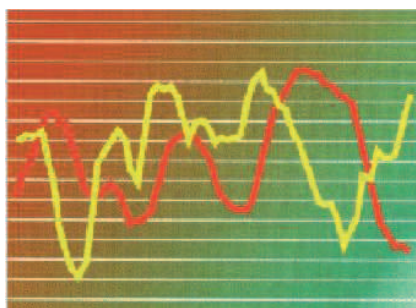


POINT DE CONJONCTURE



17 JUNE 2020

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Introduction

Almost exactly three months ago, on 17 March, a large section of the French economy was deliberately brought to a standstill in an attempt to curb the particularly virulent Covid-19 epidemic. Since 11 May the epidemic has started to ebb, allowing the lockdown to be lifted gradually. In the very short term, the evolving health situation will condition the speed of economic recovery, in much the same way that it precipitated the crisis in the first place.

As things stand, the epidemic is continuing to taper off, leading to an acceleration of the lockdown easing measures. We therefore revise our quarterly estimate of French GDP upwards for Q2 2020, to -17% (against -20% in the 27 May *Point de conjoncture*, and after -5.3% in Q1). More specifically, the latest available indicators point to a loss of economic activity compared to “normal” of 29% in April then 22% in May, and the figure should be limited to 12% in June.

This upward revision is bolstered by the availability of new “hard” indicators for April 2020, which have refined the snapshot of the French economy initially given by INSEE based on “high-frequency” data and direct feedback from businesses and professional federations. In April, both industrial output and household consumption of goods were around one-third below their pre-crisis level, an order of magnitude that was anticipated in our *Points de conjoncture*. Services to businesses, however, appear to have suffered slightly smaller losses than the information at our disposal had led us to believe.

At present, the various high-frequency data are painting a contrasting picture of the shape of the recovery. This is because not all indicators are returning to normal in the same way – and some will probably not return for a while yet. At the end of May for example, while economic activity was estimated to be one-fifth below its pre-crisis level, daily commutes calculated using mobile phone data were 40% down on their pre-lockdown level.

Aggregated bank card transactions, combined with scanner data sent by certain supermarket chains, provide information on household consumption almost in real time. The post-11 May rebound was particularly strong (down just 7% compared to the pre-crisis level, against -31% in April). The new data available for recent weeks suggest that this rebound is set to last, with consumption expected to be down just 5% in June.

The economy has thus recovered sharply since mid-May, after a month of April that will go down as one of the worst the French economy has seen in peacetime. This recovery is being boosted by various measures (short-time working, solidarity funds for micro-enterprises, the self-employed and micro-entrepreneurs, etc.) put in place to help households and enterprises to get through lockdown: the economy was temporarily put “under anaesthetic”, as we described in April, but in conditions that have allowed it to reawaken.

Uncertainties are therefore easing in the short term. However, this observation does not allow us to predict exactly when the economy will have fully returned to its pre-crisis level. The effects of the shock have varied widely from sector to sector: for those that have been hit hard (e.g. air transport, automotive), the scars will probably be deeper than for others. Generally speaking, the impacts of the health protocols on labour productivity are yet to be evaluated. And questions remain about the future investment behaviour of businesses, as well as about household consumption. During lockdown, households necessarily built up their savings, but they may yet be tempted to play at wait-and-see, either on grounds of prudence about the health situation or as an economic precaution, amid rising fears over unemployment after the loss of half a million jobs in Q1. Lastly, the international environment is likely to remain uncertain for a long time yet, particularly as the threat of a second wave of the epidemic hovers over certain countries, including China. ■

Economic activity

According to the information available on 17 June, French economic activity should continue to recover from its levels in previous weeks. In June, it is likely to be 12% below its pre-crisis level. More than one month after starting the gradual lifting of the lockdown measures, the losses of economic activity should be almost three times less than those estimated at the start of the lockdown.

Taking account of the estimates for the previous months, this scenario should result in a fall in GDP of around 17% in Q2 2020, after -5.3% in Q1. This would be the most severe recession since the creation of the French national accounts in 1948.

One month after the end of lockdown, French activity is set to continue recovering, while remaining far below normal levels

New data have enabled more precise estimates of the activity lost in March and April, with the industrial production index calculated by INSEE and the turnover figures reported by companies. The loss of economic activity has thus been revised slightly downwards, but still remains close to one-third on a full-month basis (-16% in March, then -29% in April, against average estimates of -18% and -35%

in the *Points de Conjoncture* of 26 March, 9 and 23 April).

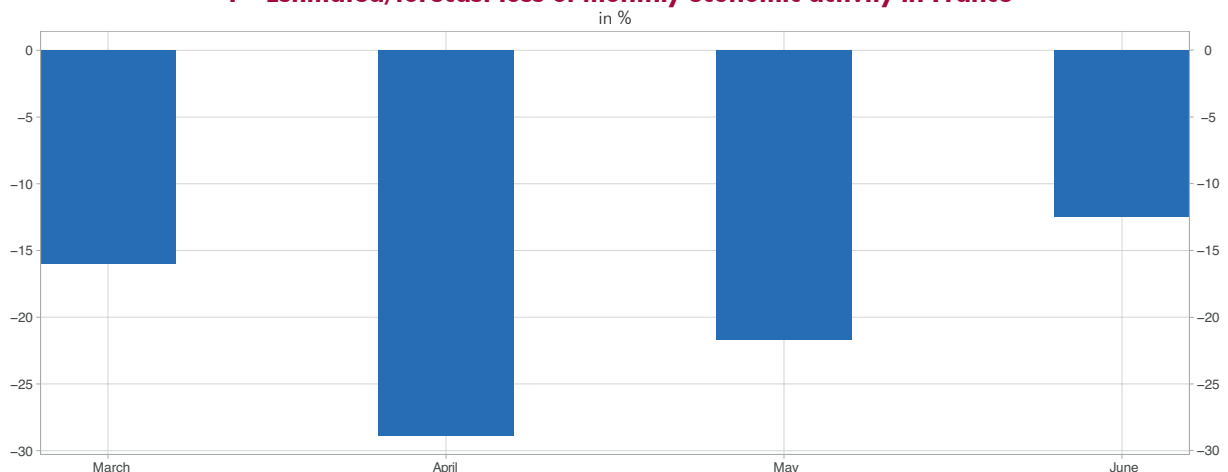
On the basis of the information and data available on 17 June,¹ economic activity should continue to recover in June, with the loss amounting to just 12% compared to a “normal” situation, after -22% on average in May (*Graph 1*). This estimate is slightly more favourable than that in the previous *Point* (-14%) and is explained, among other things, by the good post-lockdown progress made in health terms and the gradual easing of the measures to contain the epidemic. Rail freight traffic, an overall indicator of activity, is continuing its gradual recovery, reflecting the general improvement of the economic landscape (*Box*).

An upturn in activity in all branches of the economy

The continuing recovery in economic activity can be observed in all those branches in which activity is authorised. For instance, the loss of economic activity in construction would appear to have been divided almost by two compared to the figures for May (-34% against -55% in May; *table*) as worksites start up again. In industry, meanwhile, the loss of activity would now appear to be just 15%,

1. The economic activity forecasts are based, among other things, on the Acemo-Covid survey for June, conducted by the DARES with INSEE support. This monthly survey questions businesses in particular on the expected pace of the resumption of activity. Their responses are broken down by branch in order to establish a scenario for the resumption of activity in June, based on the estimates of past losses of economic activity presented in the *Points de Conjoncture*.

1 - Estimated/forecast loss of monthly economic activity in France



Source: INSEE calculations from various sources

French economic outlook

compared to one-quarter in May. Although the return to work continues and household consumption has largely recovered (*Household Consumption sheet*), industrial production is likely to continue being affected, in particular by foreign demand which is still sluggish and by the large stocks to be sold off. In market sector services, the fall in economic activity would appear to be at the same level as that in industry on the whole. Although closures and restrictions on activity affected production in services through to mid-June, the easing of the regulations announced on

14 June could lead to a more rapid rise than in the past month in the economic activity of certain branches that were hit particularly hard by the crisis (accommodation and food services, transport services, cultural and sports activities, etc.).

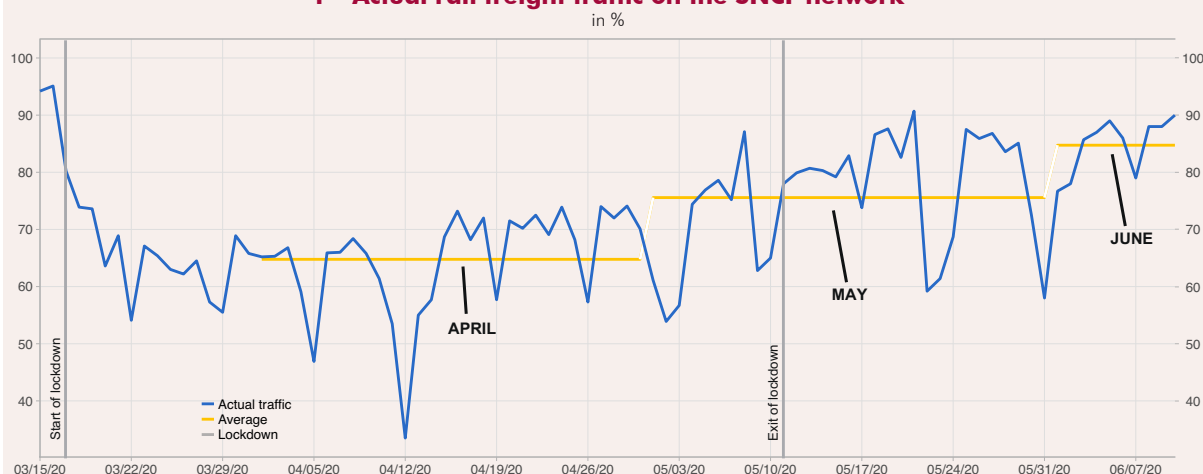
On a quarterly basis, economic activity is likely to be down by around 17% in Q2 (after -5.3% in Q1), a forecast that has been revised upwards since that published on 27 May (-20%). ■

Box

Since the beginning of lockdown, INSEE has been analysing the daily information on rail freight traffic on the SNCF network, in relation to a so-called “normal” benchmark situation. These data thus provide an estimate of the loss of activity in rail freight, but can also be seen as a more general indicator of the loss of activity overall, insofar as goods transport by rail is correlated to the volume of goods being traded in the economy.

Over the two weeks following the start of lockdown, rail freight traffic fell quickly to an average of 63% of the usual number of trains in circulation between 23 March and 23 April (*Graph 2*). In May, slightly ahead of the lockdown being lifted, traffic continued to recover and reached an average of 75%. By the start of June, it stood at around 85% on average on the SNCF network. ■

1 - Actual rail freight traffic on the SNCF network



How to read it: on 10 June 2020, actual rail freight traffic on the SNCF network was 90% compared to a reference day.

Sources: SNCF Réseau, INSEE calculations

Table 1 - Estimation

Branches	Share of GDP (in %)	Loss of activity (in %)	Contributions to loss of activity (GDP points)
Agriculture, forestry and fishing	2	-4	-0.1
Industry	14	-15	-2
Manufacture of food products, beverages and tobacco-based products	2	-2	0.0
Coke and refined petroleum	0	-13	0.0
Manufacture of electrical, electronic, computer equipment; manufacture of machinery	1	-21	0
Manufacture of transport equipment	1	-38	-1
Manufacture of other industrial products	6	-18	-1
Extractive industries, energy, water, waste treatment and decontamination	2	-5	0
Construction	6	-34	-2
Mainly market services	56	-13	-7
Trade; repair of automobiles and motorcycles	10	-12	-1
Transport and storage	5	-30	-1
Accommodation and catering	3	-35	-1
Information and communication	5	-4	0
Financial and insurance activities	4	-5	0
Real estate activities	13	0	-0,1
Scientific and technical activities; administrative and support services	14	-16	-2
Other service activities	3	-33	-1
Mainly non-market services	22	-5	-1
Total	100	-12	-12
<i>of which mainly market</i>	78	-15	-11
<i>of which mainly non-market</i>	22	-5	-1
Total mainly merchants excluding rents	65	-17	-11

How to read it: in June 2020, economic activity is expected to have declined by 12% compared with a normal situation. Industry, whose loss of activity is estimated at 15%, would contribute 2 percentage points to this decline.

