

# The impact of Covid-19 on top R&D investors:

## first insight into 2021 EU Industrial R&D Investment Scoreboard

### Headlines

- In 2020, global industrial R&D continued to grow for the eleventh consecutive year.
- R&D growth was driven by Health and ICT industries and hampered by Automobiles and Aerospace sectors.
- At a regional level, EU companies' R&D investment decreased in contrast to US and Chinese firms'. This is to large extent due to the industrial structure with EU R&D more concentrated in the automotive sector.
- The crisis hit hard most companies' financial indicators, particularly net sales, capital expenditures and operating profits, while employment has shown some resilience.
- Major challenge for the EU: to support the recovery and keep competitiveness in key industrial sectors.

This policy brief presents preliminary results anticipating the 2021 EU Industrial R&D Investment Scoreboard (the *Scoreboard*), based on a subsample of companies with available published accounts for the year 2020. The subsample consists of 697 companies representing two thirds of the global R&D of the previous year *Scoreboard*<sup>1</sup>. It includes 333 companies based in the EU, 186 from the US, 83 Chinese companies, 12 Japanese companies and 83 from the rest of the world (see details of the subsample and methodological considerations in the Annex).

<sup>1</sup> The full *Scoreboard* is published in December every year. It comprises 2500 companies worldwide. The amount of R&D invested by these 697 companies represents about 60% of the global BERD for the year 2018 (last available year).

### Global business sustained R&D investments in 2020 despite being hit hard by the pandemic.

These 697 companies invested €607 billion in R&D in 2020, on average 3.9% more than in 2019. This average R&D growth was achieved despite the effects of the pandemic on these companies that led to a significant drop in companies' net sales (-6.7%), operating profits (-26.7%) and capital expenditures (-8.2%) and a slight decrease in number of employees (-0.6%).

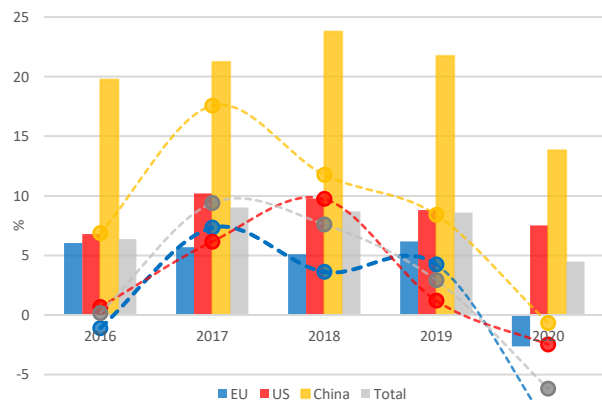
This global R&D growth in this sample was driven by sectors positively affected by the crisis, namely Health industries (9.5%), ICT services (9.9%) and ICT producers (6.1%). These three sectors (representing together 65% of the total R&D in the sample) also increased their net sales and capital expenditures. Most other sectors were negatively affected by the crisis, in particular R&D investment declined in Aerospace & defence companies by 19.8% and by 6.1% in the Automobiles sector. These two sectors (representing respectively 3.0% and 16.8% of the total R&D in the sample) showed also a considerable decline in net sales, operating profits and capital expenditures.

As observed in past *Scoreboard* editions, the R&D growth aggregated by world region is strongly shaped by the sector composition of the region. Thus, regions with a larger weight in industries positively affected by the crisis (Health and ICT sectors) show better performance than their counterparts. For companies based in the EU total R&D investments decreased by 2.7% in 2020, whereas the US and Chinese companies have increased R&D by 5.9% and 13.7% respectively. This result for the EU is in line (although greater than expected) with the forecast R&D decrease recorded in the 2020 EU Survey on Industrial R&D Investment Trends<sup>2</sup>. The R&D performance

<sup>2</sup> Potters, L. and N. Grassano: The 2020 EU Survey on Industrial R&D Investment Trends; EUR 30518 EN; Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-27454-4, doi:10.2760/003388, JRC123333.

differs significantly from companies' results in terms of net sales that have decreased for all regions. For EU companies the net sales decreased by 9.3% and for the US and Chinese companies by 2.5% and 0.5% respectively. The R&D and net sales trends over the past 5 years for the main world regions are presented in Chart 1.

