



Productive capital operating times continued to increase in 2018

Findings of the annual Banque de France survey

In 2018, productive capital operating times (COT) posted a lower increase than in 2017 (up 1.9%, compared with a 3.7% increase in 2017), but a comparable one to that of 2016 (up 1.6%).

This moderate rise in COT highlights the constraints faced by companies seeking to expand their activity. Indeed, more than 50% of companies reported that certain obstacles prevented them from extending COT, the most important of which remained the shortage of skilled labour.

Finally, the use of digital technologies and robotisation, which was the subject of specific questions in 2018, appears highly differentiated across companies. Almost all of them stated that they had an Internet connection. However, the type of connection, the employment of specialists, the use of storage services (cloud), data analysis (big data) or the use of robots vary considerably according to the size of the companies and their sector of activity.

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With the contribution of the Banque de France network

JEL codes

D21, D24

J21, J23

1.9%

average increase in productive capital operating times (COT) in 2018

51%

proportion of companies stating that certain obstacles prevented them from extending COT

99.8%

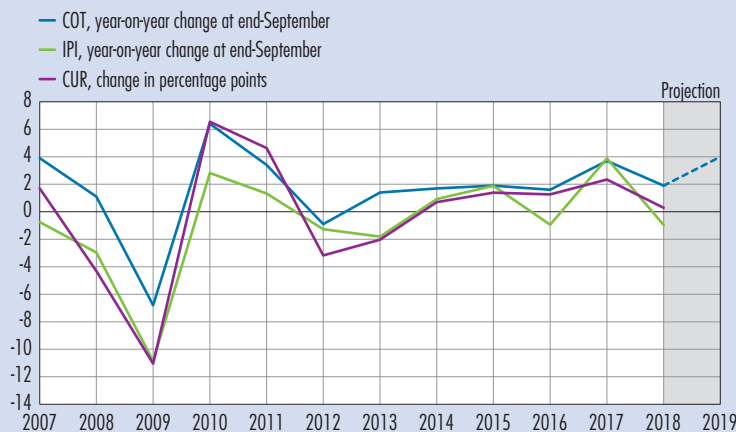
proportion of companies with an Internet connection

50%

proportion of SMEs with an access to fibre optic Internet

Changes in capital operating times (COT), industrial production index (IPI) and capacity utilisation rate (CUR)

(%)



Sources: Banque de France (COT and CUR) and Insee (IPI).

Scope: Manufacturing industry companies with 20 or more employees (CUR); manufacturing industry companies (IPI and CUR).



1 Capital operating times increased in 2018, despite a slight slowdown

The Banque de France's productive capital operating times (COT)¹ survey provides data on the adjustments made by companies to respond rapidly to changes in demand without resorting to new investments. Indeed, faced with an unexpected rise or fall in demand, companies first adjust via their capacity utilisation rate (CUR) and capital operating times, then adapt their labour and capital stock – see notably the study by Cette, Lecat and Jiddou (2016), which is based on this survey data.

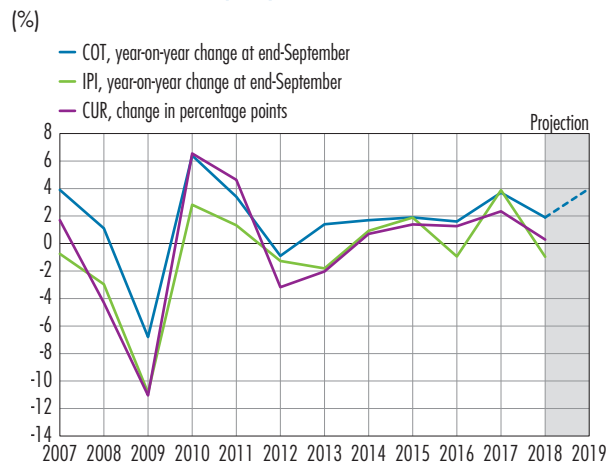
Capital operating times increased in line with industrial activity

Between 2017 and 2018, COT increased by 1.9% on average – a slower pace than that observed between 2016 and 2017 (up 3.7%). This development is in line with a slowdown in growth: according to Insee, GDP rose by 1.5% in 2018, following a rise of 2.3% in 2017.