Source: INSEE calculations from various sources

By the end of May, morning commutes had only reached 60% of their usual level

As well as recording the changes of place of residence that occurred at the start and end of lockdown, mobile phone data have been used by INSEE since the start of the health crisis to estimate the numbers of residents present on the national territory each night, thus also providing a picture of the extent of daily travel. Morning trips in particular, which may be described as commutes to the workplace, provide an indication of local-level daily activity. After falling to around a quarter of their usual volume during lockdown, by the end of May morning commutes had only risen to about 60% of their level of early February. This reflects how gradual the upturn in activity has been, but probably also the large extent to which certain professions and people in certain areas have continued to work remotely.

The most densely populated zones saw a far more marked reduction in commuting than sparser regions. During lockdown in large urban areas, morning travel towards business and shopping districts was distinctly lower than that towards more residential areas. These contrasting local situations still held true at the end of May, after lockdown had been lifted.

Understanding commutes via mobile phone data

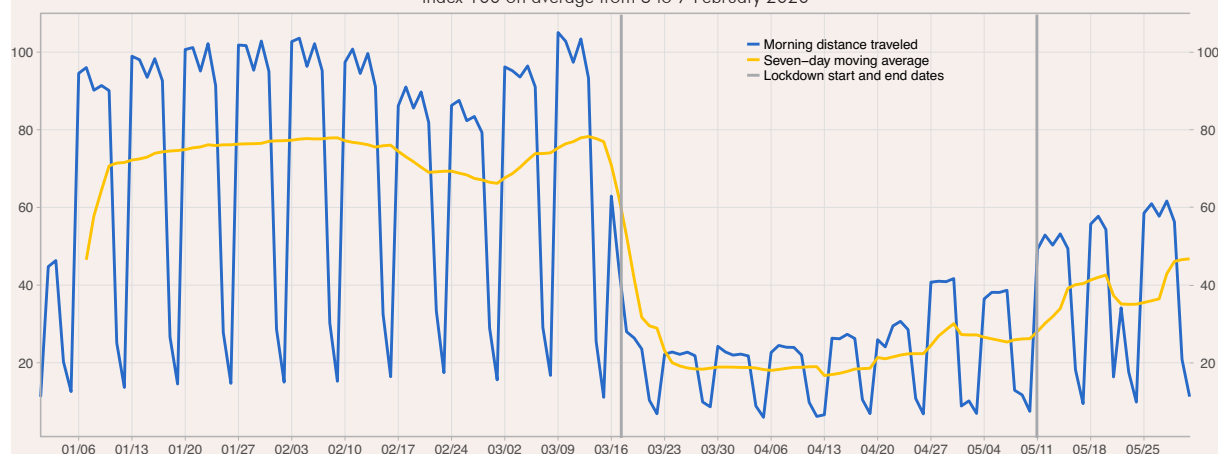
The results presented in this focus article are based on mobility estimates made by Orange Business Services France through its existing Flux Vision service, which Orange decided to share with INSEE in view of the unprecedented health crisis. After publication of estimates on the number of residents present on the territory each night, potential morning commutes are identified in order to track the variation in activity since the start of the crisis. The algorithms used by Flux Vision guarantee irreversible anonymisation by deleting all personal data and making it impossible to identify any physical person. This statistical tool measures the multiple trips made by the resident population of France between 1st January and 31 May 2020. The distances travelled and the travel times vary, potentially reflecting different reasons for those trips. In order to narrow this travel down to morning commutes – which are made directly for the purposes of professional activity – the only trips

considered here are those that ended between 7 am and 9 am followed by a 3-hour period of immobility. The indicators we analysed add together all the distances travelled during these commutes. These indicators were adjusted beforehand by Orange in order to make them representative of the resident population rather than just Orange mobile users. All the results given here to reflect a given level of activity during the health crisis are plotted against a reference working week in which activity was considered as “normal”. This reference working week ran from Monday to Friday and was the first week of February 2020 (working week 6); it preceded the winter school holidays and was no longer affected by the transport strikes that had lasted until the end of January.

Geographically, the trips are attributed to their place of arrival, which in most cases are assumed to be the workplace. Next, they are aggregated at the level of each inter-municipality cooperation institution (EPCI). Once sorted by EPCI of arrival,

1 - Morning distances travelled by mobile phone users

index 100 on average from 3 to 7 February 2020



How to read it: on Friday 29 May, the distance travelled between 7 am and 9 am by mobile phone owners in France represented 56% of the average observed from Monday 3 to Friday 7 February.

Source: Orange, calculations by INSEE. Data available between 1st January and 31 May

the travel data are then spatially smoothed (for [maps 1.a and 1.b](#))¹ in order to attenuate the impact of the administrative division of the territory on the proposed measurement of travel intensity. The indicator obtained and exploited here thus reflects daily variations in the average volume of distances travelled towards the site of arrival. The variations in the number of commutes (rather than their distance) provide very similar results to those presented here.

Morning commutes fell to one-quarter of their usual volume during lockdown and rose to 60% of this level at end May

The first two full weeks following the start of lockdown (23 March to 5 April) were those in which morning commutes by French residents were the most limited (see [Graph](#)), representing less than a quarter of their usual volume. While the week preceding lockdown was comparable to a normal week's activity, commutes slumped from 17 March. From mid-April, morning commutes picked up slightly and gradually reached 40% of normal activity by the end of lockdown.

After 11 May, morning commutes rose above half the level observed in early February, reaching 60% at the end of the month, excluding national holidays and long weeks, which reduced activity.

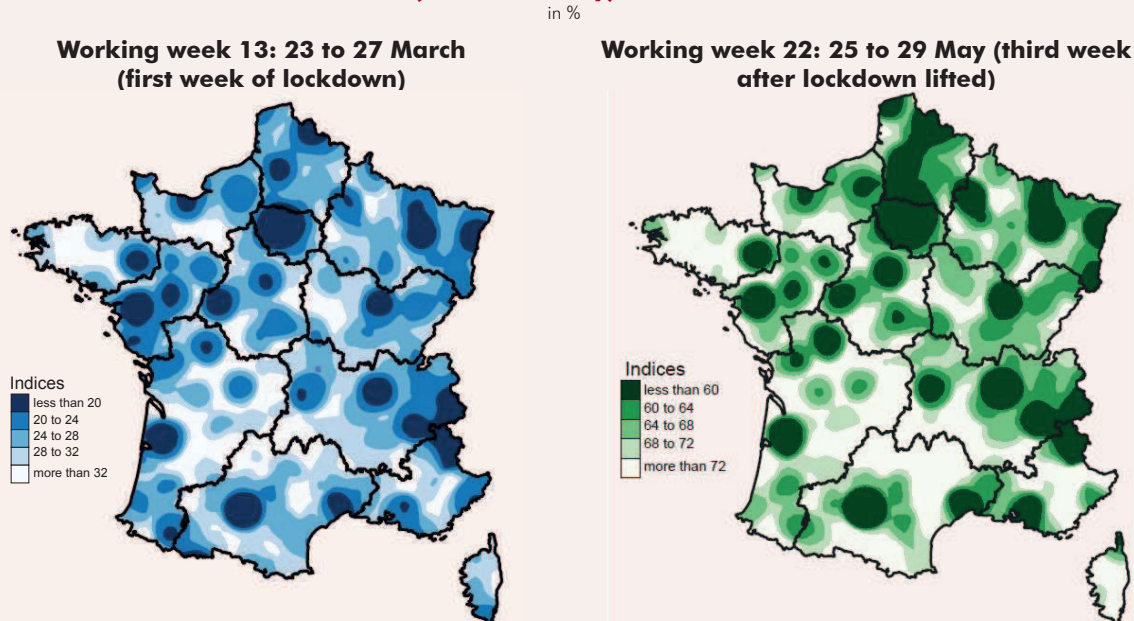
Commutes were most reduced in urban areas, both during lockdown and when it was lifted

During lockdown, the scale of morning commutes was proportionally more reduced in metropolitan areas than in less densely populated zones: in Paris, Lyon, Toulouse, Bordeaux and Nantes the index fell to below 20% of the usual volume. This was observed for the working days of the first full week of lockdown (23 to 27 March, week 13) relative to the first week of February (3 to 7, week 6, [map 1 a.](#)). This gap was maintained after the end of lockdown (25 to 29 May, week 22, [map 1 b.](#)), within the nationwide trend towards recovery.

The amplitude of commuting can be interpreted as reflecting activity: the large urban areas appear to be the zones where, at the end of May, the activity gap relative to usual levels remained the biggest. This finding seems to be independent of the categorisation of these metropolitan areas into "green" and "red" zones (low-risk and high-risk). In addition to the activity gaps, these geographical contrasts may also be explained by the breakdown of job types between metropolitan areas and less densely occupied zones. Remote working, which had been extensively used since mid-March (a quarter of all employees, according to the Acemo-Covid survey conducted by the DARES), mainly concerned certain

1. The data were smoothed over a 50-km radius using a biweight kernel. This type of kernel takes into account only those observations within a distance of 50 km, while weighting the closest observations more heavily.

Maps 1 a. and b. – Ratio of distances travelled in the mornings of working days to those of week 6 (3 to 7 February) of 2020



How to read it: morning commutes to Rouen in working week 13 (respectively 22) were between 20% and 24% (respectively under 60%) of their average level in week 6. For comparison purposes, over Metropolitan France as a whole, morning commutes fell to 22% of their early February volume in week 13, and 59% in week 22.

Source: Orange, calculations by INSEE. Note: the indices are calculated according to place of arrival of morning commutes.

types of jobs most frequently encountered in large cities (administrative services, digital professions, etc.). Conversely, numerous activities that are more common in rural areas (agriculture, crafts, micro-enterprises) were less affected by the health restrictions and contributed to the higher level of commuting in these less dense areas.

After the lifting of lockdown, morning commutes to metropolitan centres remained lower than those towards suburban areas

Similar observations to those made at regional level can be made for the metropolitan areas: trips to central, business and shopping districts fell far more sharply than those towards more residential suburban areas. For example, the majority of Paris arrondissements saw their volume of morning commutes reduced: during the first full week of lockdown, this volume fell to 16% of the level observed in early February (*map 2 a.*). More generally, the areas in which a significant proportion

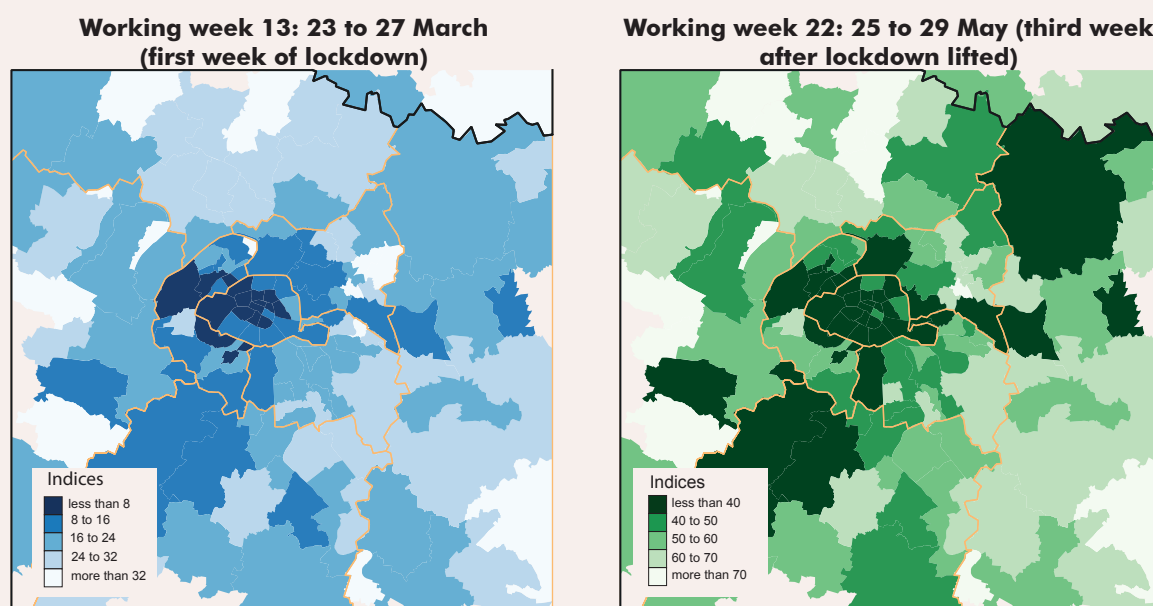
of office space is concentrated, most notably the Hauts-de-Seine and the centre and west of the capital, experienced the largest drop in volume, probably because the majority of employees working in those areas could work remotely.

