, European governments would offer the same fiscal environment

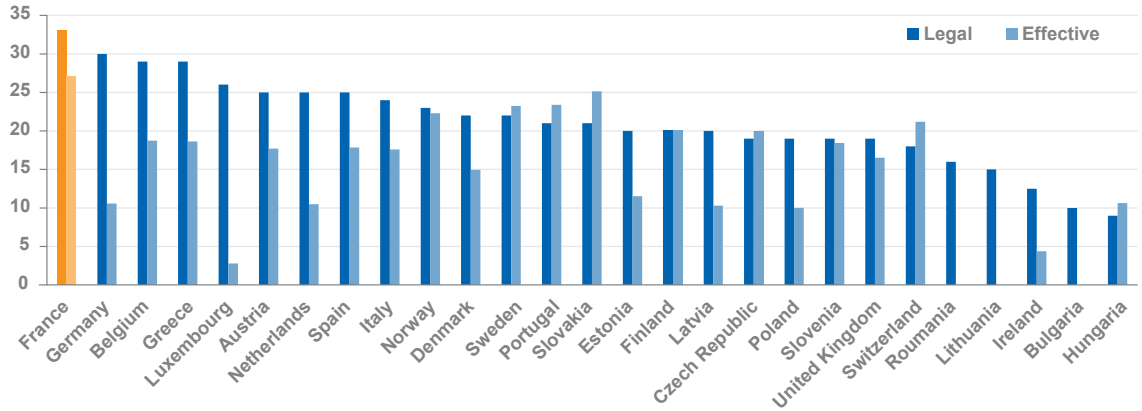
Table 2 – Increase in the probability of choosing France

	Production	Innovation	Head Office
5 billion decrease in corporate income tax	0	0	7,9%
5 billion decrease in production taxes	2,3%	0	6,6%
5 billion increase in R&D aid		42,6%	
5 billion decrease in labour costs	0,6%	0	–

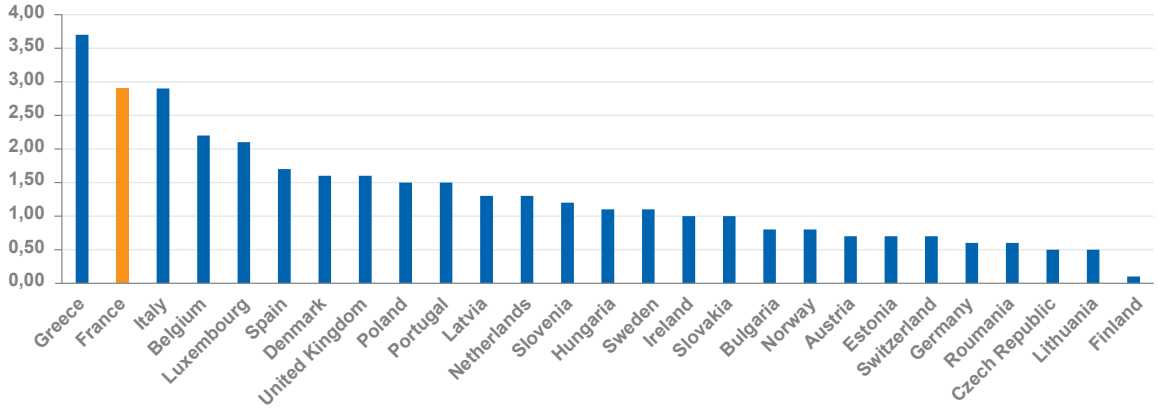
Note: insignificant (0) or negative (-) effect. Estimates with the conditional logit model at the national level for the investments for site creation only.