Changes in COT are closely linked to changes in industrial activity. Manufacturing output was less dynamic in 2018 than in 2017. This change in productive activity, and therefore in COT, was also accompanied by a very slight fall in the CUR over the period (see Chart 1 and Table 1).

While COT rose in the same proportions as in 2017 among small and medium-sized enterprises,² they registered a sharp slowdown among large enterprises,³ growing by only 0.6% in 2018, compared with an

CI Changes in capital operating times (COT), industrial production index (IPI) and capacity utilisation rate (CUR)



Sources: Banque de France (COT and CUR) and Insee (IPI).
Scope: Manufacturing industry companies with 20 or more employees (CUR); manufacturing industry companies (IPI and CUR).
Key: Between September 2017 and September 2018, COT rose by 1.9% and the IPI decreased by 1.0%; between 2017 and 2018, the CUR increased by 0.3%.
Note: The change in COT is calculated by weighting it by the product of workforce representativity ratios (see methodological appendix).

increase of 4.2% in 2017. Changes in COT also differed substantially from one sector to another over these two years. While COT increased in the food, beverages and tobacco products sector (from -0.5% to +0.5%) and in the electrical, electronic and computer equipment and machinery sector (from 4.4% to 5.0%), they posted a sharp fall in the transport equipment sector (from 8.0% to 0.6%) and, to a lesser extent, in the other industrial products sector (from 3.3% to 1.7%) – see Table 1 and Charts 2a and 2b.

¹ The COT survey is the only survey in France that targets capital operating times. The average COT corresponds to the average number of hours during which equipment is used during a reference week defined in September. The companies surveyed answer the question, "What is the variation in your productive capital operating times over the past twelve months (the week of 3-9 September 2018 compared to the week of 4-10 September 2017)?" See the methodological appendix for further details.

² Small and medium-sized enterprises count 20 to 499 employees.

³ Large enterprises count 500 or more employees.



T1 Changes in the industrial production index (IPI) and capital operating times (COT) by business size and sector of activity

(year-on-year change at September, %)

	Change in COT							Change in the industrial production index					
	2007	2009	2012	2016	2017	2018	Proj. 2019	2007	2009	2012	2016	2017	2018
All	3.9	-6.8	-0.9	1.6	3.7	1.9	4.0	-0.7	-10.8	-1.3	-0.9	3.9	-1.0
By company size													
SMEs (20 to 499 employees)	4.1	-5.4	-0.4	2.5	3.3	3.0	4.1						
Large enterprises (500 employees or more)	3.7	-8.4	-1.5	0.4	4.2	0.6	3.8						
By sector of activity													
Food, beverages and tobacco products (C1)	3.3	2.2	2.5	2.3	-0.5	0.5	6.0	0.9	-0.1	-1.1	-0.8	-1.0	-3.2
Electrical, electronic, computer equipment and machinery (C3)	4.3	-7.3	1.8	2.1	4.4	5.0	5.7	0.5	-23.8	-2.3	-4.3	2.6	0.2
Transport equipment (C4)	7.0	-11.7	-7.3	-0.7	8.0	0.6	0.8	-5.2	-7.7	-5.9	-0.4	9.8	-0.8
Other industrial products (C5)	3.2	-7.2	-0.8	1.9	3.3	1.7	3.8	-0.2	-10.2	0.3	-0.1	4.1	-0.7

Sources: Banque de France (COT survey) and Insee (monthly industry survey for the IPI).

Scope: Manufacturing industry companies with 20 or more employees (COT); manufacturing industry companies (IPI).

Key: Between September 2017 and September 2018, COT rose by 1.9% and the IPI decreased by 1.0%.

Note: The change in COT is calculated by weighting it by the product of workforce representativity ratios (see methodological appendix).