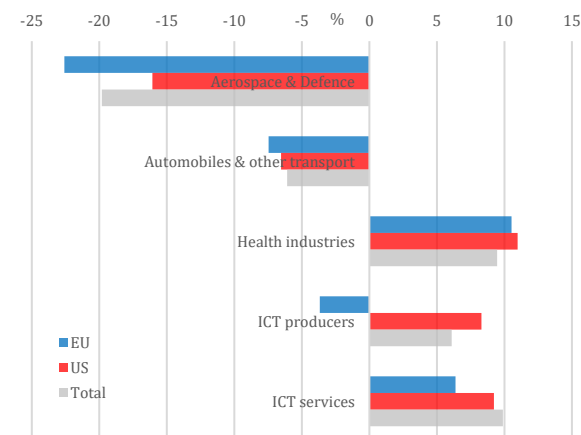
**Chart 1- yearly % change R&D (bars) and Net sales (dots) – 5 years trends (region)**



Source: The 2021 EU R&D investment Scoreboard (forthcoming) – first sample.

As mentioned, the companies' results are completely different for industries positively affected by the crisis, i.e. Health and ICT, than for those directly hit by the pandemic, e.g. Automobiles and Aerospace. This is illustrated by Chart 2 presenting the one-year R&D change for the EU and the US samples of companies for these four industries. The strong weight of the EU, particularly in the Automobiles sector, and the strong weight of the US, specifically in the ICT services, explain largely the different R&D growth rate of the two regions.

**Chart 2 - 1 year % change R&D – selected sectors and regions**



Source: The 2021 EU R&D investment Scoreboard (forthcoming) – first sample.

## Companies' highlights in the global sample

The examination of the performance of individual companies reflects also the aforementioned results showing striking differences between companies from industries positively or negatively affected by the pandemic (see Table 1). The fourteen companies among the top 20 R&D investors that increased R&D in 2020 operate all of them in Health and ICT industries, seven of these companies showed a double-digit R&D growth. On the other hand, the four companies operating in the Automobiles sector showed a decrease in R&D investment, three of them are based in the EU.

Other companies showing remarkable R&D growth in 2020 from ICT industries are Tencent (China, 28.3%); Nvidia (US, 38.7%), Salesforce.com (US, 30.1%). From the Health sector, other companies showing outstanding R&D growth are Biogen (US, 75%), Incyte (US, 89.8%), AstraZeneca (UK, 11.5%).

*The growth in R&D investment may be organic or driven by company mergers, acquisitions, divestments or accounting practices.*

**Table 1 – Top 20 companies by R&D investment in the sample**

Company	Country	Sector group	RD 2020		Net sales 2020	
			(€ bn.)	1 year growth rate (%)	(€ bn.)	1 year growth rate (%)
ALPHABET	US	ICT ser	225	6.0	1487	12.8
HUAWEI	CN	ICT prod	175	6.7	1112	3.8
SAMSUNG	KR	ICT prod	159	5.1	1774	2.8
APPLE	US	ICT prod	153	15.6	2237	5.5
FACEBOOK	US	ICT ser	150	35.6	70.1	21.6
VOLKSWAGEN	DE	Auto	139	-2.9	2229	-11.8
ROCHE	CH	Health	112	3.9	54.0	-5.1
INTEL	US	ICT prod	110	1.5	635	8.2
JOHNSON & JOHNSON	US	Health	9.9	7.1	67.3	0.6
DAIMLER	DE	Auto	8.4	-12.3	1543	-10.7
BRISTOL-MYERS SQUIBB	US	Health	8.4	70.9	34.6	62.6
MERCK & CO.	US	Health	8.3	10.5	39.1	2.5
PFIZER	US	Health	7.8	16.1	34.2	1.8
BAYER	DE	Health	7.7	36.9	42.6	-8.1
NOVARTIS	CH	Health	7.1	0.7	40.7	-1.2
BMW	DE	Auto	6.3	-2.2	99.0	-5.0
ROBERT BOSCH	DE	Auto	6.0	-3.0	71.5	-8.0
FORD MOTOR	US	Auto	5.8	-4.1	103.6	-18.4
SANOFI	FR	Health	5.5	-8.1	36.0	-0.2
ABBVIE INC	US	Health	5.3	21.3	37.3	37.7