10. Or 0.21% of France's GDP in 2018.
11. Gross wages and salaries represented €905 billions in France in 2018, according to Eurostat. A decrease of €5 billions represents a decrease of approximately 0.55% in labour costs if distributed proportionally across all salaries.
12. The tax receivables associated with R&D aid is approximately €6 billions. Thus, a €5 billion increase in this claim represents an increase in the implicit R&D tax assistance rate of roughly 83.3%.
13. Corporate tax revenues were amounting to €63.5 billions in 2018, according to Eurostat. Therefore, a decrease of €5bn represents a decrease of approximately 7.9% in the corporate tax rate.

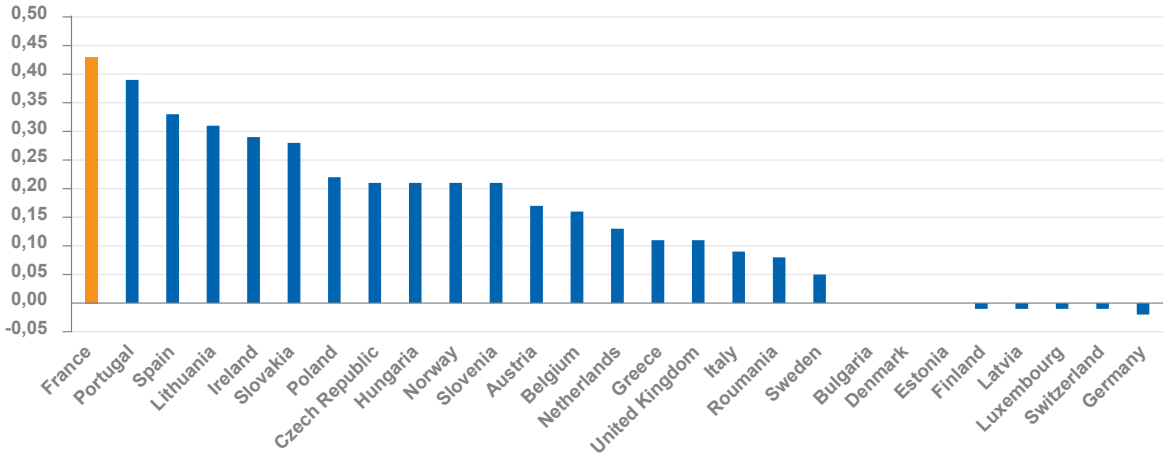
Grap 3 – Taxation levels in European countries



Corporate tax rates (%, 2018)



Taxes on production (% of GDP, 2018



Implicit tax assistance rate on R&D expenditures (2018)

Note: As the effective corporate tax rate is not available for Romania, Lithuania and Bulgaria, it is assumed to be identical to the statutory rate.

Source: Data from KPMG, Tørsløv *et al*. (2018)[14], OECD and Eurostat. Calculations: France Strategy

14. Tørsløv T. R., Wier L. S. and Zucman G. (2018), The Missing Profits of Nations, NBER, Working Paper, No. 24701, June.

to companies. This alignment is assumed to concern corporate tax rates, the relative weight of taxes on production, as well as R&D tax incentives. Figure 3 presents the fiscal environment before harmonization. This simulation exercise leaves open the question of whether this tax harmonization leads to the adoption of a relatively substantial degree of taxation (biggest bidder logic) or, on the contrary, is the result of tax competition leading to a drastic reduction in corporate taxation (lowest bidder logic). Indeed, in this simulation exercise, the result is the same in either cases.

These results should be interpreted with caution. A major limitation of the underlying reasoning is that it is in terms of the probability of investment and not in terms of amounts invested or job creation. Furthermore, the empirical approach assesses the determinants of investment in Europe from the rest of the world. The configuration considered corresponds to a zero-sum game in which a change in one country's relative position has full repercussions on the other countries in the sample, thus neglecting the fact that European locations are also in competition with other regions of the world. Consequently, if the tax harmonization carried out in Europe led to a reduction in the tax burden in Europe compared to the rest of the world, the total number of investments in Europe could increase and *ultimately* partially or totally offset any losses that may be incurred in certain countries as a result of this tax harmonization.