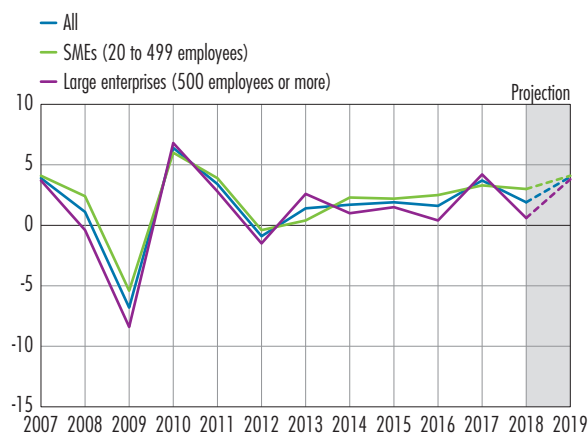
Companies expect COT to increase further in 2019, by 4.0%, a projection shared on average by SMEs and large enterprises. At the sectoral level, the food, beverages and tobacco products sector foresees the

largest increase in COT (6.0%), followed closely by the electrical, electronic, computer equipment and machinery sector (5.7%) – see Table 1 and Charts 2a and 2b.

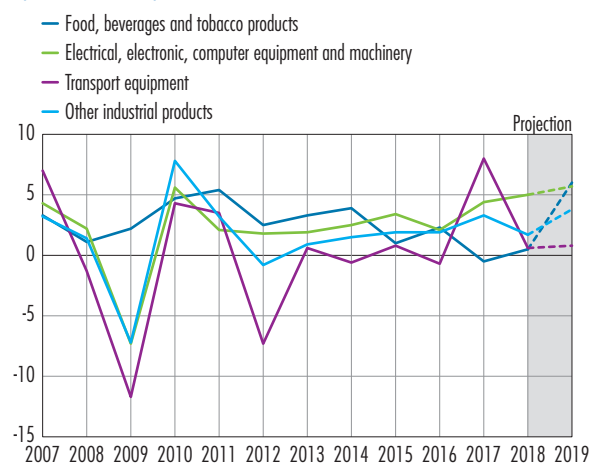
C2 Changes in capital operating times (COT)

(year-on-year change at September, %)

a) by company size



b) by sector of activity



Source: Banque de France (COT survey).

Scope: Manufacturing industry companies with 20 or more employees.

Key: a) Between September 2017 and September 2018, COT increased by 1.9%; b) Between September 2017 and September 2018, COT rose by 5.0% in the electrical, electronic, computer equipment and machinery sector.

Note: The change in COT is calculated by weighting it by the product of workforce representativity ratios (see methodological appendix).



Reliance on shift work helps raise COT

In order to raise COT, and thus the use of their stock of capital, companies can extend their employees' working time or reorganise production with several operators from a team working shifts at the same post.⁴

In 2018, 79% of manufacturing industry companies with 20 or more employees, or 30.3% of the workforce of all the companies surveyed used shift work. This share was particularly high among large enterprises (93.8%) relative to SMEs (67.1%). Similarly, the share of firms using shift work in the transport equipment sector was much larger (88.9%) than in the other sectors (see Table 2).

Companies using shift work mobilised 40.1% of their workforce on shift work, broken down by type, as follows: 16.8% for discontinuous shift work, 15.3% for semi-continuous shift work and 8.0% for continuous shift work. This distribution

appears stable across company sizes, but varies greatly from one sector to another (see Table 2).

The workweek increased slightly

Companies can also extend their COT by lengthening the working week. Between 2017 and 2018, the average workweek increased slightly from 36.1 to 36.3 hours.⁵ This rise was mainly driven by SMEs whose average workweek increased from 36.0 to 36.3 hours, while that of large enterprises remained stable at 36.3 hours (see Chart 3a).

In 2018, the average working time of the different sectors of activity converged to range between 36.0 and 36.5 hours, against 35.8 and 37.1 hours a year earlier (see Chart 3b). It was lengthened in the other industrial products sector, remained stable in the food, beverages and tobacco products sector, and the electrical, electronic, computer equipment and machinery sector, and shortened in the transport equipment sector.