After 11 May, these areas with a large volume of office space retained this specific feature, i.e. a bigger reduction in commuting compared to normal (*map 2 b.*). The resumption of commuting was also less marked towards the large business zones further out of Paris, such as the Courtabœuf Paris-Saclay business park southwest of the capital and the Paris-Nord 2 international business park to the northeast.

Similarly, in the large cities in the rest of France, lower levels of commuting towards central business districts during and after lockdown were also observed. By the end of May in these metropolitan areas, the average volume of commutes had not risen above half that observed in early February. ■

Maps 2 a. and b. - Ratio of distances travelled in Île-de-France on the mornings of working days to that of week 6 (3 to 7 February) of 2020

in %



How to read it: morning commutes in the 13th arrondissement of Paris in working week 13 (respectively 22) were between 8% and 16% (respectively under 40%) of their average level in week 6.

Note: the indices are calculated according to place of arrival of morning commutes.

Source: Orange, Insee calculations

Information gleaned from press articles can help predict economic activity in real time

Most of the short-term economic activity indicators commonly used in the *Notes de Conjoncture* are monthly or quarterly, only becoming available at the end of the month or the quarter in question. However, it can be crucial to be aware of any change in activity even earlier, especially during the Covid-19 health crisis which has given rise to some sudden and far-reaching economic trends. The qualitative information in articles in the French economic press can be used for this purpose. In particular, it could be used to calculate an indicator that measures the tone of media opinion on economic activity. This indicator provides real-time information on the French economy which is often consistent with change in GDP measured *ex post*.

The aim of the media sentiment indicator is to summarise the qualitative information collected in press articles

Press articles contain a wealth of qualitative information on the current economic context, they deal with a range of topics and are available two or three weeks before the usual short-term indicators, such as the monthly outlook surveys (available only at the end of the month). Using text analysis techniques, automated online data collection (*web scraping*) and *machine learning*, a media sentiment indicator of the French economy was produced based on online articles in *Les Échos*, a French daily newspaper. To do this, the words appearing in an article are categorised and classified as “positive” (or “negative”), according to whether they reflect an “optimistic” (or “pessimistic”) opinion on French economic activity on the day the article was published.¹ An indicator can then be calculated which compares the occurrence of “positive” words against “negative” words: it therefore measures the general tone of the paper regarding the economic situation in the country on a given day. According to the number of positive and negative terms in the

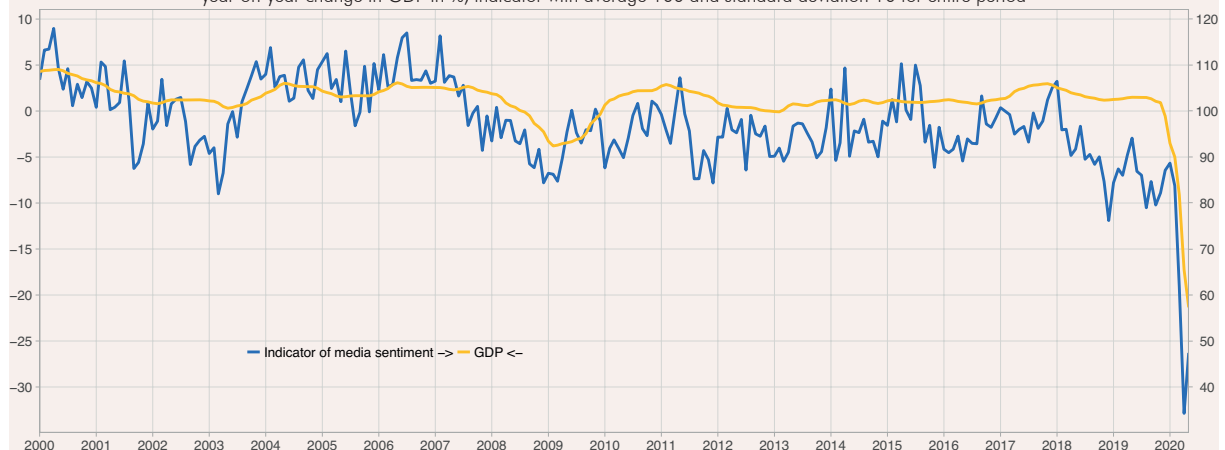
article, a “sentiment score” can be attributed: the value of the media sentiment indicator in a given month is the average of the “scores” from that month’s articles. The indicator was then centred around an average of 100 and reduced to a standard deviation of 10 for the entire period since 2000. Articles containing indicators from economic institutes like INSEE were not taken into account in the analysis in order to avoid any circularity bias. This restriction does not entirely eliminate the possibility of circularity, however, because INSEE publications can also influence the tone of articles even if they are not specifically quoted.

The media sentiment indicator can anticipate fluctuations in economic activity

Calculated over a long period, the media sentiment indicator often reflects variations in year-on-year changes in GDP, especially during major economic contraction episodes (*Graph 1*). For example, between 2007 and 2008, the value of the indicator fell substantially, whereas in 2008 real GDP declined by 2.2%. Since February 2020, the media sentiment indicator has fallen sharply, well below its previous

1. The methodology used is similar to that described in the article by C. Bortoli, S. Combes, T. Renault, *Prévoir la croissance du PIB en lisant le journal* [Predicting GDP growth by reading the paper], *Économie et Statistiques* no.505-506, 2018.

1 – Media sentiment indicator and year-on-year change in French GDP
 year-on-year change in GDP in %, indicator with average 100 and standard deviation 10 for entire period



How to read it: in May, the indicator was more than 5 standard deviations lower than its long-term average (100 between 2000 and 2020).

Source: INSEE, *Les Échos* daily newspaper. INSEE calculations. Last point: May 2020 for media sentiment indicator, Q2 forecast for GDP

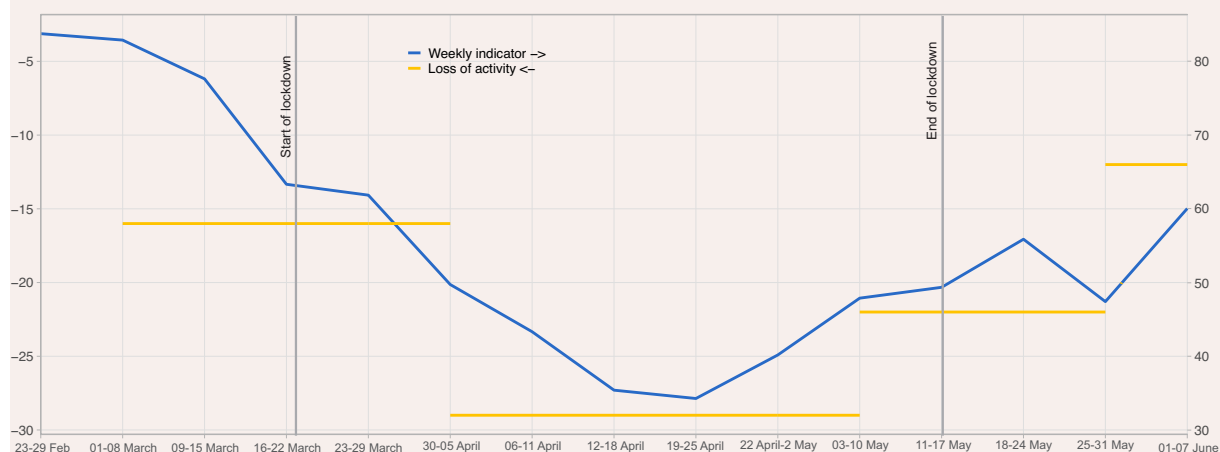
worst levels. This strong deterioration in media opinion on the short-term economic situation is consistent with estimates of economic activity losses in *Points de Conjoncture* since the start of the current crisis.

The indicator suggests a decline in economic activity even before lockdown was introduced, but this was then accentuated when it actually came into force

The indicator can be calculated on a daily basis, but because of its volatility, it is not easy to produce a good interpretation. A trade-off between frequency and volatility shows that it is preferable to calculate the indicator on a weekly basis. The resulting indicator shows a sharp drop in activity from the

second week of March, after which the general lockdown of the population was announced then introduced (*Graph 2*). This fall then intensified until the end of April, when the indicator rebounded, reflecting the less pessimistic tone of press articles as the end of lockdown approached. This trend is consistent with the estimated levels of current activity in previous *Points de Conjoncture*. However, the media indicator was a little slow in reaching its low point given that there was a much more sudden decline in activity during the second half of March. Since mid-May, the economic recovery appears to be established: the indicator seems to be returning to the levels observed just before lockdown, but nevertheless remains below its February level. ■

2 – Weekly media sentiment indicator and monthly loss of activity



How to read it: at the beginning of March, the indicator was 15% lower than its long-term average (100 between 2000 and 2020). During lockdown, it tumbled to 35, more than 6 standard deviations below this average.

Source: INSEE, *Les Échos* daily newspaper

Consumer prices

Headline inflation has fallen sharply since the start of the health crisis, mainly due to the fall in the price of petroleum products – the result of a decline in world demand – and the price of services (especially transport services), all affected by the lockdown measures. Conversely, as the supply of food products declined, fresh food in particular, food prices increased significantly. As a result, headline inflation decreased in May 2020, settling at +0.4% year-on-year after +1.4% in February. Core inflation slowed a little less, to +0.6% in May, after reaching +1.3% in February. Inflation is measured from a basket of consumer products, fixed in the previous year. During lockdown, however, the structure of consumption was temporarily disrupted: a focus study attached to this sheet proposes a simulation that measures inflation based only what was consumed during this period.

Inflation has fallen sharply since the start of the health crisis, despite a sharp increase in food prices during lockdown

In March 2020, headline inflation fell to +0.7% year-on-year, after +1.4% in February (Graph). This substantial decline was due mainly to the fall in the prices of energy products, to -4.0% in March after +1.1% in February: the decline in activity in many countries as a result of the health

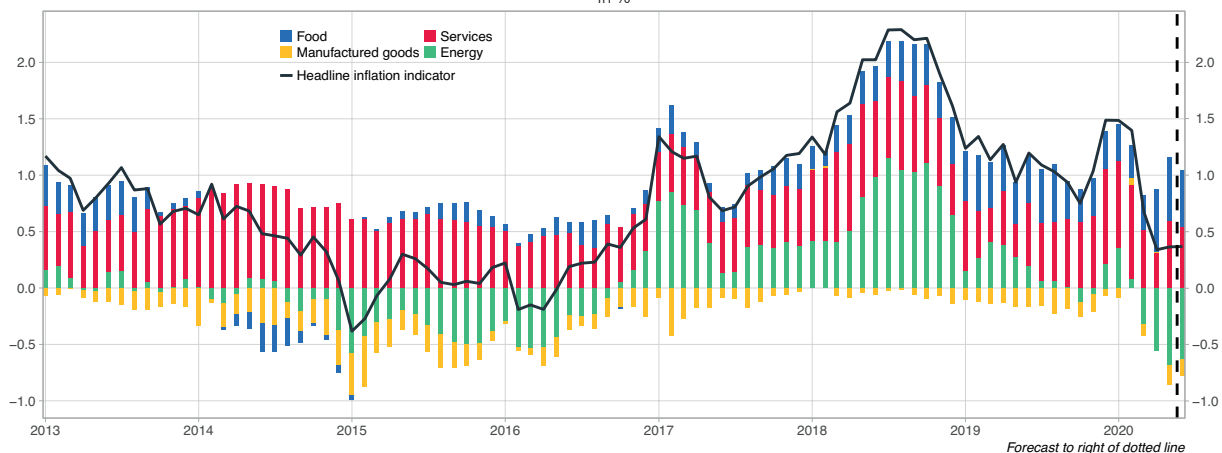
crisis brought down their demand for petroleum products (see [Commodity Prices Sheet](#)).

