



# JRC SCIENCE FOR POLICY REPORT

From the complete publication:

## RIO Country Report 2015: France

Chapter:

*3. Public and private  
funding of R&I and  
expenditure*

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**Abstract**

The 2015 series of RIO Country Reports analyse and assess the policy and the national research and innovation system developments in relation to national policy priorities and the EU policy agenda with special focus on ERA and Innovation Union. The executive summaries of these reports put forward the main challenges of the research and innovation systems.

### 3. Public and private funding of R&I and expenditure

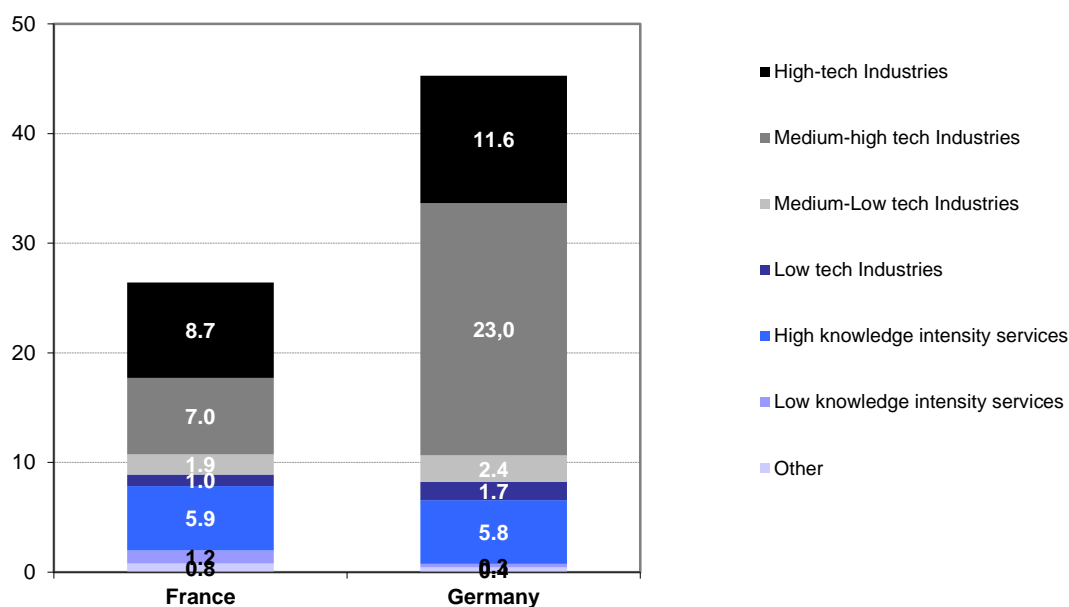
#### 3.1 Introduction

In 2014, French GERD amounted to €48.1b, i.e. 2.26% of GDP. Slightly less than two-third (65%) of which correspond to business R&D (€ 31.2 billion). GERD has been increasing, though quite slowly, both in volume and in relative terms (GDP), at least from 2010. Nonetheless, 2.26% of GDP spent on R&D in 2014, is below the 3% target set by the EU in the framework of the Europe 2020 strategy. In EU 28, France is ranked 8<sup>th</sup> whereas Germany with 2,84% is at rank 5, and closer to the objective.

French GBAORD continues its decrease started in 2009 (it amounted to €17.5b back then), and reached 14.8b in 2014. But this amount is the second largest, though far from the German level of public outlays (€ 25.7b, in 2014). For the sake of the comparison, when measured by the share per inhabitant, France would be at the 11<sup>th</sup> rank.

Business R&D expenditures, although representing two-thirds of the share of GDP, are stable at 41% below the objective of 2%. As this is partially explained by the country's lowest and declining weight of the industry in the GDP<sup>1</sup>: the bulk of R & D is carried out in the industry, which in Germany occupies a more important place in the economy than in France

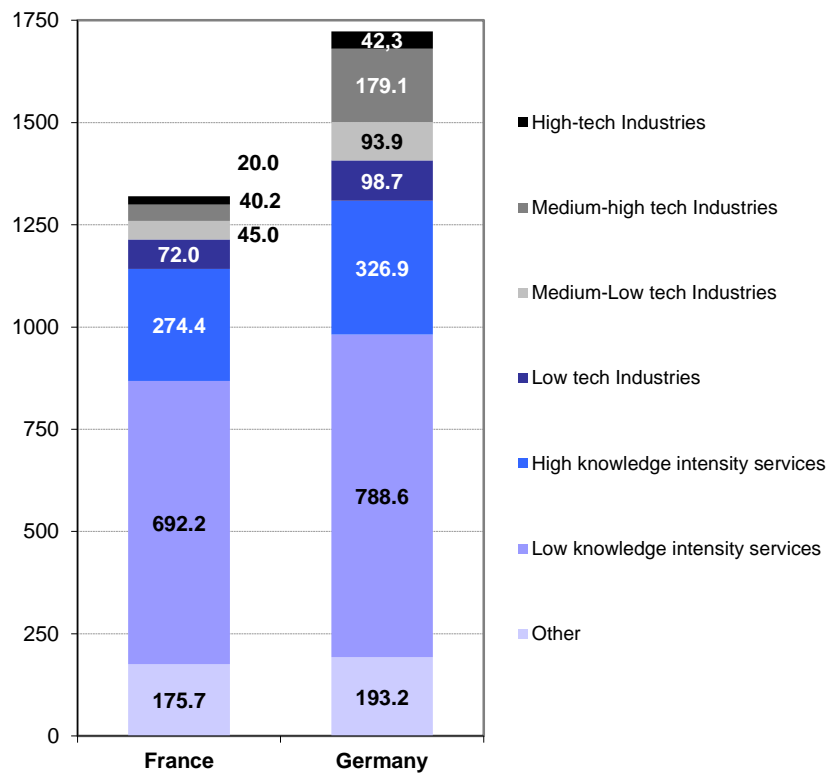
**Figure 1.** BERD, France vs Germany (2009), € billion



**Source :** « [Un déficit d'effort de recherche des entreprises françaises ? Comparaison France – Allemagne](#) », Note d'information 12.09, [July, MESR \(2012\)](#).

<sup>1</sup> « [Un déficit d'effort de recherche des entreprises françaises ? Comparaison France – Allemagne](#) », Note d'information 12.09, [July, MESR \(2012\)](#).

**Figure 2.** Added value, France vs Germany (2009), € billion



**Source :** « [Un déficit d'effort de recherche des entreprises françaises ? Comparaison France – Allemagne](#) », Note d'information 12.09, July, MESR (2012).

**Table 1.** Basic indicators for R&D investments (as of December 2015)

Indicator	2011	2012	2013	2014	2015	EU average (2015)**
GERD (as % of GDP)	2.19	2.23	2.23	2.26	N/A	2.03% (EU-28, 2014)
GERD (Euro per capita)	694.3	712.6	724.2	730.7-	N/A	558.4 (EU-28, 2014)
GBAORD (€m)	15 671	14 057	14 038	13 836	N/A	3315.3 (EU-28, 2014)
R&D funded by BES (% of GDP)	1.21	1.23	1.23	N/A	N/A	1.12% (EU-28, 2013)
R&D funded by PNP (% of GDP)	0.02	0.02	0.02	N/A	N/A	0.03% (EU-28, 2013)
R&D funded by government sector (% of GDP)	0.77	0.79	0.79	N/A	N/A	0.66% (EU-28, 2013)
R&D funded by HEI (% of GDP)	0.02	0.03	0.03	N/A	N/A	0.02% (EU-28, 2013)
R&D funded from abroad	0.17	0.17	0.18	N/A	N/A	0.20% (EU-28, 2013)
R&D performed by HEIs (% of GERD)	0.46	0.47	0.47	0.46	N/A	23.2% (EU-28, 2014)
R&D performed by government sector (% of GERD)	0.3	0.29	0.29	0.30	N/A	12.3% (EU-28, 2014)
R&D performed by business sector (% of GERD)	1.4	1.4	1.45	1.46	N/A	64.0% (EU-28, 2014)

Source: December 2015 EUROSTAT data

### 3.2 Smart fiscal consolidation

As pointed out in the Council Recommendation of 14 July 2015 (OJEU, 18 August 2015), France is currently “in the corrective arm of the Stability and Growth Pact”. Its 2015 Stability Programme therefore aims at correcting the excessive deficit by 2017 so that a structural deficit of 0.4 % of GDP could be reached by 2018. As a consequence, the Stability Programme 2015-2018 submitted by Agence France Trésor in April 2015 was entitled “A strategy for fiscal consolidation”. As regards the ‘smartness’ in terms of R&I funding, the Stability programme specifies four tax policies focuses, the promotion of “investment, entrepreneurship and innovation” being one of them. It further emphasises that innovative new companies that qualify as innovative start-ups (JEIs) do benefit from a full exemption from corporate income tax in their first three years and a 50% allowance for the next two years’ earnings. This makes the JEI scheme “the most effective innovation tax incentive in the European Union<sup>2</sup>”. At global policy level, R&I and higher education are considered as priorities for the current government; so, in order to keep fiscal consolidation smart while encouraging stakeholders to pursue the Europe 2020 target, tax credits (research; innovation and competitiveness) are the privileged fiscal tools. The R&D tax credit has thus been “ring-fenced”. The subsequent prominent

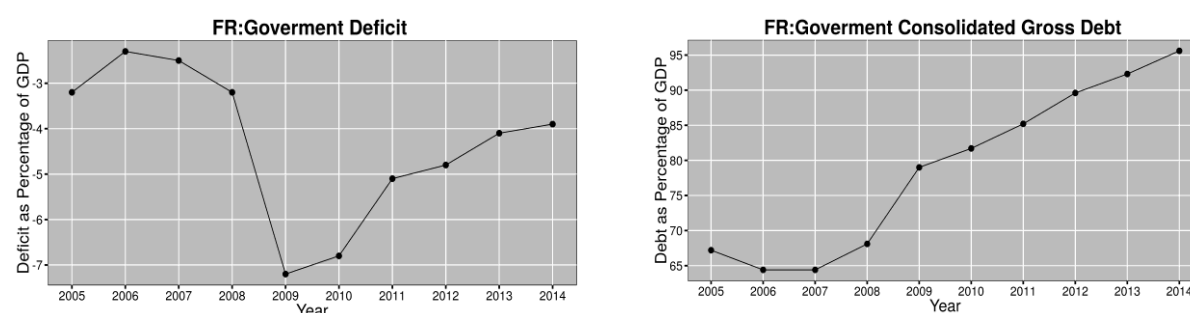
<sup>2</sup> According to “[A Study on R&D Tax Incentives Final report](#)” Working Paper N. 52, EC, 2014

– and exceptional on an international scale – indirect public funding of R&D should be noted though. The long term sustainability of this choice is to be questioned.