T2 Proportion of companies resorting to shift work and proportion of staff concerned, by company size and sector of activity in 2018 (%)

	Proportion of companies resorting to shift work	Proportion of shift workers within all companies				Proportion of shift workers in companies resorting to shift work			
		Total	o/w discontinuous	semi-continuous	continuous	Total	o/w discontinuous	semi-continuous	continuous
All	79.0	30.3	12.7	11.6	6.0	40.1	16.8	15.3	8.0
By company size									
SMEs (20 to 499 employees)	67.1	25.7	10.6	10.7	4.3	40.5	16.7	16.8	7.0
Large enterprises (500 employees or more)	93.8	36.3	15.4	12.8	8.1	39.6	16.8	13.9	8.9
By sector of activity									
Food, beverages and tobacco products (C1)	76.4	30.8	17.5	11.5	1.7	42.0	23.7	15.7	2.7
Electrical, electronic, computer equipment and machinery (C3)	69.9	21.8	9.3	4.4	8.1	32.5	13.8	6.7	12.0
Transport equipment (C4)	88.9	32.8	12.3	17.4	3.1	40.1	15.0	21.3	3.8
Other industrial products (C5)	79.8	32.5	12.6	12.5	7.4	41.8	16.2	16.1	9.6

Source: Banque de France (COT survey).

Scope: Manufacturing industry companies of 20 or more employees.

Note: The shares are calculated by weighting them by the product of workforce representativity ratios (see methodological appendix).

⁴ Shift work, or successive work teams, corresponds to working arrangements under which the same post or group of posts is occupied on a rotating basis by different employees belonging to separate teams. See methodological appendix for further details.

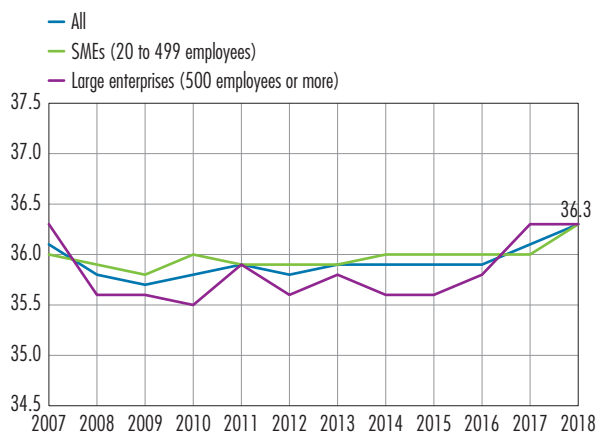
⁵ According to the "Activité et les conditions d'emploi de la main-d'oeuvre" (Acemo – workforce activity and working conditions) survey conducted by Dares, a French government department for research, studies and statistics, the average collective labour workweek in industry as a whole amounted to 35.4 hours at end-September 2018, unchanged on that of end-September 2017.



C3 Changes in working time

(workweek in hours)

a) by company size

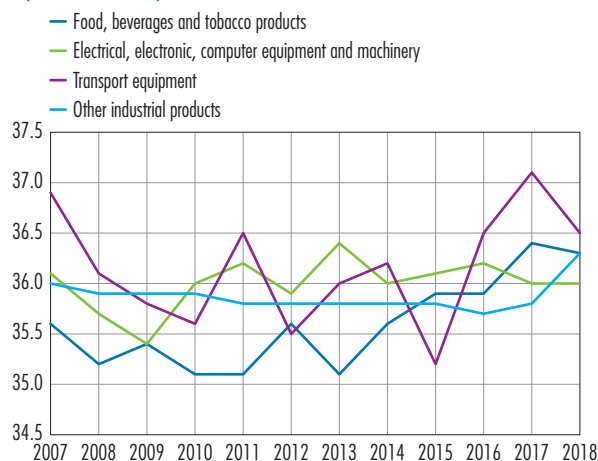


Source: Banque de France (COT survey).

Scope: Manufacturing industry companies of 20 or more employees.

Note: The workweek is calculated by weighting it by the product of workforce representativity ratios (see methodological appendix).

b) by sector of activity



2 Obstacles to extending COT grew in 2018

In 2018, 51% of companies (compared to 41% in 2017) stated that certain obstacles prevented them from extending COT to meet an increase in demand.

Among these companies, 52% considered that these obstacles stopped them from raising COT to the desired level (compared to 55% in 2017). This ratio was even 74% in the electrical, electronic, computer equipment and machinery sector (see Table 3).