The results (see table 3) show the change in the proportion of investment from the rest of the world received by each

Table 3 – Change in share of received investments after tax harmonization

COUNTRY	Share of investments received before			Change induced by tax harmonization		
	Innovation	Head Office	Production	Innovation	Head Office	Production
Germany	14.8%	15.7%	9.9%	+35%	-33%	-11%
Austria	1.9%	0.6%	1.5%	+3%	-7%	+9%
Belgium	2.8%	2.7%	1.7%	+14%	+37%	+8%
Bulgaria	0.8%	0.3%	3.5%	-4%	-32%	-6%
Denmark	1.5%	0.8%	0.7%	+22%	+2%	+2%
Spain	5.7%	4.2%	6.6%	-18%	+18%	+3%
Estonia	0.3%	0.1%	1.0%	+12	-29%	-8%
Finland	2.4%	0.8%	1.3%	+10%	-10%	-15%
France	14.0%	7.4%	12.2%	-12%	+131%	+17%
Greece	0.8%	0.1%	0.9%	+32%	+93%	+29%
Hungaria	2.4%	0.2%	5.8%	-28%	-25%	-2%
Ireland	7.5%	16.0%	4.2%	-31%	-43%	-4%
Italy	4.8%	1.5%	3.3%	+20%	+54%	+18%
Latvia	0.3%	0.0%	0.8%	+18%	-22%	-2%
Lithuani	1.0%	0.1%	1.4%	-33%	-21%	-10%
Luxembourg	0.8%	2.5%	0.4%	+35	-33%	+7%
Norway	1.1%	0.7%	0.5%	-11%	+16%	-8%
Netherlands	5.3%	11.5%	2.8%	+6%	-22%	-2%
Poland	5.6%	0.9%	9.8%	-14%	-2%	+1%
Portugal	1.1%	0.8%	2.7%	-30%	+44 %	+1%
Czech Republic	2.7%	0.3%	4.1%	-18%	-2%	-10%
Roumania	2.2%	0.7%	6.9%	-6%	-15%	-9%
United Kingdom	14.0%	26.0%	11.6%	+0%	+10%	+2%
Slovakia	1.5%	0.1%	2.4%	-20%	+38%	-5%
Slovenia	0.4%	0.1%	0.9%	-14%	+8%	-3%
Sweden	2.0%	0.3%	1.4%	+11%	+30%	-4%
Switzerland	2.2%	5.9%	1.5%	+10%	+8%	-8%

Note: the share of investments received is calculated in terms of the number of location decisions and not the amount of investments. The share before harmonization is calculated using the coefficients estimated over all periods (2008-2018) and the average value of the location factors in 2018.

European country following tax harmonization, which would be effective in 2018. Above all, the results show the important impact that taxation has on companies' decision to invest in the most mobile business functions. These evolutions are strongly contrasted between countries and between different functions. Such a tax alignment would result in fewer decisions to locate head offices in Luxembourg, the Netherlands, Ireland and Germany. Conversely, France, Italy, Greece and, to a lesser extent, Portugal, Belgium, Sweden and Slovakia would benefit from such tax harmonization in terms of head office location attractiveness.

According to this simulation, France's attractiveness for innovation would be slightly diminished because its generous R&D tax incentives would then no longer be effective, at least compared to other European countries. Conversely, France would benefit from this fiscal federalism for production activities and head offices, for which it currently has an unattractive tax system. The situation is broadly reversed across the Rhine river, since this simulation suggests that Germany would welcome relatively less investment for production and head offices. Nevertheless, the results corroborate the idea that Germany's attractiveness for innovation activities would most likely benefit from tax harmonization or, in the shorter term, from the recent introduction in this country of an R&D tax credit. At the European level, the introduction of a European tax incentive for R&D is part of the reflections aimed, within the EU, at harmonizing corporate taxation through the establishment of a common consolidated corporate tax base.