### 3.2.1 Macroeconomic context<sup>3</sup> and public R&D indicators

With only 0.2-0.7% of growth the French **GDP** has been practically stagnating throughout the last three years. However, due to strengthening confidence, low inflation and prolonged wage growth, consumer spending is expected to grow according to the 2015 EC Winter forecast. Consequently, economic growth is expected to accelerate to 1.1% in 2015, 1.3% in 2016, and 1.7% in 2017.

Government budget deficit was high already before the crisis and it remained excessive ever since. Since 2013 it is declining due to fiscal consolidation measures. However, based on the EC forecast, it is expected to remain above 3% throughout 2015-2017: 3.7% of GDP in 2015, 3.4% in 2016 and 3.2% in 2017. As a consequence of high deficits, government gross debt has increased continuously, accelerating since the crisis, reaching a 95.6% debt-to-GDP ratio in 2014, slightly above the euro area average (94.3%). According to the forecast, the Commission expects that the debt ratio continues increasing to 96.2% of GDP in 2015, to 96.8% in 2016 and to 97.1.% in 2017.



**Figure 3.** Government deficit and public debt  
Data source: Eurostat

Total GERD in France was 47,481 MEUR in 2013. There are three main sources of R&D funding: the business sector (26,126 MEUR), the government sector (16,721 MEUR), and the foreign funding (3,808 MEUR<sup>4</sup>). Domestic direct public funding goes to R&D institutes in business enterprises (2,485 MEUR), the government (5,191 MEUR) and the higher education sector (8,733 MEUR).

**Table 2.** Key French Public R&D Indicators

	2007	2009	2013
GBAORD, % of gov. exp.	1.39	1.59	1.24
GERD, % of GDP	2.02	2.21	2.24
out of which GERD to public, % of GDP	0.72	0.82	0.76
Funding from GOV to, % of GDP			
Business	0.12	0.12	0.12
Public (GOV+HES)	0.64	0.72	0.66
Total	0.77	0.86	0.79
EU funding, % of GDP	0.02	0.02	0.03

**Source:** Eurostat

<sup>3</sup> Sources: DG ECFIN, [http://ec.europa.eu/europe2020/pdf/csr2016/cr2016\\_france\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/cr2016_france_en.pdf)

<sup>4</sup> EU funding in 2013 was 719 MEUR

### 3.2.2 Direct funding of R&D activities

In this analysis the public sector as source of funds is given by the GOV part of the total intramural R&D expenditure (GERD), whereas the public sector as a sector of performance is the aggregation of GOV and HES. Figure 5, below shows the historical evolution of GERD financing in current prices in France.

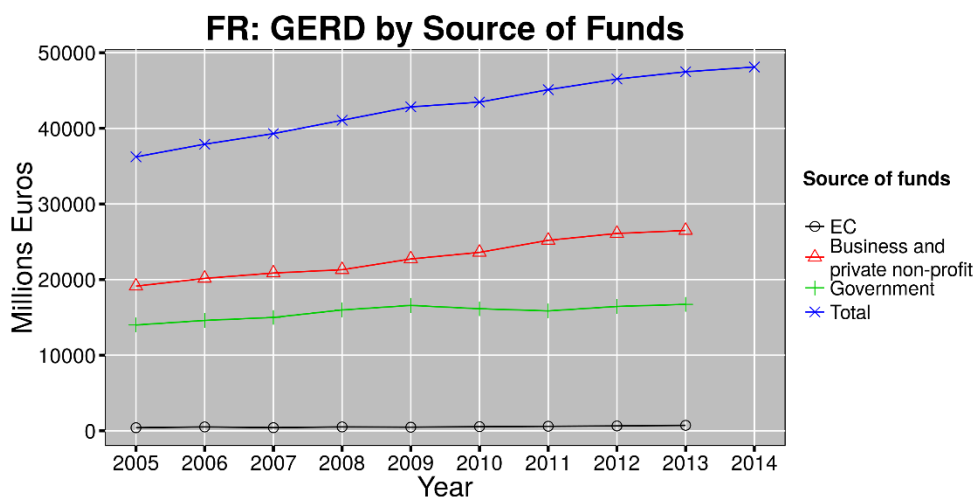


Figure 4. funding of total GERD

The total GERD has increased almost linearly in the period 2005-2013. The effect of the 2008-2009 crises is not very visible on the total GERD due to the increase of the funding from the business and private non-profit sectors from 2008 onwards. The private sector thus remains the largest source of funds for the French GERD. The direct funding from the government has essentially been stagnating over the last few years and the levels of 2012 are approximately the same as in 2008-2009.

The EC contribution represents a much more marginal share of the French GERD with respect to the public and private sector, respectively.

#### 3.2.2.1 Direct public funding from the government

Direct public funding is usually the main source of the total governmental support to R&D. Figure 6, below shows the time evolution of the total R&D appropriations (GBAORD) and the GERD directly funded by the government.

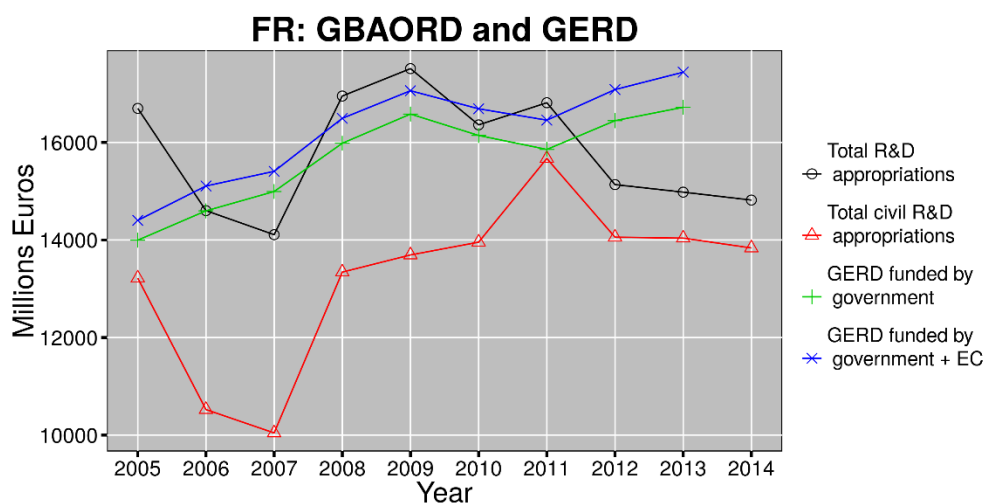


Figure 5. R&D appropriations and government funded GERD in millions of national currency  
Data source: Eurostat

The total appropriations have experienced a declining trend ever since 2009. Also from the same year, we observe a shrinking of the gap between the total and civil appropriations, a clear indication of the decrease in the allocations devoted to military R&D. This was not followed equally severe nominal cuts in civil R&D appropriations, which are at similar levels as before the beginning of the economic crisis in 2008. "

The most important reduction regards the National Research Agency (the main RFO) Since 2008, the credits allocated to National Research Agency were reduced by 35.6%.

Section 3.2.3, where the role of indirect funding is discussed, shows that the decrease of the R&D allocations in France in recent years is essentially compensated *in nominal values* by a system of tax incentives. In 2012 we notice that the GERD funded by the government is superior to the total R&D appropriations. This may be an artefact of the accountancy of external budget lines into the government GERD.

### 3.2.2.2 Direct public funding from abroad

The EU and the international organizations are the most important external public sources of R&D funding, as shown in Table 7, below:

**Table 3.** Public Funding from Abroad to French R&D

Source from abroad	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total	2727.41	2645.20	2939.97	3270.75	3013.42	3278.51	3494.76	3533.95	3808.24
BES	1632.90	1663.22	1983.65	2144.02	2017.99	2075.20	2296.56	2337.79	2486.06
EC	405.97	509.51	413.89	511.39	478.13	546.81	600.03	637.70	719.33
GOV	67.73	66.75	64.49	95.42	73.47	117.82	148.65	117.20	120.39
HES	0			0	0	0	0	0	0
International Organizations	620.81	405.72	466.36	519.93	443.82	538.67	449.52	441.27	482.47
Total as % GERD	7.53	6.98	7.48	7.96	7.03	7.54	7.75	7.6	8.02
EC as % GOVERD	2.9	3.49	2.76	3.2	2.88	3.39	3.78	3.88	4.3

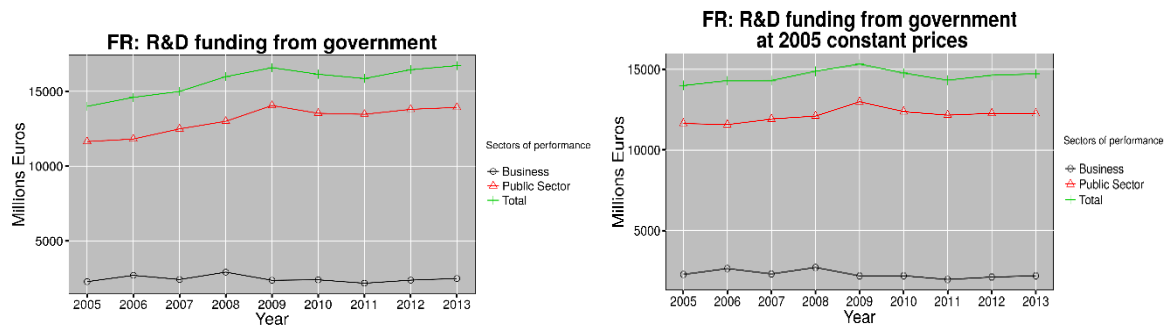
**Source:** Eurostat

It is worth mentioning that the business sector (which of course is not an external source of funds) is by far the most important source of external funds to French R&D. Among the public sources of external funding, the EC is the most important, but, despite some increase in its entity in the years after 2009, the EC contribution continues to amount to less than 4% of the R&D financed by government.



## Distribution of public funding

Figure 7, below shows how the distribution of public funding to sectors of performance evolved over time:



**Figure 6.** Government intramural expenditure by sectors of performance  
**Data source:** Eurostat

Unsurprisingly, the public sector (GOV+HES) is the main recipient of the funding from the government. A stagnation of the government funding after 2009 is observed. This is emphasized when expressed at 2005 constant prices.