T3 Share of companies facing obstacles to extending COT, by company size and sector of activity

(%)

	2016	2017	2018
Total	44	41	51
<i>o/w consider the obstacles restrictive</i>	45	55	52
By company size			
SMEs (20 to 499 employees)	43	43	48
<i>o/w consider the obstacles restrictive</i>	45	51	60
Large enterprises (500 employees or more)	47	38	54
<i>o/w consider the obstacles restrictive</i>	45	60	43
By sector of activity			
Food, beverages and tobacco products (C1)	43	42	44
<i>o/w consider the obstacles restrictive</i>	45	50	37
Electrical, electronic, computer equipment and machinery (C3)	45	37	48
<i>o/w consider the obstacles restrictive</i>	43	55	74
Transport equipment (C4)	47	20	59
<i>o/w consider the obstacles restrictive</i>	22	66	19
Other industrial products (C5)	44	49	51
<i>o/w consider the obstacles restrictive</i>	54	54	62

Source: Banque de France (COT survey).

Scope: Manufacturing industry companies of 20 or more employees.

Note: The shares are calculated by weighting them by the product of workforce representativity ratios (see methodological appendix).



The shortage of skilled labour remained the primary obstacle to extending COT

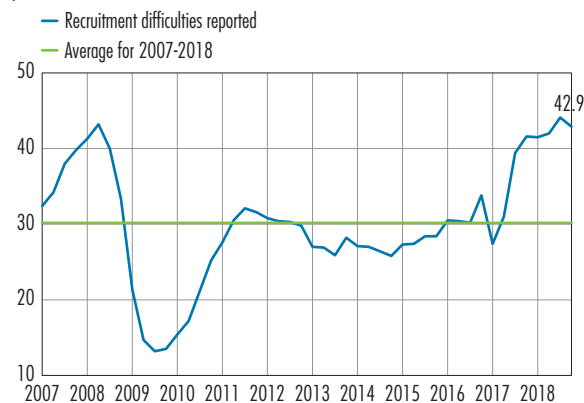
In 2018, 84% of companies facing obstacles to extending their COT reported a shortage of skilled labour. Since 2008, this shortage has topped the seven obstacles to extending COT that have been identified by the survey (see Table 4).

These statements are corroborated by the results of the Insee quarterly business survey in industry, which indicates that the share of companies reporting recruitment difficulties was 44.1% in the third quarter of 2018, i.e. significantly higher than its long-term average of 30.2% (see Chart 4).

As in 2017, the three most significant obstacles after the shortage of skilled labour are: technical obstacles (81%), bottlenecks in commodities or supplies (74%) and staff or union reluctance (72%) (see Table 4).

C4 Difficulties recruiting skilled staff

(%)



Source: Insee (quarterly business survey in industry).

Scope: Manufacturing and extractive industry companies.

The capacity utilisation rate (CUR) declined

In 2018, the companies surveyed reported a capacity utilisation rate of 76.8%, down on the rate of 78.4% in 2017. It is close to its 2016 level (76.3%), in line with the changes in CUR. However, it differs from the CUR observed in the Banque de France's monthly business survey⁶ (see Table 5), mainly on account of different samples and reference periods.

T4 Breakdown of companies facing obstacles to extending COT, by type of obstacle

(%)

	2008	2009	2010	2011	2012	2013	2015	2016	2017	2018
Shortage of skilled labour	56	50	50	56	49	50	74	81	86	84
Technical obstacles	36	33	31	40	39	41	69	62	68	81
Bottlenecks in commodities or supplies	21	27	35	41	30	29	59	69	69	74
Staff or union reluctance ^{a)}	44	31	45	44	43	39	65	61	67	72
Legislative or regulatory obstacles	24	28	31	27	31	29	65	60	59	65
Company-level collective agreements	15	15	23	19	25	22	52	50	49	65
Sectoral arrangements and agreements	7	6	10	12	10	9	48	46	43	60
Union position ^{a)}	31	27	30	30	26	30	63	58	-	-
Others ^{b)}	7	7	12	13	7	11	46	43	-	-

a) "Staff reluctance" and "union position" were combined under "staff or union reluctance" in 2017.

b) The "others" category was removed in 2017.

Source: Banque de France (COT survey).

Scope: Manufacturing industry companies of 20 or more employees.

Note: The shares are calculated by weighting them by the product of workforce representativity ratios (see methodological appendix).