In April, inflation then fell further, to +0.3% year-on-year. The prices of energy products continued to decline sharply, despite OPEC agreements to reduce oil production; the same for the prices of transport services, especially air transport: as most aircraft were grounded, air transport service prices fell 12.6% year-on-year in April. Conversely, food prices increased by 3.7% year-on-year in April, after +1.9% in March. Prices of fresh foodstuffs, especially fruit and vegetables, leaped to +17.8% in April year-on-year, after +4.7% in March. Their trade conditions were disrupted during lockdown: difficulties in supplying essential businesses and greater than usual demand during this period boosted inflation significantly. In the clothing-footwear sector, where shops were closed during lockdown as they were classified as “non-essential” businesses,¹ prices declined by 0.9% year-on-year in April, after +0.1% in March (Table).

In May 2020, inflation bounced back slightly, settling at +0.4% year-on-year, linked to the rebound in the prices of services when lockdown came to an end (+1.2% in May after +0.6% in April), and despite the widespread price decreases in petroleum products and manufactured products. In the case of manufactured products, this decline was caused mainly by clothing-footwear prices, as the sector introduced various special offers in order to boost consumption. Prices of food products increased at almost the

1. However, these goods could still be purchased online, and thus it was possible to observe some of the prices in this sector.

Headline inflation and contributions by item in %



Source: INSEE

French economic outlook

same pace as in the previous month, despite the lifting of lockdown: prices of fresh produce slowed very slightly, to +17.3% year-on-year, after +17.8% in April, whereas the slowdown in the prices of other food products was a little more pronounced (+1.2% year-on-year, after +1.4%).

In June, inflation is expected to remain at +0.4% year-on-year

In June 2020, headline inflation is expected to stay at +0.4% year-on-year. This forecast is more fragile than usual. The post-lockdown context may give rise to some price dynamics not

anticipated by the usual tools, due to additional demand by households for specific products (e.g. clothing) or a lesser demand for others (e.g. food products). The prices of food products are expected to slow slightly, in the wake of the slowdown in fresh food prices. The rebound in the price of Brent, linked to global recovery, should cause the prices of petroleum products to rise slightly. Inflation in services is likely to decline slightly, to +1.1% year-on-year. Prices of manufactured products are expected to fall less than usual in June, due to the rebound in clothing-footwear prices linked to the delaying of the summer sales until July. ■

Consumer prices

changes as %

CPI groups* (2019 weightings)	February 2020		March 2020		April 2020		May 2020		June 2020	
	yoy	cyoy	yoy	cyoy	yoy	cyoy	yoy	cyoy	yoy	cyoy
Food (16.1%)	1.8	0.3	1.9	0.3	3.7	0.6	3.5	0.6	3.1	0.5
including: fresh food (2.3%)	3.3	0.1	4.7	0.1	17.8	0.4	17.3	0.4	14.9	0.3
excluding: fresh food (13.8%)	1.5	0.2	1.4	0.2	1.4	0.2	1.2	0.2	1.1	0.2
Tabacco (2.1%)	14.5	0.3	13.8	0.3	13.7	0.3	13.9	0.3	13.9	0.3
Manufactured products (24.9%)	0.3	0.1	-0.4	-0.1	-0.5	-0.1	-0.7	-0.2	-0.6	-0.1
including: clothing and footwear (3.8%)	2.1	0.1	0.1	0.0	-0.9	0.0	-2.7	-0.1	-0.7	0.0
medical products (4.1%)	-2.3	-0.1	-2.4	-0.1	-2.4	-0.1	-2.1	-0.1	-2.0	-0.1
other manufactured products (17.0%)	0.5	0.1	-0.1	0.0	0.0	0.0	0.1	0.0	-0.2	0.0
Energy (8.1%)	1.1	0.1	-4.0	-0.3	-8.6	-0.7	-11.0	-0.9	-10.3	-0.8
including: oil products (4.4%)	-0.5	0.0	-8.8	-0.4	-17.0	-0.7	-21.2	-0.9	-18.5	-0.8
Services (48.9%)	1.4	0.7	1.1	0.5	0.6	0.3	1.2	0.6	1.1	0.5
including: rent-water (7.5%)	0.4	0.0	0.5	0.0	0.3	0.0	0.2	0.0	0.4	0.0
health services (6.0%)	0.0	0.0	0.3	0.0	0.4	0.0	0.4	0.0	0.7	0.0
transport (3.0%)	1.8	0.1	-1.0	0.0	-6.0	-0.2	0.8	0.0	0.9	0.0
communications (2.2%)	2.2	0.0	2.0	0.0	-1.0	0.0	1.6	0.0	1.3	0.0
other services (30.2%)	1.9	0.6	1.5	0.5	1.4	0.4	1.6	0.5	1.4	0.4
All (100%)	1.4	1.4	0.7	0.7	0.3	0.3	0.4	0.4	0.4	0.4
All excluding energy (91.9%)	1.5	1.3	0.7	0.7	0.3	0.2	0.6	0.5	1.3	1.2
All excluding tabacco (97.9%)	1.2	1.2	0.4	0.4	0.0	0.0	0.0	0.0	0.1	0.1
Core inflation (60.7%)**	1.3	0.8	0.7	0.4	0.3	0.2	0.6	0.3	0.5	0.3

provisional

yoy: year-on-year

cyoy: contribution to the year-on-year value of the overall index

* Consumer price index (CPI)

** Index excluding public tariffs and products with volatile prices, corrected for tax measures.

Source: INSEE

How should price changes be measured during lockdown?

Since the health crisis began, inflation has declined in the wake of falling petroleum product prices.

Inflation is a composite measure of price changes. It is built on the basis of a fixed structure of consumption, that observed in the previous year. However, the health crisis has completely disrupted this structure, resulting notably in a drop in the consumption of petroleum products and transport services, contributing to a decline in inflation, and an increase in the consumption of food products. If the change in prices had been measured from February to May, taking into consideration only what was consumed during this period, then it would have been 0.4 points higher. From May 2019 to May 2020, the change in the prices of products consumed during lockdown would have been 1.6%, against 0.4% for the basket consumed before lockdown.

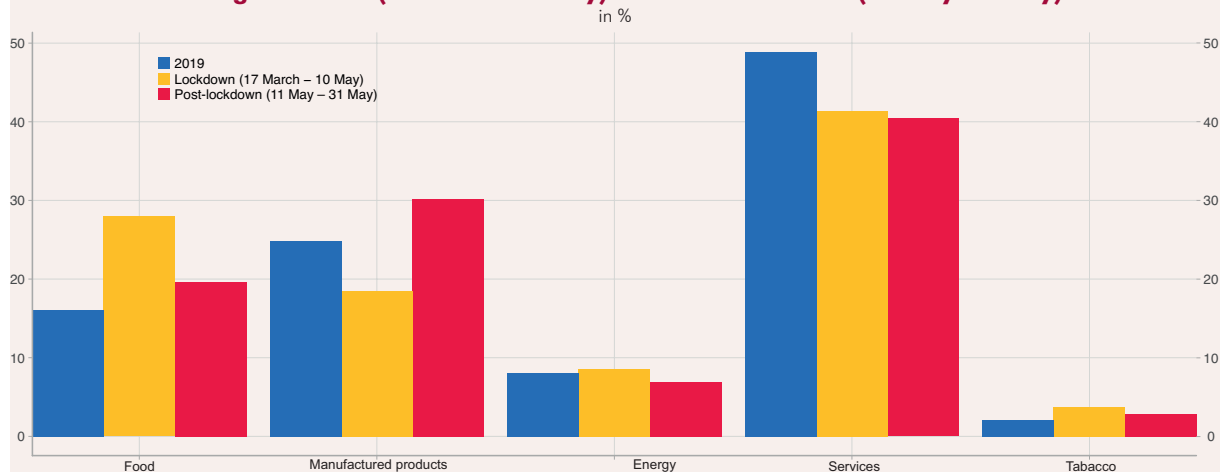
By convention, the consumer price index in 2020 measures the change in prices for an average basket, representative of consumption observed in 2019, in other words, a very different basket from that consumed by households during lockdown.

The consumer price index (CPI) is the main instrument used to measure inflation. So that only price changes are measured (and not changes in product quality or in the structure of consumption), the price of a basket of products, fixed over the course of a year, is monitored month after

month. This basket is representative of household consumption as observed over the previous year (2019 for the measurement of the 2020 CPI). Price index theory debates the correct reference to take into account to determine this basket and thus calculate price changes between years A and A-1. Should the previous period be considered (year A-1), thus using a Laspeyres index, or the current year (year A), which is a Paasche index, or an average of the two (Fisher index)?

Although in normal times the Laspeyres index is in theory likely to produce greater changes than

1 - Structure of consumption by major group, in 2019, during lockdown (17 March-10 May) and after lockdown (11 May-31 May)



How to read it: in 2019, food accounted for 16% of household consumption; this proportion was 28% during lockdown and 20% since the end of lockdown. Lockdown covers the period 17 March to 10 May; post-lockdown covers the period 11 May to 31 May.

Source: INSEE

the Paasche index,¹ this issue is usually of minor importance since the structure of household consumption changes very slowly from one year to the next: by updating the consumption basket every year and chain-linking consumer price indices, the estimate obtained for inflation always proves satisfactory, irrespective of the index selected. As a result, Laspeyres indices are generally used to calculate consumer price indices: as household consumption is usually known after the end of the month, for practical reasons of data availability, only previous consumption can be used to calculate a composite price index at the end of the month.

However, in the midst of the health crisis, the structure of household consumption has been completely disrupted as a result of the lockdown measures in place. As a result of the nowcasting exercises carried out by INSEE during this period, it has been possible to estimate this radical transformation in consumption almost in real time (*Graph 1*).

While services and manufactured products both seem to have seen their share in household consumption tumble by about 7 points during lockdown, the share of food appears to have increased by around 12 points. The share of tobacco seems to have risen slightly and the share of energy is stable (with the drop in the share of petroleum products in consumption offset by an increase in the weight of electricity and gas).

In more detail, entire sections of consumption disappeared because several points of sale were

not authorised to open from the very beginning of lockdown: cinemas, theatres, festivals, dine-in restaurants, etc.

These transformations are partly temporary: the latest nowcasting exercises since the end of lockdown show a consumption structure approaching that observed in 2019, with some catch-up trends, notably a greater proportion of manufactured products than in 2019.

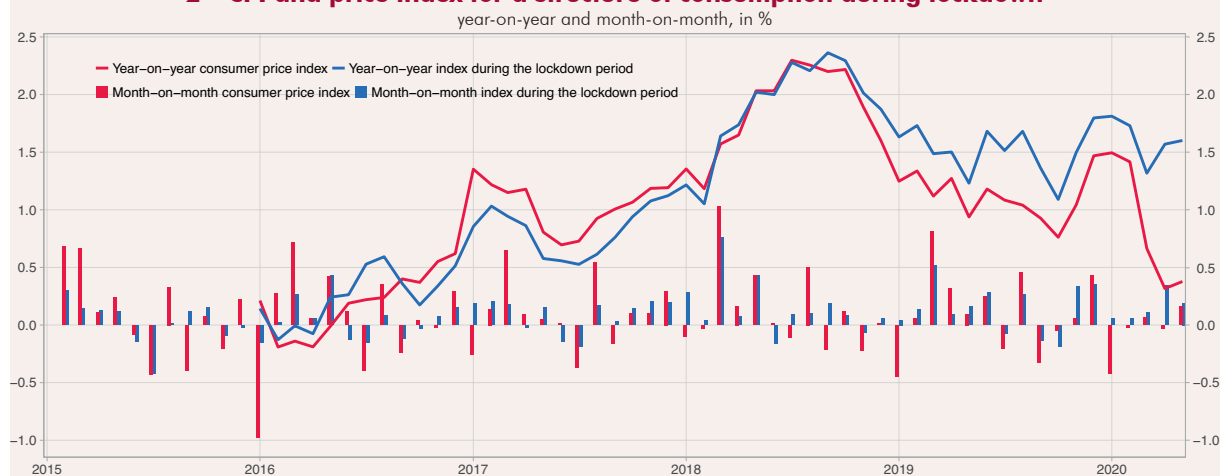
As a result, it is perhaps difficult to produce a consumer index with a fixed basket when the products in this basket are temporarily no longer on sale or their weight in the basket has collapsed. INSEE has nevertheless followed international standards in this matter:² the 2019 structure of consumption was retained for calculating the consumer price index, and prices that could not be observed, due to lack of consumption, were imputed either according to price changes observed for similar consumption segments, or from the overall index, or, in rare cases, by carrying over the last price observed.

This decision to use the 2019 consumption structure, which is similar to what other countries are doing, gives us an idea of the inflationary or deflationary tensions in the economy. However, it may be far removed from what households have been experiencing, as they may have consumed little or none of certain types of product, especially those where there has been a price downturn.