### 3.2.3 Indirect funding – tax incentives and foregone tax revenues

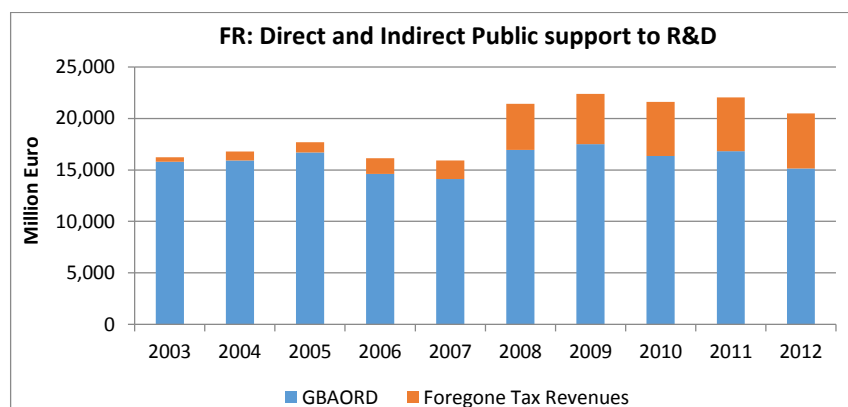
France offers research tax credit since 1983. In 2008 there was a major reform of the French R&D tax credit (the Crédit Impôt-Recherche, CIR). On the basis of a simple declaration, companies can benefit from a tax reduction for a large range of research-related spending. This measure has made the French tax credit scheme one of the most generous countries in the world.

In addition to the CIR, other R&D tax incentives have been developed in France such as the innovation tax credit (Crédit Impôt Innovation, CII, 2013)

**Table 4.** Foregone revenue due to R&D fiscal incentives (CIR).

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Amount (M€)	428	885	992	1,533	1,802	4,452	4,880	5,250	5,210	5,333

**Source:** Base GECIR, June 2014, Ministry of Higher Education and Research



**Figure 7.** Direct and Indirect R&D support

The figure above is based on data from the French Ministry of Higher Education and Research and presents the evolution of the relative size of direct and indirect R&D support by the French government. It can be seen that from 2008, tax credits for R&D account for about 30% of the total GBAORD (28% in 2009, 35% in 2012) compensating to a large extent the decrease in the allocated public funds *in nominal values*.

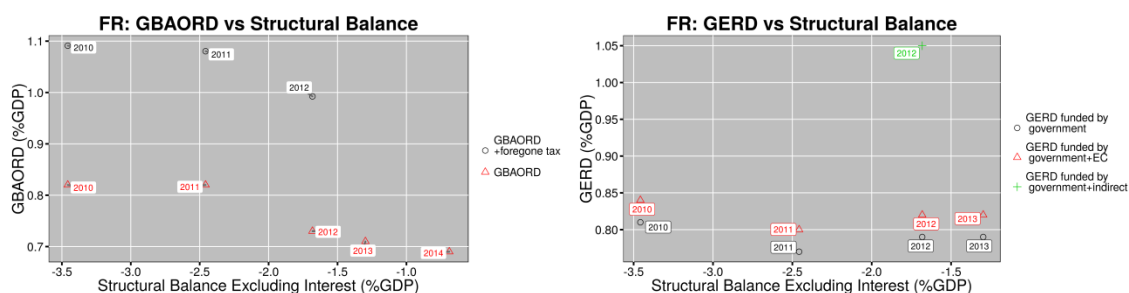
The evaluation of the tax credit incentive is an ongoing debate. Although the effect of the reform on company R&D activities is positive, the impact in terms of efficiency is considered ambiguous<sup>5</sup>. According to the French Court of Auditors, the mechanism leads to an increase in R&D spending beyond the expectations of the government; both the Court and the OECD recommended to reduce the R&D tax credit. A different feedback is provided by an ex-post assessment of the CIR's effectiveness on R&D published by the Ministry of Higher Education and Research in July 2014<sup>6</sup> which presents it as a highly efficient measure.

In a recent fiscal "Stability Programme" released in April 2015, the government has committed to further increase tax incentives to innovation, asserting that:

"Businesses that invest in production capacity in the next twelve months will receive a tax incentive to speed up modernisation of their means of production, to become more competitive and to create more jobs. The incentive will be an additional depreciation allowance for productive investment that already qualifies for declining-balance depreciation. The additional depreciation allowance will be equal to 40% of the cost price of the investment. It will entitle the eligible businesses to immediate reductions of their corporate income tax base by the same amount, spread out over the useful life of the investment. The cost of this measure is estimated at €0.4 billion in 2015 and €0.5 billion in 2016. It is part of a more comprehensive plan presented by the Prime Minister on 8 April 2015 aimed at accelerating and refocusing private and public sector investment<sup>7</sup>."

### 3.2.4 Fiscal consolidation and R&D

The figure below shows the scatterplot of the structural balance and a relevant measure of the R&D (GBAORD as % GDP, left panel and GERD as % GDP, right panel)<sup>8</sup>:



**Figure 8. Fiscal consolidation and R&D**  
Data source: AMECO, Eurostat

France has not achieved a budgetary consolidation in terms of its headline deficit. However, there seems to be an improvement in structural terms throughout the post-crisis period: from the level of -3.5% of GDP in 2010 the structural balance improved to almost 0% of GDP by 2014.

<sup>5</sup> Between 2007 and 2011, the number of companies using CIR policy doubled, passing from 9,800 to 19,700 companies (+ 101%); the declared spending increased clearly less (+ 19 %, or €15.4 mld in 2007 and €18.4 mld in 2011).

<sup>6</sup> For the series of documents, see: <http://www.enseignementsup-recherche.gouv.fr/cid80816/developpement-et-impact-du-credit-d-impot-recherche-1983-2011.html>

<sup>7</sup> Agence France Trésor, Stability Programme, April 2015.

[http://www.economie.gouv.fr/files/stability\\_programme\\_for\\_france2015-2018.pdf](http://www.economie.gouv.fr/files/stability_programme_for_france2015-2018.pdf)

<sup>8</sup> Structural balance data comes from the AMECO database the other indicators were taken from Eurostat.

Referring to figure 9 (left) one notices that the contribution from the foregone tax revenues (as long as there are available data), measured as percentage of GDP, does not change the declining trend in the GBAORD (0.1% of GDP lost between 2010 and 2014). This is not in contradiction with Figure 8, which shows the stability of the *nominal levels* of GBAORD.

In Figure 9 (left) one observes a negative correlation between the GBAORD and the structural balance both expressed as percentage of GDP. This takes place in the years 2010-2014, a period characterised by a monotonic improvement of the French structural balance.

The picture is similar when comparing the government funded GERD vs the structural balance (Figure 9, right). The government funded GERD levels as percentage of GDP in 2011, 2012 and 2013 are slightly below its 2010 value. The inclusion of the EC funding does not alter the picture and the data on indirect support are very limited. Based on the above discussion it seems that France has not fully deployed a smart fiscal consolidation strategy.

### **3.3 Funding flows**

#### **3.3.1 Research funders**

Public funding of R&I often combines two main means: direct and indirect aids. France differs from most countries, including European member states, as the indirect mode – via the R&D tax credit (CIR) - represents about 60% of the total. When a company invests on eligible R&D – “eligible” according to R&D OECD Frascati definition<sup>9</sup>-, it qualifies for a reduced corporate tax; the latter relief corresponds to 30% of the R&D spending up to € 100m, and to 5% above this ceiling. R&D Tax Credit foregone revenues are stable at €5.5b in 2014. They benefit more to than 15,000 companies investing in R&D (out of about 20,000 which exposed their R&D expenditures).

On the direct mode side, the major part of public financing of research comes from the MIREs (Mission interministérielle recherche et enseignement supérieur), a unique interministerial budget. In 2015, the research share amounted to €7.7b. Although budget implementation relies on many so-called operators, almost 90% of the credits are allocated through less than 50 operators. Among them, the ANR (National Research Agency) funds research projects, including collaborative and international ones, on a competitive basis; its 2014 budget amounted to €605m (i.e. a small share of the MIREs budget). The ANR also operate as the lead funding agency in implementing the Investment for the Future Programme (PIA 1 &2), for higher education and research financing. Bpifrance is the lead financing agency of the PIA as long as innovation financing is concerned. For instance, it is the exclusive owner of the “Innovation Programme” and of the “Industrial Projects Programme” of the PIA 2, for a total amount of €1.7b.

According to Eurostat data, private non-profit funding of business R&D is low in France, standing at €5.4m (2012, latest available). Higher education and research institutes are entitled to organise their activities in the areas of education, research, and innovation and draw on alternative sources of funding such as philanthropy. A privileged means for doing so is the ‘Fondation de coopération scientifique’ (Scientific cooperation foundation), created by the Programme Law of for Research in 2006. So, a number of HEIs have their own foundations, most of which with too small an endowment to be decisive.

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<sup>9</sup> The legal definition of R&D according to the French law is accessible [here](#), in French.

### 3.3.2 Funding sources and funding flows

National public budget amounted to 92.4% of GERD in 2012 (last available Eurostat data). This figure has remained such, at least over the 8 preceding years. Most of it originates from EU sources (mainly FP funding). Over the 2007-2013 budgetary period, France has been allocated €14.3b originating from the EU regional policy funds, i.e. a yearly support of €2b. As a quarter of those was planned to go to R&I, that would, all things being equal, have amounted to €500m per year.

As visible in the Table below, France is to benefit from €1.7b in RDI structural funds over the period 2014-2020; this represents about €240m per year. Public research and innovation infrastructures, R&I in public research centres and technology transfer primarily to the benefit of SMEs make up to 60% of the total, hence €144m. The remaining 40% are mainly aiming at supporting R&I in companies.

**Table 5.** Structural Funds allocation 2014-2020 - Research, Development and Innovation - France

Categories of Intervention	EU Amount (€)	% R&D&I
Research and innovation infrastructure (public)	368 510 979	21,9
Research and innovation activities in public research centres and centres of competence including networking	348 533 540	20,8
Technology transfer and university-enterprise cooperation primarily benefiting SMEs	286 905 482	17,1
Research and innovation processes in SMEs (including voucher schemes, process, design, service and social innovation)	216 901 458	12,9
Research and innovation infrastructure, processes, technology transfer and cooperation in enterprises focusing on the low carbon economy and on resilience to climate change	118 447 152	7,1
Cluster support and business networks primarily benefiting SMEs	90 112 036	5,4
Research and innovation activities in private research centres including networking	76 424 638	4,6
Investment in infrastructure, capacities and equipment in SMEs directly linked to research and innovation activities	75 884 748	4,5
Research and innovation infrastructure (private, including science parks)	52 516 217	3,1
Research and innovation processes in large enterprises	31 986 149	1,9
Investment in infrastructure, capacities and equipment in large companies directly linked to research and innovation activities	13 214 776	0,8
<b>Total R&amp;D&amp;I</b>	<b>1 679 437 175</b>	<b>100,0</b>
<b>Sources: ERDF data, EC 2015. Cf. <a href="http://ec.europa.eu/regional_policy/en/funding/available-budget/">http://ec.europa.eu/regional_policy/en/funding/available-budget/</a></b>		

As usual, in 2013 (latest available Eurostat data), 97% of the €26.1b of R&D funded by companies go to companies (business enterprise sector). About one per cent go to funding HEIs' R&I, while almost two times more go to government sector R&I (slightly below €500m).