Source: The 2021 EU R&D investment Scoreboard (forthcoming) – first sample.

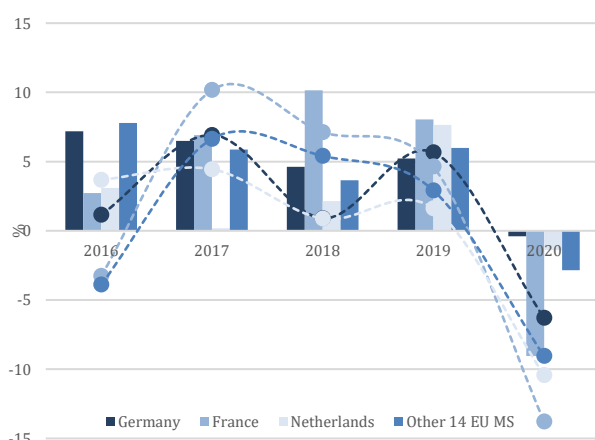
## Focus on the EU sample of companies

The 333 companies based in the EU invested €164.7 billion in R&D in 2020, 2.9% less than in 2019. This average R&D drop is relatively small compared with the other financial indicators of the EU companies that are hit hard by the pandemic. Indeed, these EU companies had a strong decline in net sales (-9.3%), operating profits (-

36.6%) and capital expenditures (-10.3%) and a modest decrease in number of employees (-1.8%).

In terms of countries, the EU's R&D growth was held back by companies based in the largest member states in terms of R&D, France (-9.0%), Italy (-22.8%), Finland (-9.7%), Germany (-0.4%) and the Netherlands (-1.8%). On the other hand, companies based in several member states showed positive R&D growth, namely in Austria (16.7%), Belgium (6.9%), Denmark (3.4%) and Luxembourg (15.6%).<sup>3</sup> The R&D and net sales trends over the past 5 years for selected member states are presented in the Chart 3.

**Chart 3- yearly % change R&D (bars) and Net sales (dots) – 5 years trends (selected EU member states)**



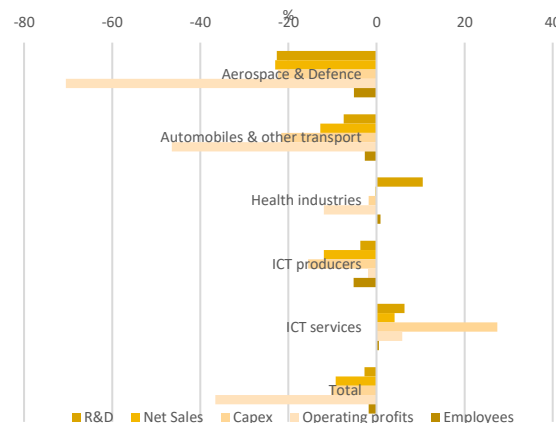
Source: The 2021 EU R&D investment Scoreboard (forthcoming) – first sample.

From a sector perspective, as observed for the global sample, the R&D growth of the EU companies was sustained by R&D investment growth in Health industries (10.5%) and ICT services (6.4%). The Health sector showed a small decline in net sales and capital expenditures and a significant drop in operating profits. ICT services was the only sector showing growth for all of the financial indicators, however this sector accounts for a small share of the EU' R&D. The Automobiles sector (-7.5%), accounting for more than one third of the total R&D, weighed most heavily on the total R&D of the EU sample. Most other sectors decreased R&D investments, in particular Aerospace & defence (-22.6%) and Industrials (-6.8%) and showed a decline for all financial indicators, particularly strong decline in profits for the Aerospace & defence (-70.5%) and Automobiles (-46.5%).