1. In general, when the price of a product declines, its consumption increases; therefore, the Laspeyres index gives less weight than the Paasche index to products whose price declines and it is consequently higher than the Paasche index. During lockdown, however, price changes and consumption did not follow this logic: in particular, the prices of fuel and transport collapsed because demand fell.

2. Eurostat, guidance on the compilation of the HICP in the context of the Covid-19 crisis, April 2020: https://ec.europa.eu/eurostat/documents/10186/10693286/HICP_guidance.pdf

2 – CPI and price index for a structure of consumption during lockdown



Scope: Metropolitan France

How to read it: if the structure of consumption since 2015 was that observed during lockdown, the month-on-month price change would have been +0.2% in May 2020, as was also observed with the structure of consumption used for the CPI (2019 consumption structure for the 2020 indices, structure of year A-1 for year A). The year-on-year price change would be 1.6% in May 2020 against 0.4% observed with the CPI.

Source: INSEE

If inflation were measured based on the basket of products consumed during lockdown, price changes from February to May would have been 0.4 points higher.

Price changes measured from a consumption basket of consumers in lockdown are slightly more dynamic than the change in the CPI: from February to May, prices would seem to have increased by only 0.2% according to the CPI, but by 0.6% using the lockdown consumer basket (Graph 2). During the three months, the fall in the price of petroleum products, which has a lesser weighting in the lockdown consumer basket, contributed to lowering the CPI more than the index based on the lockdown basket (Graph 3).

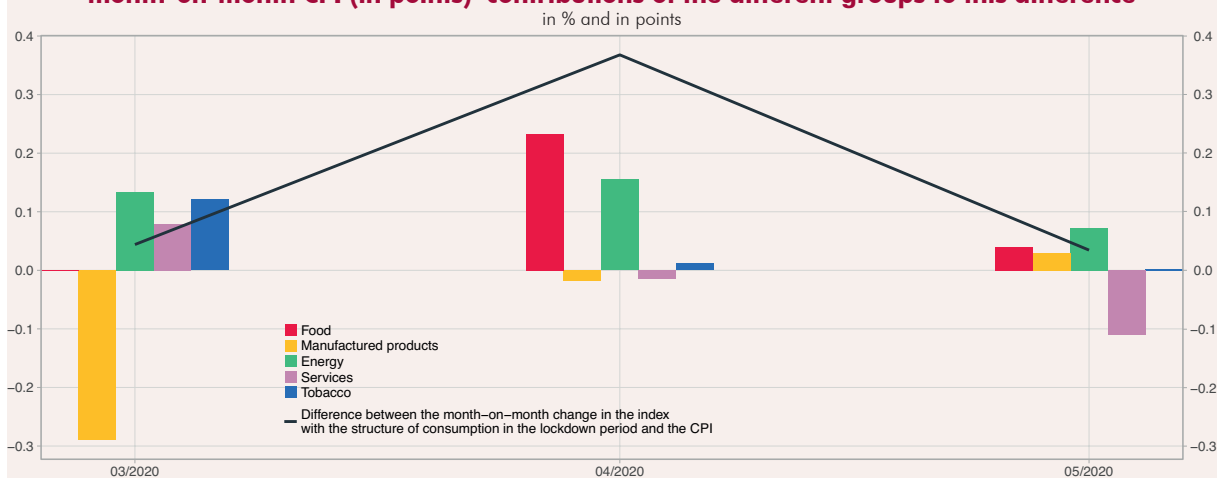
The difference between the two indices is more pronounced during April: in April, food prices were particularly dynamic, however, they accounted for a greater proportion of the lockdown consumer basket. In May, the slowdown in these food prices and the buoyancy of the prices of services, which were consumed less during lockdown, limited the difference between the two indices. In March, the dynamism of the prices of manufactured products,

especially with the end of the sales, affected the CPI more than the lockdown basket index because these products were consumed less during lockdown.

There is a limitation in the analysis of these monthly changes: the indices are not adjusted for seasonal variations and given the basket's different structure, seasonality affects monthly variations in the two indices differently (the end of the sales period, a seasonal phenomenon, does not have the same effect on the two indices, as noted above).

In order to neutralise these seasonal effects, the year-on-year price change between the period preceding lockdown and May 2020 can be considered: in February, the year-on-year change in the CPI was 1.4% while for the lockdown basket it was 1.7%; in May, the year-on-year change in the CPI had fallen back to 0.4%, a drop of 1.0 point. At the same time, the year-on-year change in the lockdown basket index declined by only 0.1 point, to 1.6%. Taking seasonality into account therefore leads to more marked differences between the two indices (difference of 0.9 points from February to May). ■

3 – Difference between month-on-month values for the lockdown basket price index and month-on-month CPI (in points) contributions of the different groups to this difference



Scope: Metropolitan France

How to read it: in April 2020, the month-on-month value for the lockdown basket index is 0.4 points higher than for the CPI. Food accounts for 0.2 points of this difference.

Source: INSEE

Household consumption

The lifting of the lockdown caused a sharp rebound in household consumption in May, although it did not get back to its level in a “normal” situation. Some spending increased substantially, returning to or even exceeding its normal level, especially in manufactured goods, while other expenditure has still not caught up with its pre-crisis level (fuel, transport services, catering). In June it is likely that these catch-up effects will continue for the products concerned, and conversely that the additional consumption seen in May will ease. Ultimately, household consumption expenditure in June is expected to be 5% below that of the corresponding level in a normal period of activity, or similar to that estimated in May over the first weeks out of lockdown (Table 1).

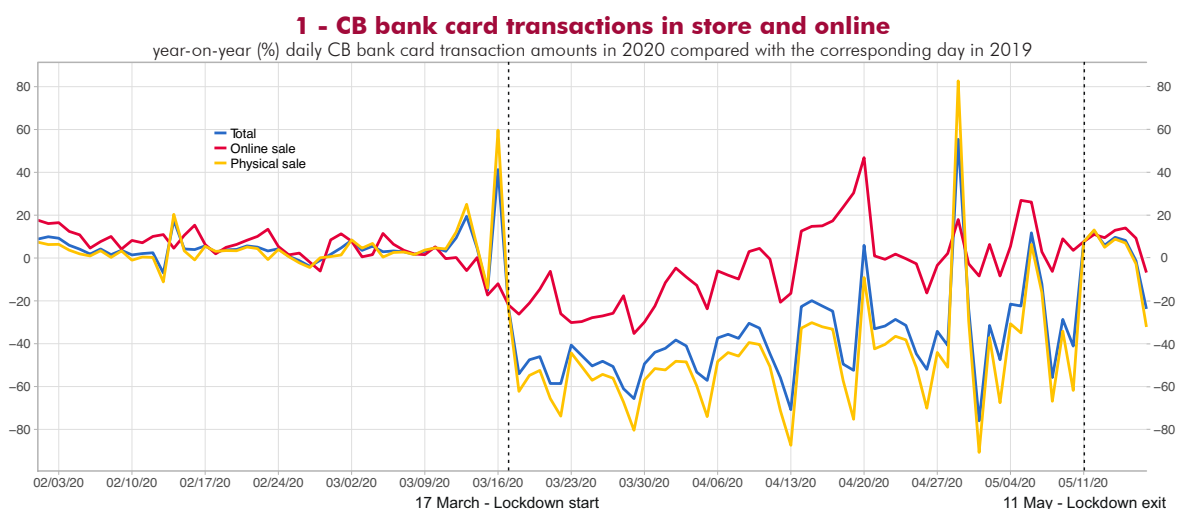
As in the previous *Points de Conjoncture*, the estimate produced here is based on assumptions of loss or gain in consumption compared to a “normal” period of activity, applied to different goods and services. These assumptions are based mainly on information from bank card transaction data and scanner data (Box). They also reflect the consequences of the regulatory measures in force from the start of the health crisis (authorisations for some businesses to open, etc.) and specific consumption behaviours (constant need for certain types of product, etc.).

In the first week after lockdown was lifted, from 11 to 17 May, household consumption rebounded strongly (*Point de Conjoncture* of 27 May). Since then, and more specifically from 18 May to 7 June, household consumption appears to have remained at this same level overall, still slightly below “normal” (-7%). This can be seen mainly

from the total amount in bank card transactions, which has remained broadly similar to the 2019 level since the end of lockdown (Graph 1). Also, after the wide divergence observed during lockdown, the dynamics of physical sale and online sale payments are now similar, a sign that people are resuming their more usual consumption habits.

In fact, if we paint a picture of household consumption for the three weeks following that of 11 May, it includes some opposing trends that are not yet complete – decline in some of the extra consumption observed at the very beginning of lockdown, increase in spending as it catches up to the pre-crisis level – and this is in a context where several activities are still subject to restrictions on reopening. In June, if we assume that these trends are likely to continue, consumption is expected to remain at a similar level to the last weeks of May, settling at 5% below its level in a normal situation.

In June, consumption of manufactured products looks set to be 5% above its level in a situation of normal activity, contributing to an upturn in total consumption of 2 points. Some areas of spending are likely to continue the catch-up that began when lockdown ended, such as spending on fuel (Graph 2) or purchase of transport equipment. However, for other manufactured goods, the strong rebound in consumption, or even excessive consumption, observed at the moment the lockdown was lifted could ease as a backlash effect. This is likely to be the case notably for capital goods, where although consumption is up on its pre-crisis level, it is nevertheless likely to weaken compared to the first week out of lockdown. In addition, household spending on



Note: the very high year-on-year level on Wednesday 29 April 2020 is linked to the fact that the corresponding day in 2019 was Wednesday 1st May, a public holiday, when CB bank card transaction amounts, all types of sale combined, were particularly low.

Source: Cartes Bancaires CB, INSEE calculations

agrifood products is expected to lose momentum, linked to the gradual return to working on site and the reopening of restaurants and schools.

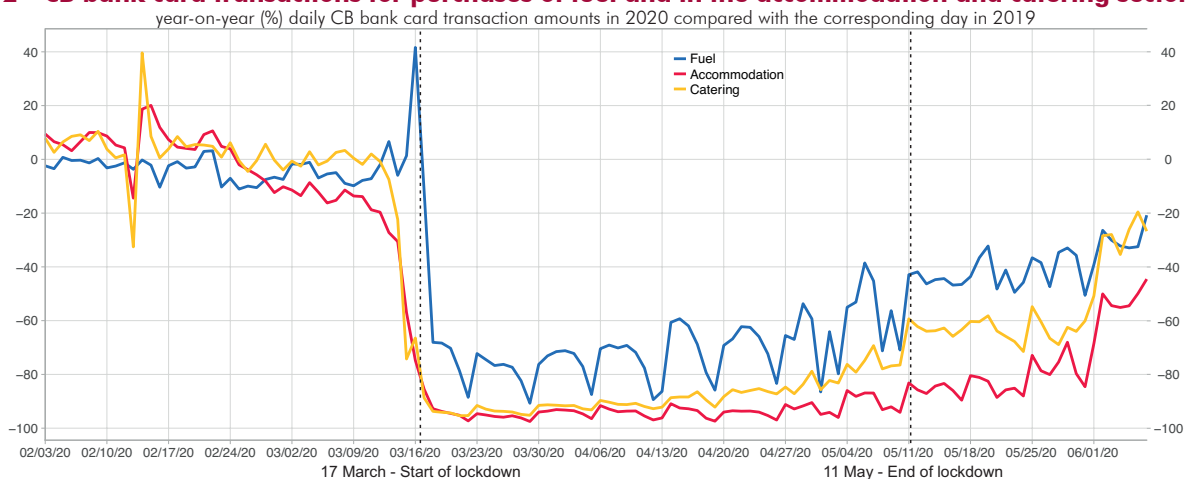
In June, consumption of mainly market services is expected to be 12% lower than in a normal situation, or a contribution of -6 points to the overall loss of household consumption. As in the case of manufactured goods, some services where consumption increased strongly when lockdown was lifted are now weakening (especially personal services to households, including, for example, laundries and hairdressing). In contrast, for other services, consumption is likely to continue its catch-up effect, especially in catering and accommodation and also land transport. Finally, consumption levels for services that are still subject to restrictions in their activity will probably remain particularly weak, such as air transport, for example, or cultural activities.