## 3.4 Public funding for R&I

### 3.4.1 Project vs. institutional allocation of public funding

#### Introduction: project funding on the rise in France

Although BERD accounts for about two thirds of French GERD (c. 65% of €48.1b), business R&D stands at about 40% below the 2% Lisbon target: 1.19% out of 2%. This holds true in 2014-2015, in spite of an important public support as the R&D tax credit

illustrates – about €5.5b in 2014. Public funding also is below the 1% target. Project funding is supposed to better stimulate R&D<sup>10</sup>.

The rise of competitive funding is a noticeable feature of the French RIS since 2005, although it remains low according to international standards<sup>11</sup>. The establishment of the National Research Agency (ANR) in 2005 has been essential in this transformation. In spite of this role, the ANR received a reduced budget of €686.6m in 2013 (-€82m in comparison with 2012), and a reduced budget of €605.1m in 2014 (-€80m).

In parallel, the government has nominated the Agency as the Investments for the Future Programme's implementing body. As such, it is responsible for steering the competitive selection and contracting processes for both Investments for the Future Programmes 1 and 2. Under Plan 1, €21.9b are dedicated to higher education and research, out of which €17.9b are to be allocated on a competitive basis. Under Plan 2 (announced by Prime Minister 12 July, 2013), the ANR became responsible for managing an additional budget of €4.015b. The actions to be funded on this budget are Excellence Equipments (Equipex), University Hospital Institutes (IHU), Key Enabling Technologies (KETs) and Excellence Initiatives (Idex); the latter totalling almost 80% of it.

All grants and funding allocated through the ANR, irrespective of the origin of the public money (regular outlays from the Ministry for Research or the Investments for the Future Programme), are on a competitive basis, relying on international juries of peers. That adds up to roughly €2b in 2014.

Not all PROs and HEIs follow the same research funding allocation procedures. To be more specific, due to their legal status, RTOs, such as the Commissariat à l'énergie atomique et aux énergies alternatives (CEA), the oceanographic institute Ifremer (Institut français de recherche pour l'exploitation de la mer), the national aerospace laboratory (ONERA), and the IFP Energies nouvelles (IFPEN) obtain between 30% and more than 50% of the yearly budget through contracts with private and public partners. In any case, the majority of research organisations' budgets for research go to researchers' salaries. As a consequence, RTOs have to sell contract research (to public and private organisations) to both fund R&D projects and cover for their researchers' salaries; the internal funding selection mechanism is quite competitive.

The Investments for the Future Programme is showing the new significance of project-based competitive funding in the French RIS. And indeed, project funding of public research is steadily increasing, from 7.4% in 2009 to close to 11% in 2012 (for total expenses of about €13 billion in 2012, according to ANRT-FutuRIS calculations<sup>12</sup>).

### **Modest on the surface, influential in depth**

Compared to other OECD countries, France is a very modest user of competitive funding<sup>13</sup>. For instance, national public project funding represents more than 50% of public funding to national performers in a number of European countries (e.g. Ireland, Belgium or Finland). In France though, project funding covers project activities and does not cover salaries of permanent staff. Thus, the influence of project funding on public research activities may correspond in reality to twice as much as the 11% indicated above, i.e. roughly 22%. Since most public researchers have permanent positions, an increased part of project-based funding is seen as complex. The researchers often feel that they spend too much of their time in writing and revising research proposals just to

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10 Cf. e.g. Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions a reinforced European research area partnership for excellence and growth. Com/2012/0392 final.

11 Steen, J. v. (2012), "Modes of Public Funding of Research and Development: Towards Internationally Comparable Indicators", OECD Science, Technology and Industry Working Papers, 2012/04, OECD Publishing. Nota: France is not included in this study, therefore refer to OECD Reviews of Innovation Policy: France 2014

12 Anne-Cécile Ollivier, 2013, « Modalités de financement public de la RDI : recherche sur projet », in: La recherche et l'innovation en France, Odile JACOB

13 Cf. J. v. Steen (2012) above.

be able to do research. The latter is being often carried out by young researchers, most often on a temporary contract. At the same time, in some PROs, the search for project funding, "external fresh money", is already compulsory since the organisation's yearly budget – including salaries – depends on it; so, it is rather a matter of survival. Generally, the influence of project-based funding is bigger than what the percentages seem to imply; it is a key driver of the research activities despite its modest apparent value.

Nonetheless, from a system's perspective, one may look for a greater coherence, i.e. a better connection between socioeconomic priorities and the thematic activities of the public researchers. This implies an improved tracing and readability of the public funding R&D flows. This can be obtained by the continuing progress of the evaluation system and by a new and clearer mix of multi-annual research budget programming (employment) and project funding.

Limitations of measurement are numerous, and include the lack of categories and classifications that would be needed for policy analysis. In most countries, the distinction between project and institutional funding is blurred, and delineation tricky. Without sound international comparisons of the effectiveness of the various competitive/institutional funding mixes, averages tend to be poorly significant.

### **3.4.2 Institutional funding**

To start with, one may recall the internationally agreed definition of institutional funding, as the difference between project and institutional block (i.e. non-competitive) funding is not that straightforward in this context. Institutional funding is defined as the total of national budgets in a given country, attributed to an institution, with no direct selection of R&D project or programmes and for which money the organisation has more or less freedom to define the research activities to be performed. Institutional funding can be in the form of non-competitively allocated Block funding. Institutional funding may also be allocated in a variable/competitive manner tied to institutional assessments.

The R&I portion of the MIRES budget for Y2014-2015 stands at €13.8b. Once the R&I expenses related to fiscal measures - the R&D tax credit specifically - are added to this, it makes €19.4b<sup>14</sup>. One must also take into account the fraction of the Investments for the future (PIA) 1 & 2 in relation to R&I. Although significant, this is not the most easily identifiable part. This is due to the very nature of the funds disbursed. They are composed of 'expendable endowment disbursements', 'expendable endowment interest disbursements' and 'transfers of non-expendable endowment' when allowed. Expenses are then to be earmarked to a specific year. As can be drawn from budgetary documents, those expenses that relate to PIA 1 amount to €1.9b in 2015. On the whole, R&I funding would amount to roughly €21.5b. Then comes the question of which part of it can be considered as institutional funding and which part is project funding. By definition, both ANR (€575m) and PIA (€1.9) allocate competitive project-based funding. Fiscal measures, including R&D tax credit, cannot be considered as public project funding<sup>15</sup>. Then, we may assume that the rest of MIRES can be labelled as 'institutional funding'. Our estimate would therefore be €11.3b, i.e. approximately 58%.

### **3.4.3 Project funding**

Based on the reasoning presented above (3.4.2.), project funding of R&I funding in 2015 in France would amount to 42% of the nation's budget allocated to R&I, i.e. roughly €10.2b. The National Research Agency (ANR) is responsible for allocating most public project funding to research, including that coming from the Investments for the Future Programme. Irrespective of the origin of the funding (MIRES or PIA), project funding is

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<sup>14</sup> [Rapport sur les politiques nationales de recherche et de formations supérieures](#), République Française, October 2015.

<sup>15</sup> Even though about €450m are outsourced from companies to public research organisations each year, which might correspond to project research

being attributed to consortia, research units, or institutes to perform an R&D activity limited in scope, budget and time. The ANR does so on the basis of the submission of a project proposal describing the research activities to be done. In the case of typical ANR projects, a yearly plan is developed by the agency and project open calls are launched accordingly. The same functioning holds for specialised research funding agencies such as the ADEME (environment agency).

### 3.4.4 Other allocation mechanisms

Apart from project and institutional funding (e.g. contract research for governmental organisations), the main public R&D funding mechanism is the R&D tax credit (cf. e.g. 2.3.2). The “Jeunes Entreprises Innovantes” scheme (young innovative companies), supported by the MENESR from 2004; would also be in this category (cf. 5.2.). In terms of public funding for innovation, there are mainly Bpifrance’s loans and schemes (cf. e.g. 5.2. or 5.4.); the latter mechanisms have local influences too: like any a bank, bpifrance has a network of agencies, nationwide (43 settlements; 25 regional directorates).

## 3.5 Public funding for private R&I

### 3.5.1 Direct funding for private R&I

The summary table below provides a tentative classification of most public funding streams in France, in 2015, by nature (R&D, “R”, or Innovation, “I” or both), focusing on funding for private R&I.

**Table 6.** Funding streams: from fundamental research to market innovation

Funding for Businesses (SMEs, mid-tier, large companies)	Nature
R&D tax credit	R
Sub scheme for innovation dedicated to SMEs	I
National Research Agency	R
Investments for the future	R/I
<i>Plans for industrial recovery (see below)</i>	<i>I</i>
Bpifrance loans & schemes	I
Regional funding	R/I
European funding (FP, ESIF)	R/I
<i>Innovation 2030 (see below)</i>	<i>I</i>

The two funding schemes above characterised as ‘**innovation support**’ deserve a special attention. The “Plans for Industrial Reconquest”, launched in September 2013, are meant to fund innovative projects with “considerable growth prospects in the global economy” based upon a clearly identified strong position and an ability to develop mass production. The “Innovation 2030” Plan, launched in October 2013, is an original competition opened to international companies’ project-leaders candidates (cf. below for details). Innovation, entrepreneurship and attractiveness are major drivers of competitiveness gains.

### The new face of industry in France

Budgets dedicated to the industrial plans that compose the “New face of industry in France” are not known yet since each plan has to be based upon public-private partnerships, and public funding for innovation will derive from the proposed plans. In any case, their “innovative nature” is doubtless: “*The initiatives underscore the new face of industry in France but also that of a new environmentally friendly, digital and inclusive society in which progress is shared by all. They are at the nexus of three*

*broad transitions: in energy and the environment; in digital technology; and in technology and society" (cf. [The New Face of Industry](#), p. 3).*

As of May 2015, a new phase dubbed "[Rallying the New Face of Industry in France](#)" was launched, building upon the road maps for the industrial renewal' that were identified in phase 1. This new step is meant to "accelerate deployment of the Industry of the Future and the nine industrial solutions in France and internationally". The 'Industry for the future' is a high level policy priority since it is to be "the matrix of France's industrial strategy; it will be heavily funded. Hence, to help companies adapt to the new paradigm, two exceptional measures were announced: "€2.5bn in tax incentives for companies investing in their production base over the next 12 months; and €2.1bn in loans earmarked by Bpifrance for SMEs and mid-tier firms over the next two years: these additional development loans will supplement the €1.2bn already made available to companies investing in Industry of the Future projects (digitization, robotics, energy efficiency, etc.). The nine 'industrial solutions' are listed hereafter:

1. New resources
2. Smart cities
3. Eco-mobility
4. Tomorrow's transport
5. Medicine of the future
6. The data economy
7. Smart devices
8. Digital confidence
9. Smart food choices

These "nine solutions", i.e. thematic priority programmes involving public-private partnerships, are building upon the coordinated efforts done during phase 1 by the 250 companies involved. As a result, more than 330 projects were eventually supported by the end of phase 1. They have received a public support of €1.5b leveraging a total investment of €3.7b. The industrial solutions are coherent bundles of projects, whereby the Ministry for the Economy, Industry and Digital Affairs intends to "more directly address the needs and the markets", "acquire a stronger international dimension and "more effectively manage the overall programme". Notably, the regroupings shall "allow tighter, more responsive and more agile management of the programme".