Another simulation consisting of harmonizing only one tax variable at a time gives slightly different results. Thus, if France had the same production tax level as its partners, its share in the total number of production site creations by non-European multinationals in Europe would increase by about 18%. If corporate tax rates were harmonized in Europe, France's share as a host country for head offices would increase by nearly 70% to achieve 13% of the total. Conversely, its share in innovation centres set up by foreign multinationals could decrease by 30% if all European countries adopted the same level of R&D tax incentives.

CONCLUSION

To assess the degree of attractiveness of France and other countries for foreign multinationals investments, the studies are most often based on FDI data taken from the balance of payments. These indicators lead to ambiguous results. While France has shown a rather growing capacity since 2016 as a host country to attract FDI, unlike most other EU countries and, even more so, the United Kingdom, it demonstrates an even greater dynamism as origin country of FDI. In other words, France is clearly a net investor abroad, largely above the EU average. However, for an interpretation in terms of attractiveness, these FDI data in value terms have only an imperfect relevance. Indeed, these flows are subject to high volatility and have limited comparability because of how intra-group loans are recorded, which are very much in line with tax optimization logics. Moreover, this data is highly dependent on mergers and acquisitions, which are largely explained by other factors than considerations of territorial attractiveness, in particular considerations of the know-how, trademarks and patents that the acquiring company is seeking to acquire.

The study uses data on international investment projects to go beyond this ambiguous observation, allowing us to focus on site creation and extension projects - excluding mergers and acquisitions - and distinguish projects by the function they fulfil within the company's value chain. Thus, the study seeks to explain multinationals' location choices for their production and innovation sites and head offices. That is, for the three types of activity (or functions) that can be considered the most mobile and the most influenced by the quality of the business environment. One limitation of the analysis is that the econometric study focuses only on investments in Europe by non-European companies, to avoid the selection bias associated with the fact that European multinationals' decisions to invest in their own country are not known. Another limitation lies in the fact that the analysis takes into account each location decision in the same way regardless of the amount of the investment, as this amount is only reported in a limited number of cases. Further work is underway to complete the analysis on these two points.

Although multinational companies put the reduction of production costs at the centre of their location choices, this dimension coexists with other considerations. In terms of attractiveness, the analysis confirms that production sites are more sensitive to labour costs than are innovation centres and head offices. However, this empirical work confirms the importance of two other factors in location decisions.

- First of all, because of geographical synergies, co-location effects encourage companies to group their production units and innovation centres within the same territory. Therefore, it would be illusory to assume that the location of firms' innovation activities tends to be systematically decoupled from that of their factories, to the extent that a country such as France could be sustainably attractive to the former without also being attractive to the latter. These co-localization effects probably also apply to direct investments made abroad by French multinationals. If the shift of their value chain towards China began with production units, it appears that it has continued over the last fifteen years or so also from the point of view of R&D centres[15]. Nevertheless, the study reveals that the opposite phenomenon is no less plausible: innovation centres have a relatively high power of attraction on production activities and vice versa, without the study allowing us to confirm one effect's superiority over the other.

- Secondly, tax systems put in place by public authorities have an impact on the investment decisions of the companies in question in several ways. Overall, tax incentives for R&D positively influence the location of innovation activities, while head offices are attracted to regions with low corporate tax rates, while taxes on production have a repulsive effect on both production activities and head offices. Yet France is not only the country in Europe with the highest tax pressure in terms of corporate and production taxes but also one of those - along with Belgium - that offers the most important tax incentives for R&D. The econometric results support the idea that in France, the planned reduction of the corporate tax rate to 25 percent by 2022 should improve the attractiveness of the country for the location of head offices.

15. See Lavergne M.-A. and Lemoine K. (2016), "La mondialisation des activités de R&D des entreprises: où en est la France? "Direction générale du Trésor, *Trésor Éco*, No. 183, October

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