⁶ The questions on CUR in the monthly business survey and in the COT survey were only harmonised in 2007. The monthly business survey CUR is expressed as an annual average, while the COT survey CUR corresponds to the reference week in September and to a different sample. See the methodological appendix for further details.



T5 Capacity utilisation rate, according to different sources

(%)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
COT survey CUR	79.3	78.0	70.4	75.8	76.8	74.3	75.4	76.1	74.7	76.3	78.4	76.8
Monthly business survey CUR ^{a)}	83.9	80.3	71.5	76.1	79.7	77.1	75.6	76.1	77.2	78.1	80.0	80.2
Insee CUR ^{a)}	85.8	85.0	74.1	77.5	82.1	80.9	80.5	81.0	81.9	82.5	84.3	85.4

a) Annual average (%).

Source: Banque de France (COT survey and monthly business survey) and Insee (quarterly business survey).

Scope: Manufacturing industry companies of 20 or more employees (COT survey CUR); manufacturing industry companies (monthly business survey CUR).

Note: The CUR is calculated by weighting it by the product of workforce representativity ratios (see methodological appendix).

The 2018 COT survey focus: companies' use of digital technologies and robotisation

In 2018, the COT survey included a series of additional questions on digital technologies and robotisation. These questions concerned the use and type of broadband connection, the employment of information and communication technology (ICT) specialists, the use of new information technologies (cloud, big data) and robotisation.

The results of the survey show that the use of digital technologies and robotisation differs significantly depending on the companies' size and/or sector of activity (see tables below).

Almost all the companies surveyed (94.8%) have had an Internet connection for an average of 17 years. Fibre connection is nevertheless more widespread in large enterprises (73%) than in SMEs (only 50%).

Ta Share of companies with an Internet connection, by company size and sector of activity in 2018

(share in%, duration in years)

	Internet connection		Breakdown of companies by type of Internet connection					
	Share of connected respondents	Duration	DSL	Fibre	Cable	WiMax	Other	Non-specified
Total	94.8	17.2	33.8	60.7	2.5	0.5	2.5	6.4
By company size								
SMEs (20 to 499 employees)	97.4	16.5	44.6	50.0	3.2	0.3	2.0	9.2
Large enterprises (500 employees or more)	91.7	18.3	20.6	73.7	1.7	0.8	3.2	2.7
By sector of activity								
Food, beverages and tobacco products (C1)	93.3	16.6	44.3	53.7	1.5	0.0	0.5	7.6
Electrical, electronic, computer equipment and machinery (C3)	98.9	17.5	27.8	65.4	4.1	0.4	2.3	6.5
Transport equipment (C4)	94.1	17.9	16.9	76.6	3.4	0.0	3.1	0.9
Other industrial products (C5)	94.0	17.1	39.2	55.0	1.9	0.9	3.0	7.9

Source: Banque de France (COT survey).

Scope: Manufacturing industry companies with 20 or more employees.

Note: The share of connected companies, the duration of the Internet connection and the breakdown of the companies by type of connection are calculated by weighting them by the product of workforce representativity ratios (see methodological appendix).

.../...



Over 80% of large enterprises employ (in-house or external) ICT specialists. However, only 50% of SMEs employ such staff, and have been doing so for a shorter period (approximately 14 years on average, against 18 for large enterprises).

The use of cloud services and big data analysis is relatively recent (respectively 5 to 6 years on average), and appears very uneven (much more widespread among large enterprises and in the transport equipment sector).

Tb Employment of ICT specialists, use of cloud services and big data analysis, by company size and sector of activity in 2018

(share of companies having replied "yes" in %, duration in years)

	Employment of ICT specialists				Use of cloud services		Big data analysis	
	In-house staff		External staff		Share	Duration	Share	Duration
	Share	Duration	Share	Duration				
Total	71.0	17.5	69.1	15.4	57.1	5.2	28.5	6.2
By company size								
SMEs (20 to 499 employees)	55.0	15.2	57.6	13.5	45.4	4.8	13.5	6.8
Large enterprises (500 or more employees)	90.7	19.3	83.3	17.0	71.6	5.5	47.1	6.0
By sector of activity								
Food, beverages and tobacco products (C1)	58.8	17.0	67.3	14.6	58.9	5.2	18.3	3.6
Electrical, electronic, computer equipment and machinery (C3)	78.6	16.9	66.3	14.5	53.4	4.8	29.2	8.1
Transport equipment (C4)	92.3	18.7	81.7	17.0	68.3	4.9	55.0	4.7
Other industrial products (C5)	64.7	17.4	68.4	15.3	54.1	5.4	22.4	7.1

Source: Banque de France (COT survey).