### **The Worldwide Innovation Challenge**

The €300m Innovation 2030 plan is a second remarkable new initiative; it is a Worldwide Innovation Challenge. The innovative nature of the policy initiative itself is interesting, as illustrated by its description given on the [English website dedicated to it](#): "*In an effort to confront the major challenges of the world of 2030, the Commission singled out a select number of key opportunities with very significant implications for the French economy. Following these efforts, the Commission identified seven goals based on pressing social concerns. These goals can be seen as seven critical pillars to put France on the road to long-term prosperity and employment. This is why the French government is launching a Worldwide Innovation Challenge. The goal is to foster talent and bring out future champions of the French economy. It will accomplish this by identifying and providing support for the growth of both French and foreign entrepreneurs whose innovation projects have significant implications for the French economy. This Challenge will encourage the talents of today in order to create the collective wealth of tomorrow, whether these talents are in France or abroad. The French government thus hopes to attract the world's best talents, so they can complete their projects in France.*"



In practical terms:

- On 18 April 2013: the Prime Minister commissioned Anne Lauvergeon to identify technological and industrial challenges that society will face in 2030 and to propose a method to stimulate the creativity of entrepreneurs around these challenges. Most public investment will come from the High Commission for Investments (the structure that runs the Investments for the Future).
- 11 October 2013: The Commission "Innovation 2030" singled out seven ambitions based on societal expectations and growth sectors: Energy storage, Recycling of metals, Development of marine resources, Plant protein and plant chemistry, Personalised medicine, Silver economy, Big data.
- On 2 December 2013: launch of the call for proposals, under the chairmanship of the President: open to all innovators as long as they want to grow their business in France.
- On 20 March 2014: 58 projects selected for stage 2 (626 proposals received).
- Applications for phase 2 were opened from 2 October 2014 to 2 March 2015.

A 3-stage procedure, with an international jury:

- Stage 1. Seeding/priming: up to €200,000.
- Stage 2. Coaching: up to 10 times the seeding funds to develop the project further: opening of the specific call for proposals on 14 December 2014.
- Stage 3. Development (industrialising and marketing): up to 10 times as much as for stage 2.

On 21 September 2015, new Call for proposals for the seeding/priming stage ('Start-up phase') was launched on (and will be closed on 2 December 2015).

### **3.5.2 Public procurement of innovative solutions**

Public procurement in France represents ca. €80b per year (€40b coming from Ministries and State bodies, €20b from hospitals and €20b from local and regional authorities)<sup>16</sup>. Five Ministries (Defence, Environment, Home Affairs, Finance and Justice) totalise 90% of Ministries public procurement contracts.

#### Legal Public Procurement framework

France transposed the two Directives on public procurement (2004/17/CE and 2004/18/CE), including the exemptions for R&D public procurement (art. 16 Dir 2004/18/CE and art. 24 Dir. 2004/17/CE) in 2005 through a modification of two articles of its "*code des marchés publics/procurement guidelines*" (art. 3 and art. 7 modified by the "*ordonnance*" 2005-649).

A second modification was introduced in 2011 in order to clarify the wording (Cf. Decree n°2011-1104 of 14 September 2011), which states that: "*The provisions of the 'code' [on public procurement] are not applicable to the following procurement or agreements [...]: 6° Framework agreements and services procurement of research and development for which the public procurer does not acquire the exclusive ownership of the results or does not integrally fund the delivery.*"

The same exemption is foreseen in the transposition of the defence and securities Directive (art. 13(j) of 2009/81/CE) into the French national legislation.

This new wording was confirmed by the "*Circulaire*" of 14 February 2012<sup>17</sup>, clarifying that the usual/normal rules of public procurement apply only when the public contracting

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<sup>16</sup> SAE, Service des Achats de l'Etat - <http://www.economie.gouv.fr/sae/chiffres-cles>

<sup>17</sup> "Circulaire" on "good practice in public procurement", n° EFIM1201512C, Official Journal of 15/02/2012.

authority is acquiring the entirety of the R&D results, or when it ensures full funding of the research programme.

Despite this transposition of the Directive into its public procurement guidelines, France has not set specific schemes, guidelines, or labels for PCPs.

### **The PCP/PPI landscape in France**

The negotiations on the revision of these two Directives<sup>18</sup>, which started in 2011 with the EC proposals, led France to engage in a deeper reform of its public procurement legislation.

The "*National Pact for Growth, Competitiveness and Employment*" adopted in November 2012<sup>19</sup> included a specific measure to "support the development of innovative growth SMEs by mobilising public purchasing" (measure n° 32). The pact announced a national target: "by 2020, the goal is to achieve a volume of 2% of public orders from the State, its operators and hospitals". This would represent Euro 1.6 billion a year, as the French public purchasing sector represents 60 billion Euro a year for the State and its operators (including hospitals), and 20 billion for regional/local authorities<sup>20</sup>.

On 11 April 2013, a conference was organised by the French government in order to launch the debate between public procurers and private companies (SMEs in particular) on public procurement on innovative products.

The draft "*Guidelines for public procurement of innovation*" were submitted to a public consultation (closed on 3 June 2013). The objective was to help contracting authorities building their own methods and channels to identify and capture innovative solutions.

The Inter-Ministerial Committee in charge of modernising public action (CIMAP<sup>21</sup>) decided on 17 July 2013 to adopt a fast track procedure to transpose the new EU Directives on public procurement into national legislation<sup>22</sup>.

The SAE (Service d'Achat de l'Etat) published in September 2013 a new guide on "State and State bodies purchases – objectives and organisation: guide for modernising public purchases"<sup>23</sup> with a twofold objective: (1) better spending of public money, and (2) supporting priorities of public policies, such as promoting innovation.

The guide requires each state service to review its procurement process in order to make place for innovative companies. An annual procurement plan has to be established by each state service, integrating a clear roadmap for innovative purchases.

A final version of the handbook for "*Achats publics innovants*"<sup>24</sup> was presented in January 2014, integrating the results of the public consultation. In addition to innovative products, the guidelines also include R&D activities. The scheme is in fact merging PCP and PPI into integrated guidelines.

The French Government presented the tools put in place to support PPIs (and PCPs, as R&D is integrated into the broader conception of "innovation") on 30 January 2014, during a high-level conference on "public procurement of innovation":

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<sup>18</sup> Directives 2014/24/EU replacing 2004/18/EC and 2014/25/EU replacing 2004/17/EC<sup>18</sup>, voted by the EP on 15.01.2014 and adopted by the Council on 11/02/2014.

<sup>19</sup> <http://www.economie.gouv.fr/files/PR-competitiveness.pdf>

<sup>20</sup> <http://www.economie.gouv.fr/files/PR-competitiveness.pdf>. Page 9.

<sup>21</sup> Comité interministériel pour la modernisation de l'action publique.

<sup>22</sup> [http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/releve\\_de\\_decisions\\_cimap3\\_17\\_juillet\\_2013.pdf](http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/releve_de_decisions_cimap3_17_juillet_2013.pdf). Page 9.

<sup>23</sup> [http://www.economie.gouv.fr/files/files/directions\\_services/sae/doc/SAE\\_060913\\_guide\\_modernisation\\_achat\\_avec\\_liens.pdf?utm\\_source=actualite-marches-publics&utm\\_medium=article&utm\\_content=crosslink-externe](http://www.economie.gouv.fr/files/files/directions_services/sae/doc/SAE_060913_guide_modernisation_achat_avec_liens.pdf?utm_source=actualite-marches-publics&utm_medium=article&utm_content=crosslink-externe)

<sup>24</sup> [http://www.economie.gouv.fr/files/files/directions\\_services/daj/marches\\_publics/conseil\\_acheteurs/guides/guide-pratique-achat-public-innovant.pdf](http://www.economie.gouv.fr/files/files/directions_services/daj/marches_publics/conseil_acheteurs/guides/guide-pratique-achat-public-innovant.pdf)

- roadmaps established by Ministries and State bodies<sup>25</sup> (with identification of fields, and targeted number of projects scheduled for 2014-2015): as of 31 January 2014, 124 projects were planned by the Ministries and 144 by State bodies for 2014-2015; these roadmaps enable private companies, and SMEs in particular, to be well informed of public procurers needs, in terms of fields.
- An online platform of public procurers for innovation<sup>26</sup>, which establishes direct contacts between contracting authorities and SMEs (created in February 2014); this platform allows public procurers to be aware and informed about innovative solutions which could potentially answer their needs.
- meetings to be organised between SMEs and public procurers<sup>27</sup>, along the ones already organised in 2013 by three Ministries (Home affairs, Finance, and Defence).

A public consultation<sup>28</sup> on the draft "*Decree on simplification of public procurement and contracts*"<sup>29</sup> took place between 12 March 2014 and 11 April 2014. The decree integrates the new provisions of the Directives on public procurement and particularly the following measures:

- the limitation of the turnover required in the specifications by contracting authorities, in order to allow SMEs to participate more easily to the procurement; (cf. Directive 2014/24/EU art. 58 § 3: "*The minimum yearly turnover that economic operators are required to have shall not exceed two times the estimated contract value, except in duly justified cases such as relating to the special risks attached to the nature of the works, services or supplies*"<sup>30</sup>);
- the reduction of administrative burden and limitation of documents to be provided, with the use of a European Single Procurement Document (ESPD) (cf. Directive 2014/24/EU art. 84), the use of standard form for self-declarations, etc.
- the setting up of a new type of public procurement: "*innovation partnership*" (cf. Directive 2014/24 art. 31 and Directive 2014/25 art. 49), which includes R&D products and services as well as innovative products and services. This partnership enables a long term and structured partnership between companies and public purchasers.

The decree was adopted on 26 September 2014 and entered into force on 1 October 2014.

In addition, the ordinance n°2015-899 dated 23 July 2015 implements into national law provisions of EU Directive 2014/24/UE on public procurement and Directive 2014/25/UE on procurement by entities operating in the water, energy, transport and postal services sectors. It also consolidates the different legislative texts relating to public procurement. These are mainly the public procurement code, Ordinance n°2005-649 of 6 June 2005 on contracts awarded by public authorities and private entities not subject to the public procurement code and Ordinance n°2004-559 dated 17 June 2004 on public-private partnerships. The ordinance is to be completed by a decree which has been drafted but has not reached its final version yet, as it is going through a public consultation. The new decree is expected to enter into force/to be adopted? not later than 1 April 2016.<sup>31</sup>

<sup>25</sup> <http://www.economie.gouv.fr/sae/feuilles-route-des-ministeres-et-des-etablissements-publics>

<sup>26</sup> <http://www.achatspublics-innovation.fr/> (Site with restricted access).