In mainly non-market services, consumption is expected to continue to pick up, with the gradual resumption of local outpatient care and market teaching services, but without yet returning to normal activity (-14% loss of consumption in June, contributing -1 point to overall loss).

Similarly, in the construction branch, the upswing in renovation work appears to have increased household consumption, although it is still likely to remain below its normal level (-34% loss of consumption in June, or a contribution of -1 point to overall loss).

In addition, using recent data (consumption of goods and businesses' declarations of turnover), it has been possible to refine the estimates for loss of consumption in April, putting it at -31% of its level in a normal situation. For the month of May, which included both a period of lockdown (until 10 May) and a period out of lockdown (from 11 May), loss of consumption is estimated at -14% on average over the entire month. Taking into account the forecast for June and the estimates for April and May, household consumption across all of Q2 is expected to be 17% below the corresponding level of activity in a normal situation. Thus after a 5.6% drop in Q1, it is likely to fall by about another 12% in Q2 2020. However, this forecast must of course be viewed with a great deal of uncertainty, given the current economic situation. ■

2 - CB bank card transactions for purchases of fuel and in the accommodation and catering sector



How to read it: on Tuesday 2 June 2020, bank card transactions in the catering sector were 28% down on Tuesday 4 June 2019.

Source: Cartes Bancaires CB, INSEE calculations

1 - Estimated difference in household consumption level compared with a "normal" situation

Products	Share of consumption* (%)	Variance for the period from May 18 to June 7 (in %)	Difference forecast for June (in %)	Contributions for June (percentage points)
Agriculture, forestry and fishing	3	7	3	0
Industry	44	4	5	2
Manufacture of food products, beverages and tobacco-based products	15	8	3	0
Coke and refined petroleum	4	-34	-12	0
Manufacture of electrical, electronic, computer equipment; manufacture of machinery	3	41	27	1
Manufacture of transport equipment	6	-18	1	0
Manufacture of other industrial products	13	14	11	1
Extractive industries, energy, water, waste treatment and decontamination	5	-3	0	0
Construction	2	-40	-34	-1
Mainly market services	46	-16	-12	-6
Trade; repair of automobiles and motorcycles	1	16	2	0
Transport and storage	3	-57	-42	-1
Accommodation and catering	7	-56	-35	-3
Information and communication	3	-1	-1	0
Financial and insurance activities	6	0	0	0
Real estate activities	19	0	0	0
Scientific and technical activities; administrative and support services	2	-26	-19	0
Other service activities	4	-27	-31	-1
Mainly non-market services	5	-17	-14	-1
Total	100	-7	-5	-5

* weight in final household consumption spending (excluding territorial correction)

How to read it: the level of household consumption in accommodation and catering services in June is expected to be 35% lower than that usually observed in a normal period of economic activity, contributing to a 3-percentage point reduction in household consumption overall.

Source: INSEE calculations from various sources

Box: What can we learn from scanner data for purchases in major retail outlets since the health crisis began?

Since the beginning of the health crisis and the publication of *Point de Conjoncture* on 26 March, the loss of household consumption has been estimated mainly from high-frequency data sources: bank card transaction data and also, from the *Point de Conjoncture* of 7 May onwards, scanner data, which gives information on purchase amounts in major retail outlets (supermarkets, hypermarkets, etc.). In the period of lockdown, many businesses and specialist retail outlets were closed, while the large stores remained open. It was therefore likely that there would be a shift in consumption behaviour, with the result that purchases in the large outlets would increase compared to other points of sale. Although scanner data provide information on the nature of these purchases in the major outlets, using these data alone would lead to a choice deferral bias towards these purchases. Meanwhile, bank card transaction data record purchases made in major retail outlets but not the nature of these purchases. It therefore seems appropriate to combine these two data sources to arrive at a suitable estimate for the consumption of certain products during lockdown.

One way to illustrate this is to take the field of bank card transactions, and consider the share of transactions made in large retail outlets (supermarkets and hypermarkets) in the total number of transactions. By considering only bank card transactions, this ensures that we are in a homogeneous field, without loss of generality in the conclusions reached. Thus, during lockdown there was a substantial increase in transactions in major retail outlets as a share of total bank card transactions: in January and February 2020, major retail outlets represented about 20% of all bank card transactions, and this situation was relatively stable (*Graph 3*). This percentage increased significantly during lockdown, reaching more than 45% at the end of March and remaining above 35% until lockdown ended. Since then, it has declined considerably, returning to a level close to, although higher than, that of January and February. In fact, while bank card transaction levels at the start of lockdown were very much lower than in 2019, transactions in major outlets demonstrate a much more dynamic profile, exceeding the 2019 level, on average.

At a detailed level of product categories, scanner data are a valuable source of information because, not only do they cover all types of payment (bank card, cheque, cash, etc.), but they also differentiate between type of goods sold.¹ They can therefore be used to show, at a more detailed level, shifts in consumption towards the major retail outlets observed at the aggregated level. Three categories of consumed goods are considered below: food (agricultural and agrifood products excluding tobacco), clothing-footwear and household equipment. For each category, we compare the dynamics of the amounts spent on purchases in large retail outlets during lockdown (as indicated by the scanner data) with the amounts spent elsewhere. Since no information is available on payments by cash or cheque, the amounts spent on purchases outside the major retail outlets are limited to bank card transactions. This limitation on the analysis is unlikely to call into question the main trends observed, however.

The vast majority of food as a consumption item is bought in supermarkets and hypermarkets (*Graph 4*²). During lockdown, purchases of food from supermarkets were slightly more dynamic than purchases (by bank card) in other points of sale (*Graph 5*). In addition, in both cases, these purchases are above their 2019 level, a consequence of the context of lockdown (implementation of teleworking, eating lunch at home, closure of restaurants, etc.). In any case, for food products, it seems essential that purchases in large retail outlets are taken into account in order to properly estimate the variation in consumption during the health crisis.

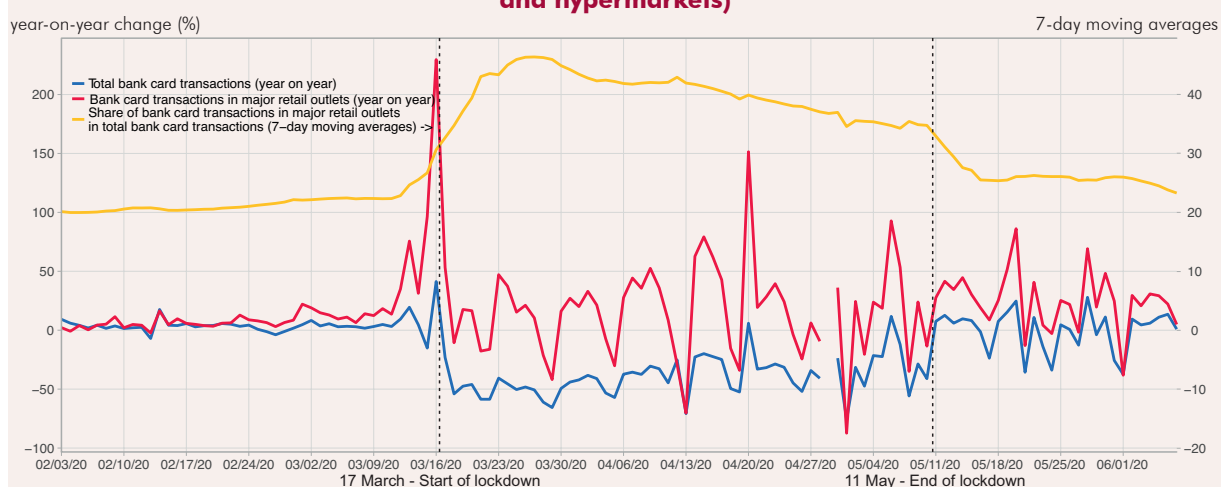
Purchases of clothing-footwear, however, mainly concern specialist sales outlets, while large retail outlets represent only a minority share (*Graph 4*). However, a shift in consumption behaviour does appear during lockdown: the loss of consumption seems less for clothing-footwear purchases in major retail outlets than for purchases (by bank card) in other outlets (*Graph 6*). In both cases, however, there was a considerable loss of consumption throughout lockdown, despite a slight upturn in April, especially in purchases in large retail outlets. Since the lockdown was lifted and shops selling non-essential items reopened, the consumption dynamics have converged: purchases of clothing-footwear in supermarkets are slightly below their 2019 level, as are purchases (by bank card) in other outlets.

1. Bank card transactions in major retail outlets provide the total amount of the transactions but do not differentiate according to type of goods.

2. For each category of product, the aim is to approximate the share of purchases in major retail outlets as a proportion of total purchases. However, there are several limitations because, on the one hand, the major retail outlets considered do not cover all of the major retail chains and, on the other hand, purchases other than in supermarkets are limited to bank card transactions only.

Finally, like clothing-footwear, household equipment is a category of product where normally only a very small proportion of purchases are made in major retail outlets (Graph 4). However, a clear shift in consumption appeared during lockdown (Graph 7): purchases of household equipment in supermarkets showed a much smaller loss compared to 2019 than purchases elsewhere (and by bank card). At the end of lockdown, the reopening of non-essential businesses and outlets resulted in additional consumption of household equipment compared to 2019 in specialist sales outlets but also in supermarkets and hypermarkets. Here too, scanner data are necessary to properly record the loss of consumption that occurred during lockdown. ■

3 - Total bank card transactions and bank card transactions in major retail outlets (supermarkets and hypermarkets)

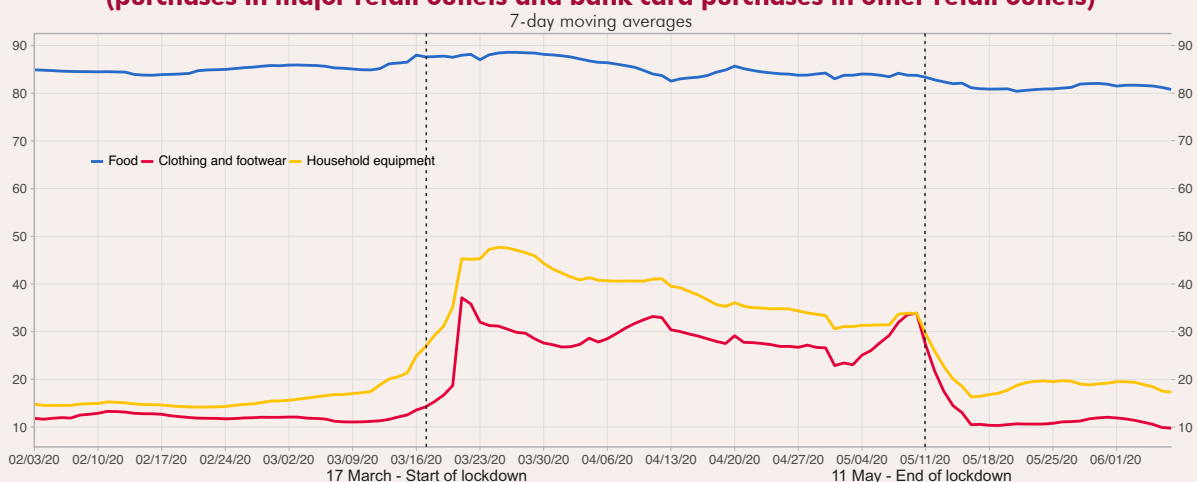


Note: transactions in major retail outlets means bank card transactions in supermarkets and hypermarkets. For clarity, the year-on-year value corresponding to Wednesday 29 April 2020 has been removed because the corresponding day in 2019 was Wednesday 1st May, when the associated year-on-year level was very high.

How to read it: on Tuesday 2 June 2020, bank card transactions were 9% higher than on Tuesday 4 June 2019. On this same day, bank card transactions in supermarkets and hypermarkets represented 26% (7-day moving averages) of total bank card transactions.