Scope: Manufacturing industry companies with 20 or more employees.

Note: ICT, information and communication technologies. The shares and durations are calculated by weighting them by the product of workforce representativity ratios (see methodological appendix).

The use of industrial robots is significant (66%), but largely driven by the transport equipment sector (90%). Conversely, the use of service robots, which is more recent (7 years on average, compared to 14 for industrial robots), is much less frequent (11%), in particular among SMEs (less than 6%).

Tc Use of robots, by company size and sector of activity in 2018

(share of companies having replied "yes" in %, duration in years)

	Industrial robots		Service robots	
	Share	Duration	Share	Duration
Total	66.3	14.0	11.1	7.1
By company size				
SMEs (20 to 499 employees)	51.1	12.2	5.6	10.5
Large enterprises (500 or more employees)	85.0	15.3	17.8	5.8
By sector of activity				
Food, beverages and tobacco products (C1)	67.7	12.9	17.4	4.7
Electrical, electronic, computer equipment and machinery (C3)	67.6	14.1	12.4	8.0
Transport equipment (C4)	90.2	16.7	19.0	7.1
Other industrial products (C5)	57.3	13.0	5.9	8.6

Source: Banque de France (COT survey).

Scope: Manufacturing industry companies with 20 or more employees.

Note: The shares and durations are calculated by weighting them by the product of workforce representativity ratios (see methodological appendix).

Finally, while 60% of the companies surveyed consider themselves to be at the same level as their competitors in terms of digitisation, only 9% consider themselves to be ahead, compared to 17% behind (the others did not express an opinion).



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Appendix

Methodological information

The Banque de France's COT survey

Since 1989, the Banque de France has carried out an annual survey on productive capital operating times (COT) through its branch network, targeting manufacturing firms with 20 employees or more. COT corresponds to the average number of hours equipment is used during a reference week defined in September. It forms an element of capital utilisation analysis and therefore of business profitability analysis, as COT have an impact on the depreciation cost of productive capital. It depends both on average working times and the way work is organised. This survey is particularly useful for understanding changes in conditions in the different manufacturing industry sectors.

This survey is carried out annually in September and in 2018 it was addressed to 1,349 companies. The questions concerned:

- past and projected changes in COT;
- the use of shift work and its organisation;
- staff levels and working time during the current and previous year;
- obstacles to extending COT;
- the capacity utilisation rate (CUR), without taking on additional employees.

Shift work is organised in three different ways:

- a discontinuous shift pattern, with a daily halt in production;
- a semi-continuous shift pattern, with a weekly halt in production;
- a continuous shift pattern, with no halt in production during the week, but with the possibility of a pause during the year.

The **reference week** for the companies surveyed ran from 3 to 9 September in 2018 (after 4 to 10 September in 2017). If it is not suitable, the company is authorised to choose another week of the same month.

New questions were added to the 2018 survey. They concern companies' use of digital technologies and robotisation. This part of the survey was divided into eight questions.

1. For how many years have you been using an Internet connection? What type of Internet connection are you currently using (ADSL, SDSL, VDSL, fiber optic [FTTH], cable, WiMax, other, none)?¹
2. Do you employ in-house information and communication technologies (ICT) specialists? If yes, for how many years?

¹ The xDSL technologies (ADSL, followed by the new, more powerful SDSL and VDSL generations) use copper connection lines (telephone or other) and rely on the traditional telephone network. The cable technology consists in a signal broadcast via a cable from a fibre located a short distance away; it is more powerful than the xDSL technologies. The optical fibre (FTTH) technology relies on optical data transmission via glass or plastic wires, and is even more powerful than the xDSL and cable technologies. The WiMax technology relies on wireless data transmission at high frequencies and over long distances.