<sup>27</sup> [http://www.economie.gouv.fr/files/files/directions\\_services/sae/doc/dossier\\_de\\_presse\\_web.pdf](http://www.economie.gouv.fr/files/files/directions_services/sae/doc/dossier_de_presse_web.pdf)

<sup>28</sup> <http://www.economie.gouv.fr/consultations-publiques>

<sup>29</sup> [http://www.economie.gouv.fr/files/files/directions\\_services/daj/marches\\_publics/actualites/decret-CIMAP-concertation-mars-2014.pdf](http://www.economie.gouv.fr/files/files/directions_services/daj/marches_publics/actualites/decret-CIMAP-concertation-mars-2014.pdf)

<sup>30</sup> [http://www.economie.gouv.fr/files/files/directions\\_services/daj/marches\\_publics/actualites/tableau-transpo-decret-CIMAP-concertation-mars-2014.pdf](http://www.economie.gouv.fr/files/files/directions_services/daj/marches_publics/actualites/tableau-transpo-decret-CIMAP-concertation-mars-2014.pdf)

<sup>31</sup> <http://www.hoganlovells.com/files/Publication/53e51296-b4c7-48cd-b80c-6528927ad7e0/Presentation/PublicationAttachment/8323a578-ff27-4771-93d1-f99c34d9413a/French-Legal-and-Regulatory-Newsletter.pdf>

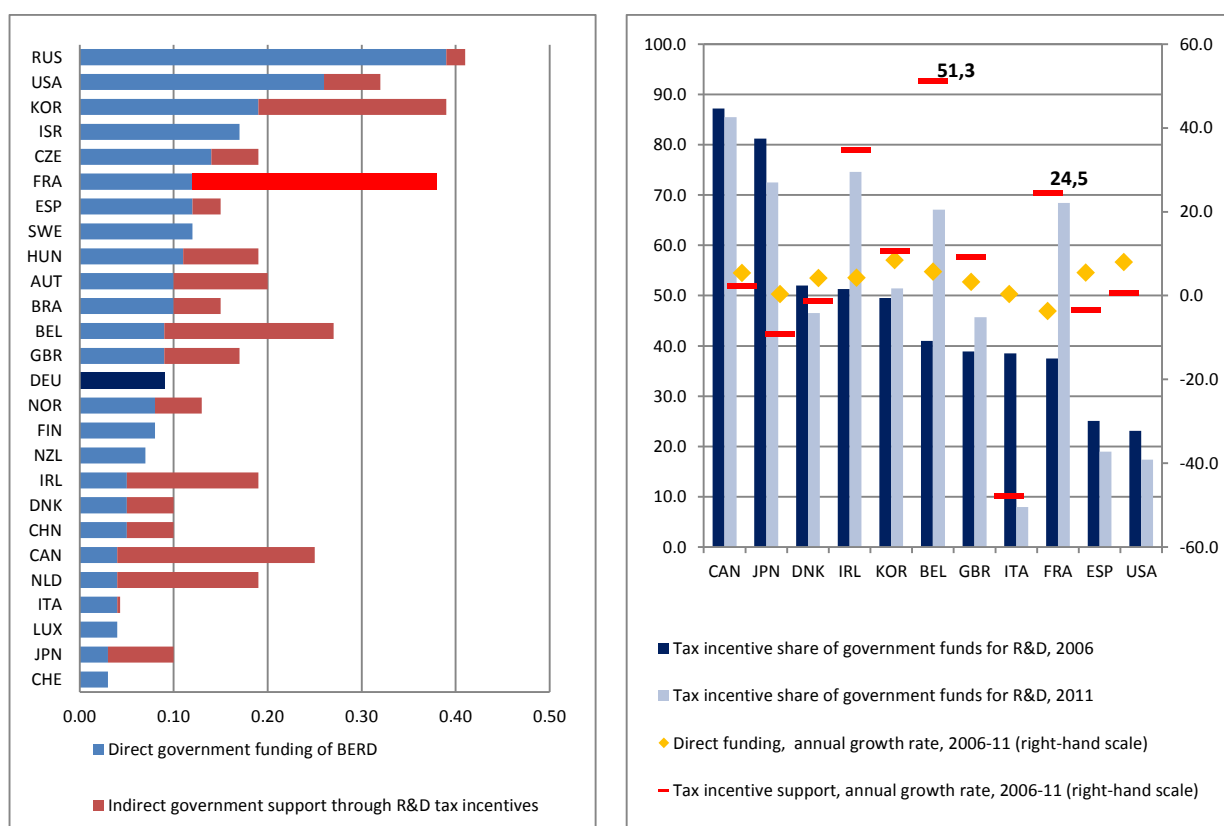
## PCP/PPI initiatives in France

As already mentioned, France is putting in place several tools for PPI/PCP, like the online platform of public procurers for innovation and innovation partnership. Another important tool is the roadmap (see supra). According to the latter, each ministry identified the fields in which they would require innovative solutions for future public purchases<sup>32</sup>:

**Table 7.** Public procurement projects in France

<b>Fields</b>	<b>Number of projects (2014-2015)</b>	<b>Ministries</b>
Informatique - Nouvelles technologie - Numérique – RFID – Télécommunication	23	Affaires Etrangères Culture Défense Ecologie Intérieur Services du Premier Ministre
E-learning – Information et communication – Prestations intellectuelles – Services en ligne web	15	Affaires Etrangères Agriculture Education Nationale Finances Intérieur Justice Santé/Travail
Eclairage – Ecoconception – Energie et environnement – Energie renouvelables – Chaudières – HQE	23	Affaires Etrangères Agriculture Culture Défense Ecologie Finances Intérieur Santé/Travail
Equipements individuels de sécurité – Ergonomie des postes de travail – Gestion de crise – Logistique – Sécurité des bâtiments – Textiles – Transport	23	Affaires Etrangères Agriculture Justice Ecologie Finances Intérieur Santé/travail
Processus – Produits et services socialement innovant – Soutien aux politiques publiques – Transformations des relations avec les usagers	18	Affaires Etrangères Agriculture Education Nationale Finances Intérieur Justice Santé/Travail
Agronomie – Santé animale et végétale – Biomédical	5	Agriculture Défense (Santé des armées)
Archivage – Dématérialisation – Gestion des files d’attente – Modernisation – Productivités des administrations – Traduction – Simplification	17	Affaires Etrangères Agriculture La Défense Ecologie Education Nationale Finances Intérieur Justice

<sup>32</sup> [http://www.economie.gouv.fr/files/files/directions\\_services/sae/doc/dossier\\_de\\_presse\\_web.pdf](http://www.economie.gouv.fr/files/files/directions_services/sae/doc/dossier_de_presse_web.pdf) Page 6.



**Figure 9.** Government direct funding vs. indirect R&D funding – France compared to a selection of countries

**Source:** Data from OECD Supporting Investment in Knowledge Capital, Growth and Innovation, 2013; Science, Technology and Industry Outlook, 2014.

### 3.5.3 Indirect financial support for private R&I

France is the OECD country with the highest level of indirect government funding of business R&D as a share of GDP (cf. graphs below; data from OECD Supporting Investment in Knowledge Capital, Growth and Innovation, 2013; Science, Technology and Industry Outlook, 2014). As shown by the ["Rapport sur les politiques nationales de recherche et de formations supérieures"](#) (2015), the amount of foregone tax revenues is stabilised. No direct subsequent reduction of direct public funding for private R&D is observable.

Not only is the French R&D tax credit the most advantageous for companies performing R&D activities, but as analysed by the OECD (2013)<sup>33</sup>, it is also well designed, favouring SMEs over large groups and addressing "high-growth companies" needs (with the "young and growing enterprises" scheme). Its complementarity with the CIFRE scheme (public support for public-private PhDs) is also noticeable<sup>34</sup>. Of course one may aspire that another type of generic and indiscriminate fiscal initiative is taken (so is the case of the OECD); but the whole point of the R&D tax credit (accounting for tight budgets) is preserving attractiveness and competitiveness through a constant support to R&D, in the hope that this will encourage innovation.

<sup>33</sup> OECD (2013), ["New sources of growth: Knowledge-based capital"](#)

<sup>34</sup> A fraction of the overhead costs, once the CIFRE financial support has been deducted, is covered by the R&D tax credit as they concern eligible R&D.

The following two graphs are based on 2014 OECD data. They illustrate French characteristics in terms of direct government funding of business R&D and R&D tax incentives (indirect government funding) as percentages of GDP. On the left-hand side, the figure shows the variety of mixes implemented by States to support R&D activities on their territory. France has the highest level of R&D tax incentive. Russia offers the most advantageous system with a very modest fraction of tax incentives. Germany supports business R&D through direct aid only. The figure on the right-hand shows the evolution of forms of support for business R&D for selected countries, through a comparison between 2006 and 2011 (the bars, left-hand scale) and with the average annual growth rate between the two dates (the small red lines, right-hand scale). A majority of countries have increased tax incentives (see number of red lines above zero), some strongly: Belgium, 51% per year, France, 25%, Ireland nearly 40% per year. Conversely, Italy has reduced the latter form of incentive of nearly 10% on average each year.

## **3.6 Business R&D**

### **3.6.1 The development in business R&D intensity**

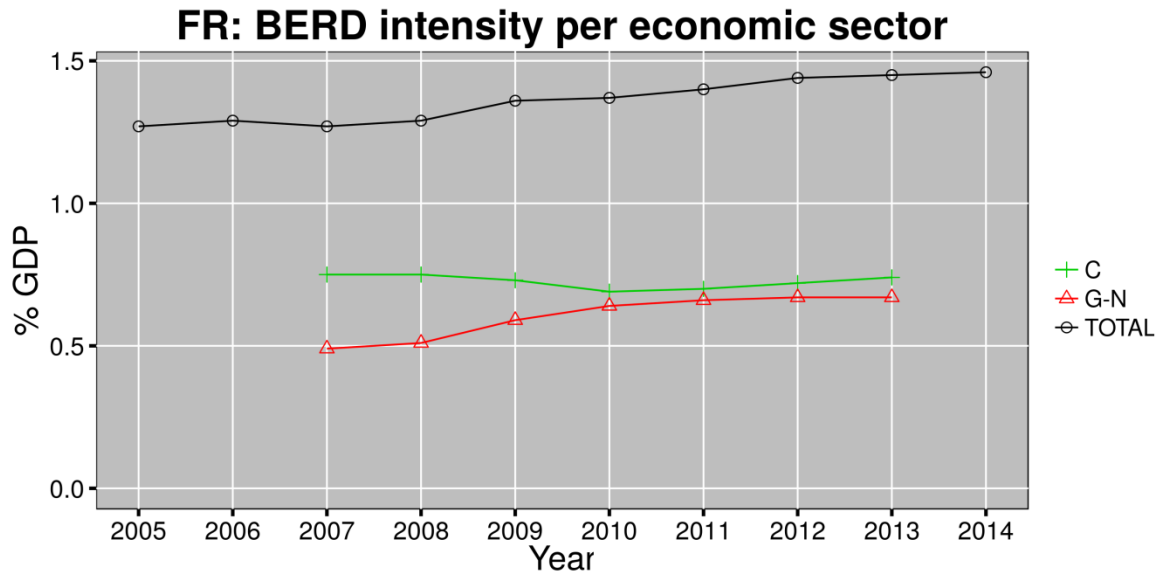
Business R&D increased from 1.27% to 1.46% of GDP between 2005 and 2014. The increase took place after 2008 and the economic and financial crisis does not seem to have had a negative impact on overall business intensity as the total amount of private R&D investments increased from 1.29% to 1.46% between 2008 and 2014.