Source: Cartes Bancaires CB, INSEE calculations

4 - Purchase amounts in major retail outlets, as a proportion of total purchases (purchases in major retail outlets and bank card purchases in other retail outlets)



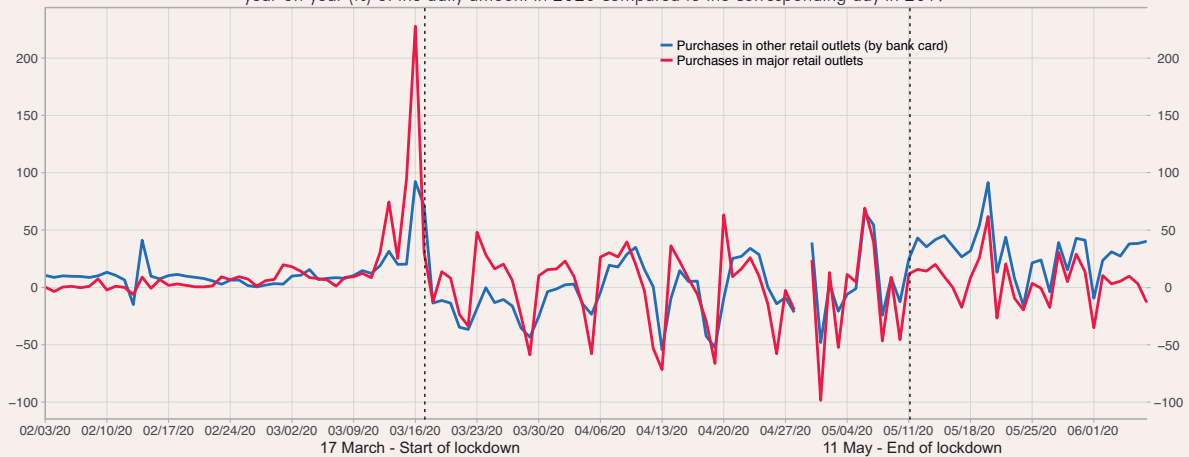
Note: for each product category, the ratio is that of purchases in major retail outlets (as provided by scanner data) to the aggregation of purchases in major retail outlets (scanner data) and bank card purchases in other retail outlets (bank card transaction data).

How to read it: on Tuesday 2 June 2020, purchases of food products in major retail outlets represented 82% (7-day moving averages) of total food purchases (purchases in major retail outlets and bank card purchases in other outlets).

Source: scanner data from several supermarket and hypermarket chains, Cartes Bancaires CB, INSEE calculations

5 – Agricultural and agrifood products excluding tobacco: purchases in major retail outlets and purchases (by bank card) in other retail outlets

year-on-year (%) of the daily amount in 2020 compared to the corresponding day in 2019



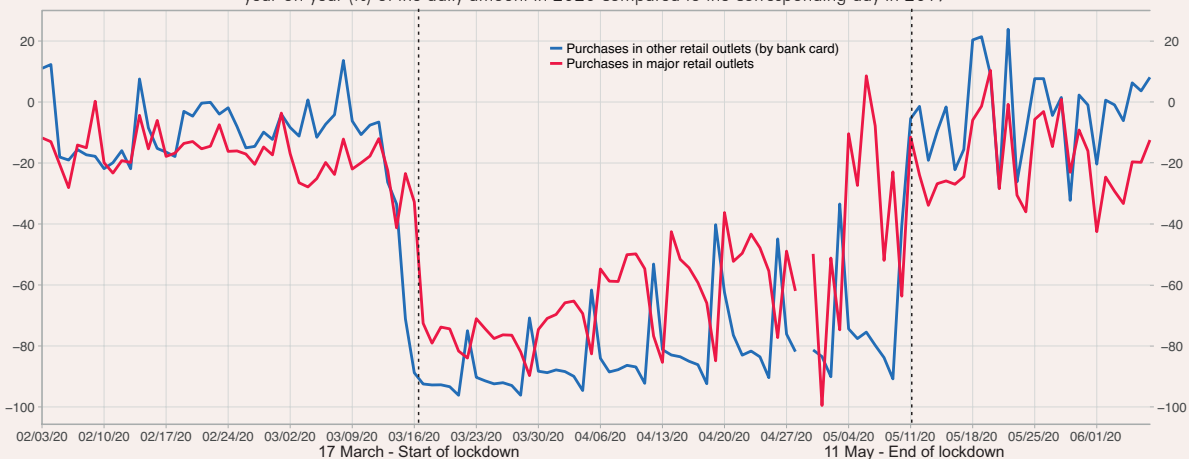
Note: purchases in other outlets are limited to bank card transactions. For clarity, the values corresponding to Wednesday 29 April 2020 have been removed because the corresponding day in 2019 was Wednesday 1st May, when the associated year-on-year levels were very high.

How to read it: on Tuesday 2 June 2020, bank card transactions in other retail outlets were 24% higher than on Tuesday 4 June 2019

Source: scanner data from several supermarket and hypermarket chains, Cartes Bancaires CB, INSEE calculations

6 – Clothing-footwear: purchases in major retail outlets and purchases (by bank card) in other retail outlets

year-on-year (%) of the daily amount in 2020 compared to the corresponding day in 2019



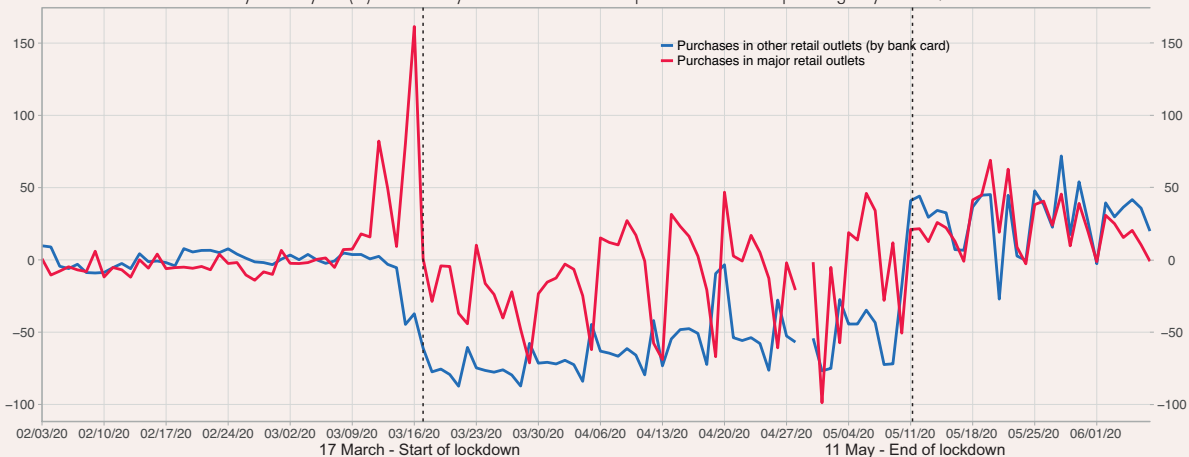
Note: purchases in other outlets are limited to bank card transactions. For clarity, the values corresponding to Wednesday 29 April 2020 have been removed because the corresponding day in 2019 was Wednesday 1st May, when the associated year-on-year levels were very high.

How to read it: on Tuesday 2 June 2020, bank card transactions in other retail outlets were 1% higher than on Tuesday 4 June 2019.

Source: scanner data from several supermarket and hypermarket chains, Cartes Bancaires CB, INSEE calculations

7 – Household equipment: purchases in major retail outlets and purchases (by bank card) in other retail outlets

year-on-year (%) of the daily amount in 2020 compared to the corresponding day in 2019



Note: purchases in other retail outlets are limited to bank card transactions. For clarity, the values corresponding to Wednesday 29 April 2020 have been removed because the corresponding day in 2019 was Wednesday 1st May, when the associated year-on-year levels were very high.

How to read it: on Tuesday 2 June 2020, bank card transactions in other retail outlets were 39% higher than on Tuesday 4 June 2019.

Source: scanner data from several supermarket and hypermarket chains, Cartes Bancaires CB, INSEE calculations

Household and enterprise accounts

*First estimate over one month of lockdown
(April 2020)*

During April, household income is estimated to have dropped by around 2.7% compared to a normal situation. Compensation schemes, via short-time working or sick leave (which includes coronavirus infections, as well as child care), and various ad hoc assistance measures have helped to limit the drop in gross disposable income (GDI). However, it has of course been affected by the decline in payroll employment and the income of sole proprietors as a result of the decline in economic activity.

Similarly, while the value-added of non-financial corporations has been severely affected by the health crisis and the measures taken to combat the epidemic, the short-time working scheme and the solidarity fund for very small enterprises have probably helped to slow down the drop in their margin rate, which is still expected to be about 9 points in April.

These changes represent a decline in household income and in the margin rate of non-financial corporations on an unprecedented scale.

Automatic stabilisers and measures taken during the health crisis have probably eased the decline in household income

In April, gross payroll received by households would appear to have declined by about 22% compared to its pre-crisis level, for three reasons: the drop in payroll employment, the huge numbers resorting to the short-time working scheme and

lastly, the increase in sick leave and child care leave.¹ The usual social benefits, unemployment benefits and daily allowances, and the more unusual short-time working allowance,² have meant that households have been able, to a large extent, to offset this lost income.

Concerning sole proprietors, they saw their activity and therefore their associated income severely affected during April due to the spread of the epidemic and the measures taken to contain it. Despite solidarity funds put in place for very small enterprises, self-employed workers and micro-entrepreneurs, and the waiving of contributions³ (respectively more than 4 billion euros of aid granted in March and April, and 3 billion euros of exemptions over the four months from March to June), the income of sole proprietors would appear to have decreased by about 25% in April compared to a “normal” situation.

Property income is expected to have declined as a result of the decision not to pay dividends in 2020, based on the 2019 results, due to the loss of economic activity or in return for ad hoc assistance received from the State.

These losses of income from economic activity and from property are expected to have been partly offset by the resulting reduction in taxes and social contributions.

All in all, households’ gross disposable income in April 2020 would seem to have decreased by around 2.7% compared to a “normal” situation (*Graph 1*).

1. Measures were taken to enable employees to look after their children when they were no longer able to attend school.

2. At a rate of 70% of gross wage, adjusted upwards to the minimum wage and with a ceiling of 4.5 times the minimum wage.

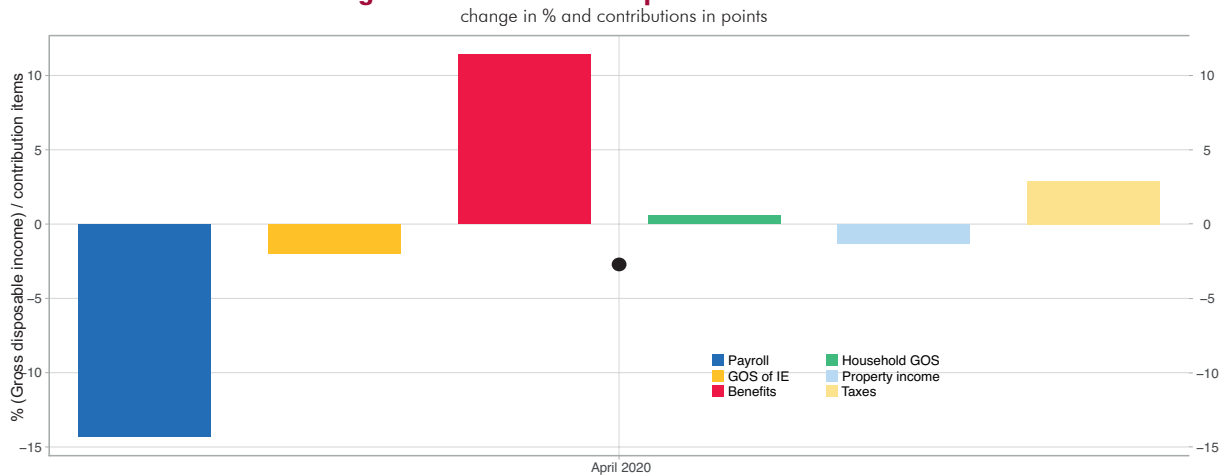
3. Deferred contributions are not included as they are recorded in the national accounts when they are due.