3. Do you employ external information and communication technologies specialists?
If yes, for how many years?

4. Have you ever used cloud services?²
If yes, for how many years?

5. Have you ever analysed big data?³
If yes, for how many years?

6. How do you perceive the implementation of digitisation in your entity compared to other market players?

7. Do you use industrial robots?⁴
If yes, for how many years?

8. Do you use service robots?⁵
If yes, for how many years?

The **sample** is made up of companies belonging to the following sectors:

- food, beverages and tobacco products (category Insee summary economic classification – NES A17 “C1”, representing 15.8% of the workforce of manufacturing industry companies with 20 or more employees in 2016);
- electrical, electronic, computer equipment and machinery (“C3”, 18.2%);
- transport equipment (“C4”, 17.0%);
- and other industrial products (“C5”, 49.0%).

The survey results are weighted using the most recent comprehensive Insee statistics on 2016 staff levels.

Between 2017 and 2018, the sample’s coverage ratio increased significantly, rising from 12.6% to 13.2% (see table below).

Company size is defined on the basis of total staff employed, including temporary workers. “Small and medium-sized enterprises” (SMEs) have 20 to 499 employees and “large enterprises” (LE) have 500 employees or more.

The number of questionnaires collected in the framework of the COT survey in 2018 stood at 1,349. Among these questionnaires, 40 were deleted, of which: i) 8 because of the existence of questionnaires corresponding to several entities from the same company (these questionnaires were merged so as to have only one observation per company); ii) 8 whose sector did not fall within the scope of the survey (manufacturing industry); iii) 12 whose staff numbers did not correspond to the scope of the survey (20 or more employees); iv) 12 whose change in COT between 2017 and 2018 was missing. In the end, this article covers 1,309 questionnaires and companies.

The variables presented in this article are calculated by weighting them by the product of two ratios: i) the ratio of the company’s workforce over the total workforce of all companies in the COT survey belonging to the same size category and the same sector of activity as the company in question; ii) the ratio of the total workforce of all companies in the French economy belonging to this same size category and sector of activity over the total workforce of all companies in the French economy belonging to the manufacturing industry with 20 or more employees. This weighting is itself calculated using the most recent comprehensive Insee statistics on 2016 staff levels (see table below).

2 Cloud services are computer services used on the Internet to access software, computing power, and storage capacity.

3 Big data are generated by the activities executed electronically and between machines. Big data analysis refers to the use of techniques, technologies, algorithms and software to analyse big data from institutional, corporate or other sources.

4 An industrial robot is an automatically controlled, reprogrammable, versatile, 3-axis programmable manipulator. It can be either fixed or mobile. It is used for industrial automation purposes.

5 A service robot is a machine with a degree of autonomy and capable of operating in a complex and dynamic environment that requires interacting with people, objects or other devices. Uses for industrial automation purposes are excluded.



Number and proportion of companies and staff within the total population and the COT survey sample, by company size and sector of activity in 2018

(number in units, proportion in %)

	Total population				COT survey sample				Staff coverage ratio	
	Companies		Staff		Companies		Staff			
	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion		
Total	15,717	100.0	2,098,402	100.0	1,309	100.0	276,525	100.0	13.2	
By company size										
Small and medium-sized enterprises (20 to 499 employees)	15,094	96.0	1,160,406	55.3	1,201	91.7	134,548	48.7	11.6	
Large enterprises (500 employees or more)	623	4.0	937,996	44.7	108	8.3	141,977	51.3	15.1	
By sector of activity										
Food, beverages and tobacco products (C1)	2,381	15.1	330,541	15.8	167	12.8	30,637	11.1	9.3	
Electrical, electronic, computer equipment and machinery (C3)	2,577	16.4	382,614	18.2	237	18.1	52,275	18.9	13.7	
Transport equipment (C4)	694	4.4	356,579	17.0	79	6.0	75,599	27.3	21.2	
Other industrial products (C5)	10,065	64.0	1,028,668	49.0	826	63.1	118,014	42.7	11.5	

Sources: Insee (total population) and Banque de France (COT survey sample).

Scope: Manufacturing industry companies of 20 or more employees.

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