<sup>3</sup> It is noteworthy that due to the concentration of R&D in large companies, in many cases the aggregate country indicator depends largely on very few firms. For example, only one company explains most of the R&D change in Austria (AMS), Belgium (UCB), Finland (Nokia), Italy (Leonardo) and Sweden (Volvo).

Chart 4 shows the one-year growth for R&D, net sales, capex, profits and employment for selected sectors of the EU sample of companies.

**Chart 4- 1 year % change R&D, Net sales, Capex, Operating profits and Employment in the EU – selected sectors**



Source: The 2021 EU R&D investment Scoreboard (forthcoming) – first sample.

### Companies' highlights in the EU sample

Similar to the global sample, the performance of individual EU companies reflects whether industries were positively or negatively affected by the pandemic (see Table 2). Only six companies among the top 20 R&D investors in the EU increased R&D in 2020 and all of them are from Health and ICT industries. Among the other 14 companies that showed a decline in R&D, nine are from the Automobiles sector. Unlike in the global sample, two top EU R&D investors in the ICT producers sector decreased R&D investments, Nokia and Siemens and one company from the Health sector decreased R&D, Sanofi.

Apart from the top R&D investors in the EU, other companies showed remarkable R&D growth in 2020 in Health industries, e.g. Biontech (DE, 119.2%), Argencx (NL, 116.8%), H Lundbeck (DK, 23.2%), UCB (BE, 22.7%), Fresenius (DE, 17.1%) as well as in ICT sectors, AMS<sup>4</sup> (AT, 61.7%), Infineon technologies (DE, 17.3%), Spotify (LU, 35.2%), Yandex (NL, 32.8%), Dassault Systèmes (FR, 26.8%).

Companies not included in the top 20 that showed poor R&D performance in the EU sample are Leonardo<sup>5</sup> (IT, -62.6%), Safran (FR, -38.9%), Valeo (FR, -18.5%), Volvo (SE, -17.3%), Thyssenkrupp (DE, -32.2%).

<sup>4</sup> Mostly due to the acquisition of Osram (DE) in 2020.

<sup>5</sup> This company adjusted its R&D reporting in 2020, reflecting better the self-funded part of R&D.

**Table 2 – Top 20 EU companies by R&D investment in the sample**

Company	Country	Sector group	RD 2020		Net sales 2020	
			(€ bn.)	1 year growth rate (%)	(€ bn.)	1 year growth rate (%)
VOLKSWAGEN	DE	Auto	13.9	2.9	222.9	-13.8
DAIMLER	DE	Auto	8.4	12.3	154.3	-10.7
BAYER	DE	Health	7.7	36.9	42.6	-8.1
BMW	DE	Auto	6.3	2.2	99.0	-5.0
ROBERT BOSCH	DE	Auto	6.0	3.0	71.5	-8.0
SANOFI	FR	Health	5.5	8.1	36.0	-0.2
SIEMENS	DE	ICT prod	5.0	17.5	57.1	-34.2
SAP	DE	ICT ser	4.4	3.8	27.3	-0.8
ERICSSON	SE	ICT prod	3.9	1.6	23.2	2.3
STELLANTIS*	NL	Auto	3.9	7.8	86.7	-21.1
NOKIA	FI	ICT prod	3.8	2.9	21.9	-6.3
BOEHRINGER SOHN	DE	Health	3.7	3.8	19.6	3.0
PEUGEOT*	FR	Auto	3.6	1.0	60.7	-18.7
CONTINENTAL	DE	Auto	3.6	1.2	37.7	-15.2
AIRBUS	NL	Aerospace	3.0	15.2	49.9	-29.2
RENAULT	FR	Auto	2.7	25.6	43.5	-21.7
MERCK DE	DE	Health	2.3	1.1	17.5	8.6
BASF	DE	Chemicals	2.1	4.0	61.0	-3.5
ASML HOLDING	NL	ICT prod	2.1	2.2	14.0	18.3

Note: \*Peugeot and Fiat Chrysler Automobiles merged in early 2021 forming the group Stellantis. Data presented here are from 2020 prior to the merger.