The explanation for this growth of BERD partially lies in the R&D tax incentives system. France offers research tax credit since 1983. In 2008 there was a major reform of the French R&D tax credit (the *Crédit Impôt-Recherche*, CIR). On the basis of a declaration of their R&D expenditures over the latest fiscal year, companies which are subject to taxes on companies benefits in France can ask for a tax reduction proportionate to the volume of those expenses. The tax credit covers up to 30% of R&D expenses. The foregone revenue due to R&D tax credit has passed from 1,802 MEUR in 2007 to 5,6 MEUR in 2013. As such, taking into account this indirect measure, the public share in the funding of R&D activities gets close to 50%, when it reaches 30% for other comparable European countries (Germany, UK).<sup>35</sup>

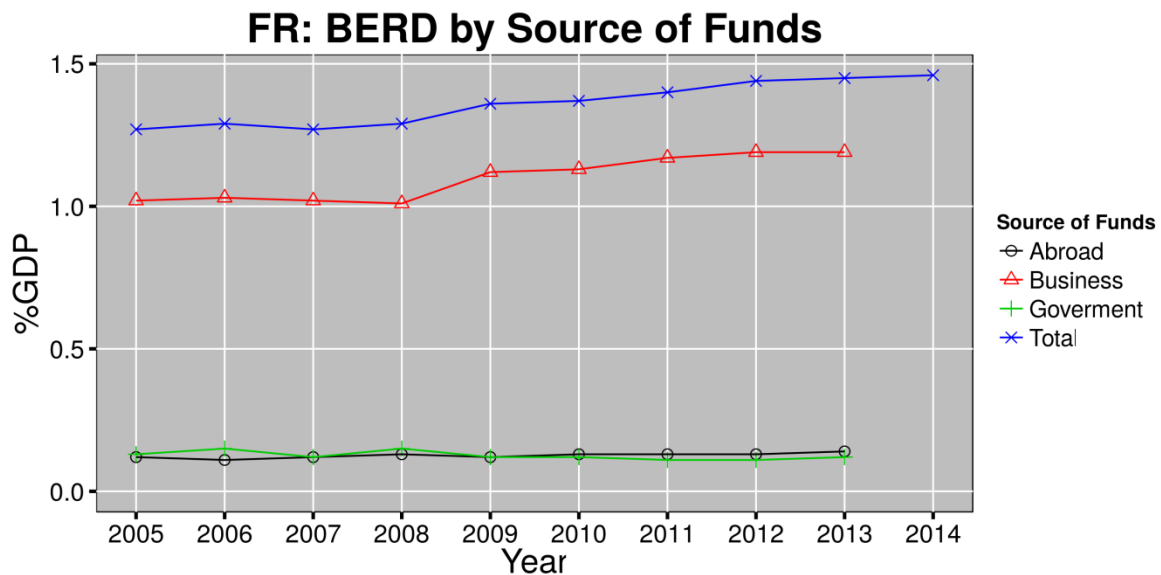
The biggest funder of business R&D is business itself (1.19% out of 1.45% of GDP) while the funding from abroad and government direct funding are almost negligible (0.12% and 0.14% respectively). Regarding government funding, the foregone revenue due to the tax breaks described above has however to be taken into account as it provides a strong incentive to private investment.

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<sup>35</sup> OECD Review of Innovation Policies 2014- France, <http://www.oecd.org/sti/inno/france-innovation-review-overall-assessment.pdf>



**Figure 10.** BERD intensity broken down by most important macro sectors (C= manufacture, G\_N=services).



**Figure 11.** BERD by source of funds

### 3.6.2 The development in business R&D intensity by sector

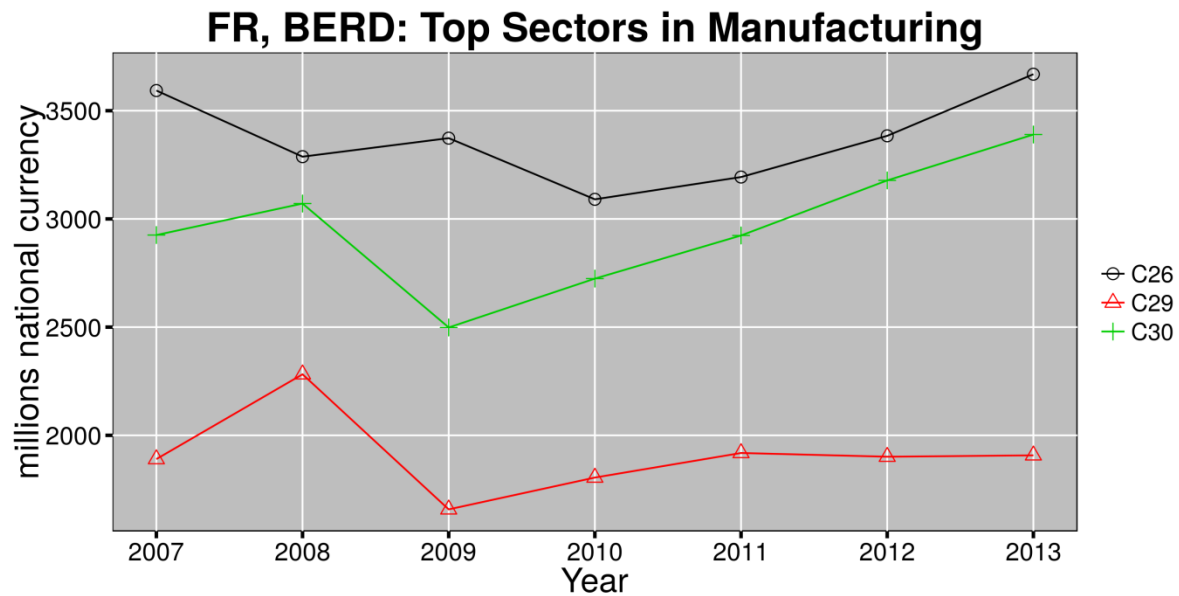
With a R&D intensity passing from 0.75% GDP in 2007 to 0.74% GDP in 2013, manufacturing has remained relatively stable over the last decade. It performed a bit more than half of French business R&D in 2013. Differently, services have since 2007 constantly increased their R&D intensity from 0.49% GDP to 0.67%.

Within manufacturing, the computer, electronic and optical equipment sector is the most important research performer accounting for about €3700 million of BERD expenditure in 2013 and has constantly been increasing since 2010 (€3100 million). According to the 2015 European Industrial R&D Scoreboard, in this sector, the largest French based R&D performers are Alcatel-Lucent (ranked 17<sup>th</sup>), Schneider (41<sup>st</sup>), Orange (52<sup>nd</sup>), Ubisoft Entertainment (68<sup>th</sup>)<sup>36</sup> and Dassault Systemes (73<sup>rd</sup>).

<sup>36</sup> <http://iri.jrc.ec.europa.eu/scoreboard14.html>

Aerospace and defence on the one hand and Automobile on the other are the other main performers of R&D in manufacturing, accounting for about €8300 million in 2014 and in constant increase since 2009. During this period, the R&D expenditure in this sector rose by 26%. According to the 2015 European Industrial R&D Scoreboard, the main French companies in these sectors are Peugeot (16<sup>th</sup>), Renault (20<sup>th</sup>) Valeo (47<sup>th</sup>) and Michelin (54<sup>th</sup>), and Safran (29<sup>th</sup>), Thales (65<sup>th</sup>), Dassault Aviation(66<sup>th</sup>) and Zodiac Aerospace (97).

Cf.

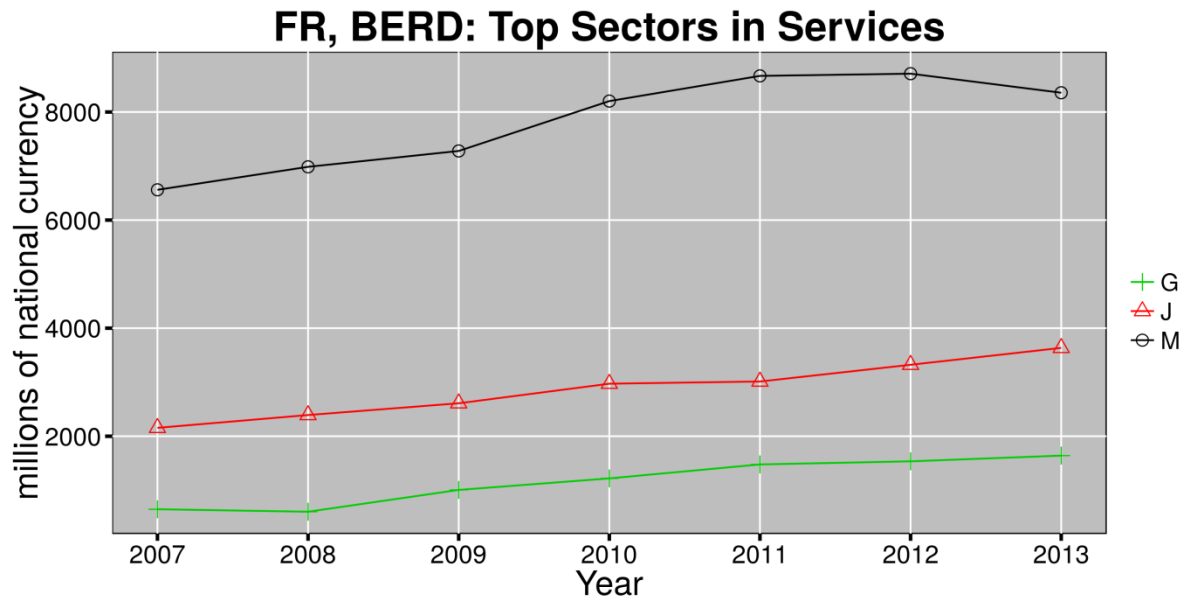


**Figure 12.** top sectors in manufacturing (C26=manufacture of computer, electronic and optical products; C29=Manufacture of motor vehicles, trailers and semi-trailers; C30=Manufacture of other transport equipment).