Source: The 2021 EU R&D investment Scoreboard (forthcoming) – first sample.

## Policy conclusion

The relative resilience shown by R&D investments (compared to other financial indicators) while companies were hit hard by the pandemic demonstrates the important role that industrial R&D plays to tackle major societal issues and to underpin the recovery.

The comparatively good performance of these companies in largely maintaining and increasing R&D at a time of falling sales and capital expenditure suggests that they are planning for the post-Covid opportunities and the digitalisation and sustainability challenges and opportunities they face.

The pandemic accelerated the ongoing global tech-race by calling for solutions from innovation-driven industries, namely pharma & biotech and ICT sectors while affecting severely other sectors and particularly transport related industries as shown in this sample of large R&D investors.

This situation poses a two-fold challenge for the EU. First, the competitors of the EU are very strong in health sectors and particularly in biotechnology which is the basis of more and more new drugs. Second, these data indicate the importance of the automotive sector for the R&I performance of EU based industry, with the need to address critical dependencies. These results stress the need to step-up the implementation of EU policies aimed at supporting the recovery, resilience and the digital and green transitions and in particular the new industrial and European Research Area strategies.

## Annex - the EU Industrial R&D Investment Scoreboard

The EU Industrial R&D Investment Scoreboard (the *Scoreboard*) is published annually since 2004 with the aim to raise awareness of the importance of R&D for businesses and to encourage firms to disclose information about their R&D investments and other intangible assets. The data for the *Scoreboard* are taken from companies' publicly available audited accounts. As in more than 99% of cases these accounts do not include information on the place where R&D is actually performed, the company's whole R&D investment in the *Scoreboard* is attributed to the country in which it has its registered office. This should be borne in mind when interpreting the *Scoreboard's* country classifications and analyses.

This brief is based on an early subsample of 697 companies with available accounts per 4 June among the December 2021 forthcoming full Scoreboard sample comprising 2500 top investors plus 1000 headquartered in the EU (with available accounts per 1 August 2021). The data for the 2021 *Scoreboard* have been collected from companies' annual reports and accounts by Bureau van Dijk – A Moody's Analytics Company. The source documents, annual reports & accounts, are public domain documents and so the *Scoreboard* is capable of independent replication. In order to maximise completeness and avoid double counting, the consolidated group accounts of the ultimate parent company are used. Companies which are subsidiaries of any other company are not listed separately. Where consolidated group accounts of the ultimate parent company are not available, subsidiaries are included. In the case of a demerger, the full history of the continuing entity is included. The history of the demerged company can only go back as far as the date of the demerger to avoid double counting of figures. In case of an acquisition or merger, pro forma figures for the year of acquisition are used along with pro-forma comparative figures if available.

The R&D investment included in the *Scoreboard* is the cash investment which is funded by the companies themselves. It excludes R&D undertaken under contract for customers such as governments or other companies. It also excludes the companies' share of any associated company or joint venture R&D investment when disclosed. However, it includes research contracted out to other companies or public research organisations, such as universities. Where part or all of R&D costs have been capitalised, the additions to the appropriate intangible assets are included to calculate the cash investment and any amortisation eliminated.

The *Scoreboard* data are nominal and expressed in Euros with all foreign currencies converted at the exchange rate of the year-end closing date (31.12.2020). Users of *Scoreboard* data should take into account also the methodological limitations summarised in the annexes of the yearly *Scoreboard* publication, especially when performing comparative analyses.