As far as the services are concerned, we notice an upward trend from 2007, in spite of the economic crisis. This can be attributed to the growth of professional, scientific and technical activities that passed from a BERD expenditure of €6500 million in 2007 to €8350 million in 2013. A decrease is however observable between 2012 (€8700 million) and 2013.

The two sectors of (1) information and communication and (2) wholesale and retail trade; repair of motor vehicles and motorcycles have also been constantly increasing over the observed period. Their respective BERD expenditures evolved from €2150 million to €3600 million and from €648 million to €1600 million.

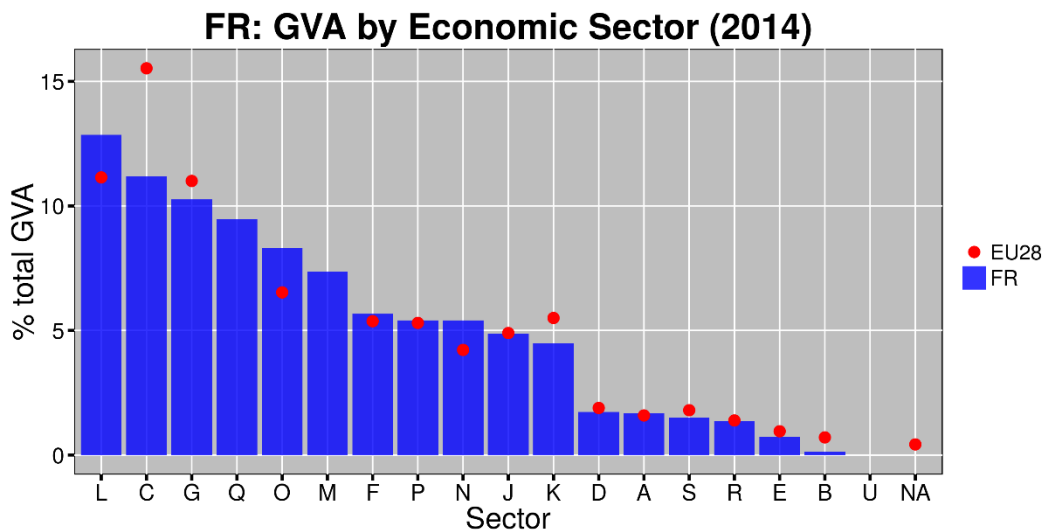




**Figure 13.** top service sectors (J=information and communication, G=wholesale and retail trade; repair of motor vehicles and motorcycles, M=professional, scientific and technical activities).

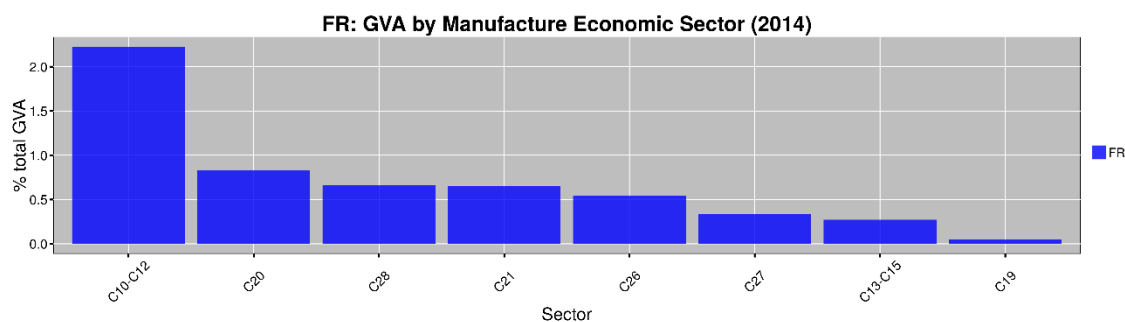
### 3.6.3 The development in business R&D intensity and value added

The real estate activity is the biggest contributor to Gross Value Added in France, with a total value (13.2% of GVA) superior to the EU28 average (11.1%). A top service sector in terms of BERD, namely the "whole sale of retail trade; repair of motor vehicles and motorcycles" also appears as one of the most important sectors in terms of GVA (11.2%). Its share is equal to the EU average. Manufacture stands as the third economic sector (10% GVA) but is far below the EU average (15.2%). Both Public administration and defence; compulsory social security (9.2%; EU average 7.5%) and Professional, scientific and technical activities (7.8%; EU average: 6.5%) are above the EU average.



**Figure 14.** economic sectors as percentage of the total GVA.

Top 6 sectors in decreasing order: 1) Real estate activities, 2) Wholesale and retail trade; repair of motor vehicles and motorcycles; 3) Manufacture; 4) Human health and social work activities; 5) Public administration and defence; compulsory social security, 6) Professional, scientific and technical activities.

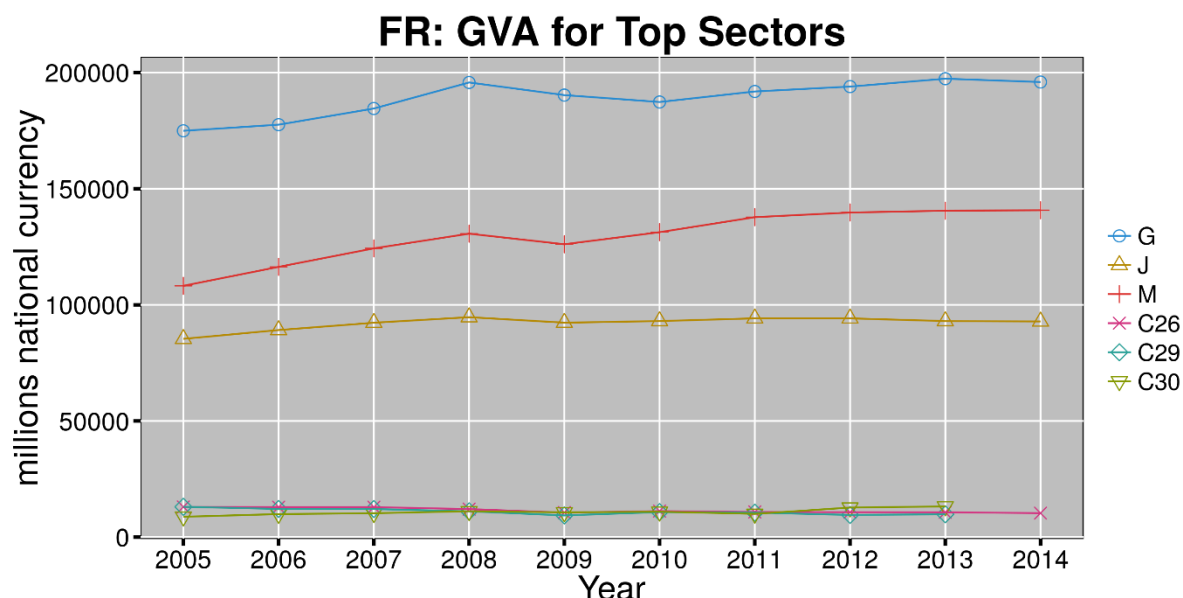


**Figure 15.** GVA in manufacturing.

Top 6 manufacturing sectors: 1) Manufacture of food products; beverages and tobacco products, 2) Manufacture of fabricated metal products, except machinery and equipment; 3) Repair and installation of machinery and equipment; 4) Manufacture of chemicals and chemical products; 5) Manufacture of machinery and equipment n.e.c.; 6) Manufacture of rubber and plastic products .

Consistently with the data exposed in Figure 16, the breakdown of the share of GVA in manufacturing activities shows that all sectors are below the EU average. The highest sector is Manufacture of food products; beverages and tobacco products (1.9% of GVA; EU average: 2.0%). The next two ones are "Manufacture of fabricated metal products, except machinery and equipment" (1%) and "Repair and installation of machinery and equipment" (1%).

According to the Small Business Act 2015 (DG GROW, EC<sup>37</sup>), SMEs account for 99.8 % of businesses in France, which is in line with the rest of the EU. They provide about two thirds of total employment and account for nearly 58 % of total value added. The French economy has been developing at a relatively modest rate over recent years. The number of new business registrations stagnated in 2014 and early 2015. The number of SMEs is set to grow at around 0.4 % until 2016. SME employment is also expected to remain close to current levels. Nevertheless, the outlook for SME value added is more optimistic: from 2014 to 2016, it is expected to grow by nearly 5 %, which is almost double the projection for large enterprises.



**Figure 16.** Value added for the leading sectors in Figures 13 and 14.

### 3.7 Assessment

<sup>37</sup> [http://ec.europa.eu/growth/smes/business-friendly-environment/performance-review/index\\_en.htm](http://ec.europa.eu/growth/smes/business-friendly-environment/performance-review/index_en.htm)

Considered through budgetary lenses, the current balance between project and institutional funding of R&I has very much evolved over the last few years, in favour of the former; notably as a result of the on-going implementation of the Investments for the Future 1 (PIA 1, started in 2010) and 2 (PIA 2, started in 2014). This disruptive form of national investment in R&I has triggered a wave of project-based public funding. From 2010 until today, slightly more than 2 000 projects were selected and funded within PIA. To illustrate the point, during the first two quarters of 2015, 9 'structuring projects for competitiveness' were selected and funded by Bpifrance (€81m); 35 projects were funded within the context of the Worldwide Innovation Contest for €51m (Bpifrance); the X6 project (helicopter of future helicopter), to be carried by ONERA for €330m; the 'Nano 2017' programme for €98m; 56 projects were selected as part of the "Vehicle of the Future" action. These obviously did not intend to finance institutions. Nonetheless, a number of these public financial supports are meant to last 10 years. Also, the huge amounts invested are often earmarked to one of the beneficiaries. Sometimes the beneficiaries are new organisations created for this very purpose.

Finally, whereas the public financier's aims were to gain flexibility and a renewed ability to choose, this form of public project funding tends to institutionalise funding: the beneficiaries are supported for a ten-year period; a period during which they will be richer, a period where they will have to invest in new equipment, a period during which they will adopt new habits. The goal of the organisation –especially if they were created to encapsulate the PIA funding- will be to do anything to benefit from a renewed funding afterwards. One may then wonder whether there is indeed a difference with regular institutionalised funding. On the other hand, more impacts are expected to develop. Firstly, there are amplified leveraging effects which get along with critical masses. The total amount of central government public money committed so far within the context of PIA 1 and 2, i.e. of €28.4b, have generated matching contract funds for about €29.7b, €19b originating in the private sector (i.e.67%). Secondly, better targeted investments, on specific societal challenges - on specific sites and on specific S&T domains - are foreseen to trigger stronger spill-over effects. Evaluations of parts of PIA (Investments for the future programme) are expected in 2016 and 2017. So far, no independent assessment of the impacts of the PIA type of project funding are published.