The margin rate of non-financial corporations would appear to be down by almost 9 points compared to a “normal” situation

In April, the general loss of economic activity as a result of the health crisis and the measures taken to combat the epidemic would seem to have resulted in a downturn in the value-added of non-financial corporations (NFCs) of

around 35%. However, the short-time working scheme and net payroll job destructions, combined with social contribution exemptions and aid received from solidarity funds for some categories of enterprise, have slowed the decline in the gross operating surplus (GOS) of NFCs (*Graph 2*). Nevertheless, the margin rate of NFCs in April is expected to be about 9 points lower than that observed in a “normal” pre-crisis period. ■

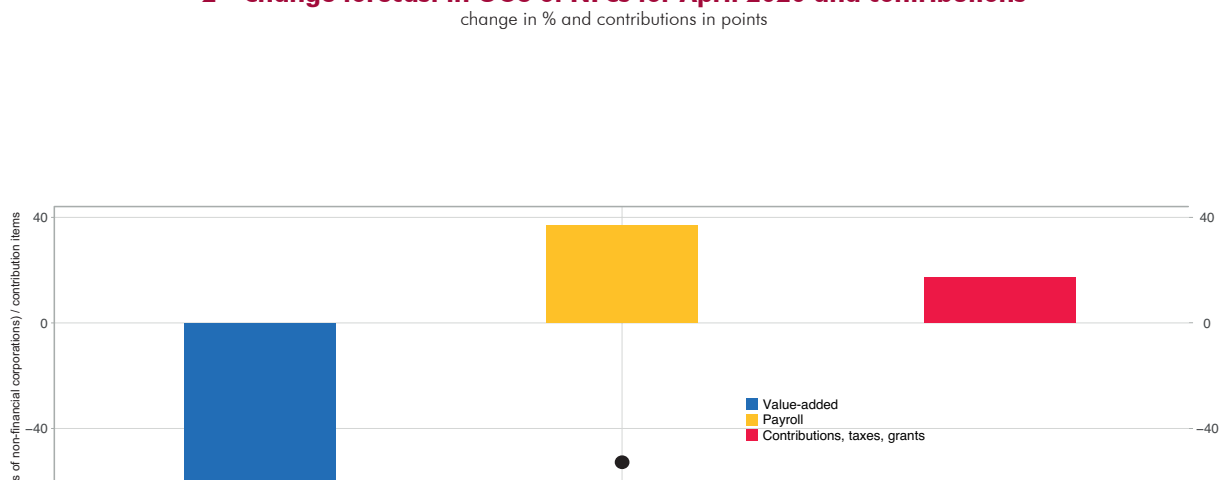
1 - Change forecast in GDI for April 2020 and contributions



How to read it: in April 2020, GDI is expected to decline by 2.7% compared to a normal situation, with the negative payroll contribution (-14 points) offset in part by support from social benefits (contribution of +12 points).

Source: INSEE, forecasts for April 2020

2 - Change forecast in GOS of NFCs for April 2020 and contributions



How to read it: in April 2020, the GOS of NFCs is expected to decline by about 50% compared to a normal situation because the contraction in value-added was greater than that in payroll.

Source: INSEE, forecasts for April 20

International developments

Lockdown restrictions are being lifted at a relatively similar pace across countries, particularly in the Eurozone. Since the early stages of the easing of restrictions, high-frequency indicators point towards a gradual recovery in economic activity. In the Eurozone, these indicators have been converging towards similar levels since the beginning of June. In the United States, the recovery seems to be even stronger, although doubts remain about the unemployment level.

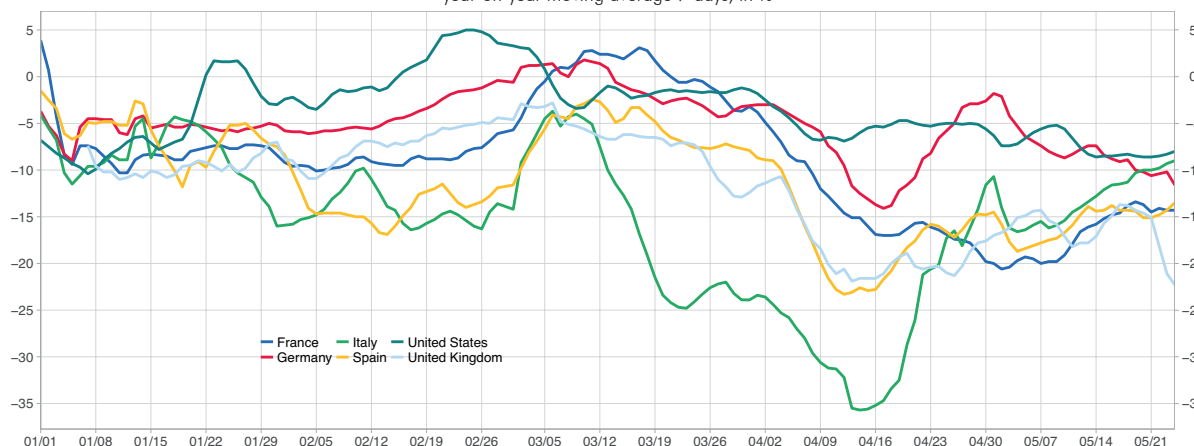
Economic activity in the Eurozone continues to recover steadily

The first data on industrial output in April, in the midst of lockdown, have recently been released by most European statistical institutes, and show that output excluding construction plummeted by nearly 28% compared with April 2019, throughout the Eurozone. These data confirm the magnitude and relative heterogeneity of the impact of the health crisis on output in the main European economies. While output has fallen by 24% year-on-year in the UK, 30% in Germany and 34% in France and Spain, Italian output has dropped by almost 43%.

Lockdown measures continue to be lifted at a relatively similar pace throughout all European countries. The very first days of June marked the beginning of a new stage in the easing of lockdown in France, and also for a large majority of the autonomous communities in Spain. However, certain regional exceptions continued to apply in both countries: in Spain, 12 communities including Madrid and the city of Barcelona remained in the first phase, while in France, the Île-de-France region, French Guiana and Mayotte were listed as "orange zones". The new stage in the lifting of lockdown measures is mainly characterised by the opening of bars, restaurants, hotels and other tourist accommodations with capacity restrictions, as well as all venues dedicated to leisure activities (museums, gymnasiums etc.). On 8 June, nineteen autonomous communities in Spain remained in phase 2 while the others were able to enter phase 3 of lockdown lifting, authorising greater freedom of movement. On 15 June, the Île-de-France region was declared a "green zone". In Italy, as in France, nationwide mobility was authorised on 3 and 2 June respectively, accompanied by the gradual resumption of train and air services. In Germany, restaurants and other leisure facilities are gradually being reopened, albeit heterogeneously in the different states (Länder). For example, these venues reopened on 8 June in Lower Saxony, on 10 June in Rhineland-Palatinate, and on 15 June in Mecklenburg-Vorpommern.

1 - Change in electricity consumption in the main advanced countries

year-on-year moving average 7 days, in %



Note: each point represents the difference between daily average electricity consumption in 2020 compared with the corresponding day in 2019 (compared with 2015-2019 average for the United States). Eurozone data adjusted for temperature effects.

Sources: data from the ENTSO-E Transparency platform for electricity consumption in the EU countries, US Energy Information Administration (EIA) website for electricity consumption in the United States

The convergence of lockdown-lifting arrangements in the different European countries is reflected by their electricity consumption

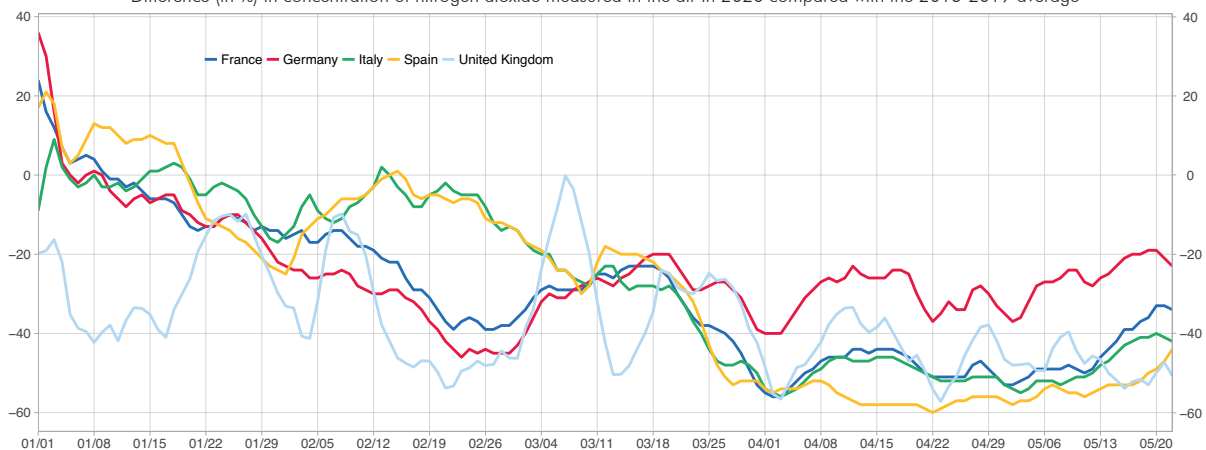
Electricity consumption is a representative indicator of the overall activity of countries (*Graph 1*). It can be seen that the continued lifting of lockdown measures in European countries has led to a gradual and almost uninterrupted increase in electricity consumption. This has been particularly apparent since 11 May in France and 4 May in Spain, dates that marked the start of the first phase of lockdown-lifting measures, when the drop in electricity consumption in these two countries compared with 2019 levels decreased at almost the same rate. Consequently, between 1st June and 9 June, electricity consumption was only 10% and 11% below its 2019 level in Spain and France respectively (compared to 12% and 13% in the last week of May). Spanish and French consumption is therefore gradually catching up with that of Germany, which, since the start of lockdown at the end of March 2020, had been consuming much more electricity than the other European countries. Indeed, on average between 1 April and 24 May, electricity consumption was down by only 8% in Germany compared with the same period in 2019, in contrast to the reductions of 15% in France and the United Kingdom, 17% in Spain and 20% in Italy. Between 1st June and 9 June, German consumption was just over 9% below its 2019 level. The Spanish and French levels relative to last year are now very close to those of Germany. Finally, as for the entire period

since the start of lockdown, Italian electricity consumption at the beginning of June remained 15% lower than that for the same period in 2019. However, this last result should be put into perspective, as Italian consumption appears to be more volatile than that of its European neighbours. Therefore, over a longer period from the end of May to the beginning of June, electricity consumption in Italy fell by 12%, as in Germany, France and Spain. Moreover, in mid-June, Italian consumption seemed to be rising again and gradually approaching that of its neighbours. In the United Kingdom too, activity is recovering more ponderously than in France and Germany: at the beginning of June, electricity consumption in the UK was still around 15% below normal, with little change compared to May. In the United States, on the other hand, the upturn in activity appears to be stronger: electricity consumption has now almost returned to its usual levels for the month of June. Finally, electricity consumption in Japan is also picking up, after bottoming out in February and May.

Another indicator of overall activity is the concentration of nitrogen dioxide in the air, which is affected by production and road transport activities, as well as by building heating systems (*Graph 2*). Since the lifting of lockdown measures began, concentrations of particulate pollutants have been very slowly approaching their historical average levels, particularly in France, Spain and Italy. In the first week of June, the decline in this concentration was 32% in France compared with the average levels for 2016-2019 (after a decline of 35% at the end of May), 34% in Italy (after

2 - Change in air pollution in the main European countries

Difference (in %) in concentration of nitrogen dioxide measured in the air in 2020 compared with the 2016-2019 average



Note: each point represents the difference between the average weekly concentration (7-day moving averages of daily data) of nitrogen dioxide (NO₂) measured in the air at monitoring stations across the entire country in 2020 compared with the average of this concentration in the same week in the years 2016-2019. The calculated average is the simple average, without adjustment for meteorological variations or demographic weighting. From 1st to 5 June, the concentration of nitrogen dioxide in the air in the United Kingdom was on average 38% lower than the average for 2016-2019.

Source: Agence européenne de l'environnement, INSEE calculations

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38%) and 36% in Spain (after 44%). Therefore, at the beginning of June, the reduction in air pollution in these three main European economies was very close to that observed in Germany (reduction of 32%). In the United Kingdom, the concentration of nitrogen dioxide in the air is also about 40% below its usual levels for this season, which seems to point towards a continued slowdown in activity or the fact that a large proportion of employees are still teleworking. Conversely, in China, since late April and early May, nitrogen dioxide emissions and concentrations in the air have exceeded their levels for the same period in 2019, and are still rising.

The easing of lockdown measures has led to a significant rebound in household consumption

The reopening of non-food retail outlets is reflected by Google queries related to shopping centres (*Graph 3*). Indeed, the easing of lockdown measures in early May led to a marked rebound in the number of visitors to these stores. Whereas between the end of April and the beginning of May, the number of queries concerning shopping centres was around 60% below the 2019 level for the same period in France and Spain, 42% lower in Germany and 65% lower in Italy, by the

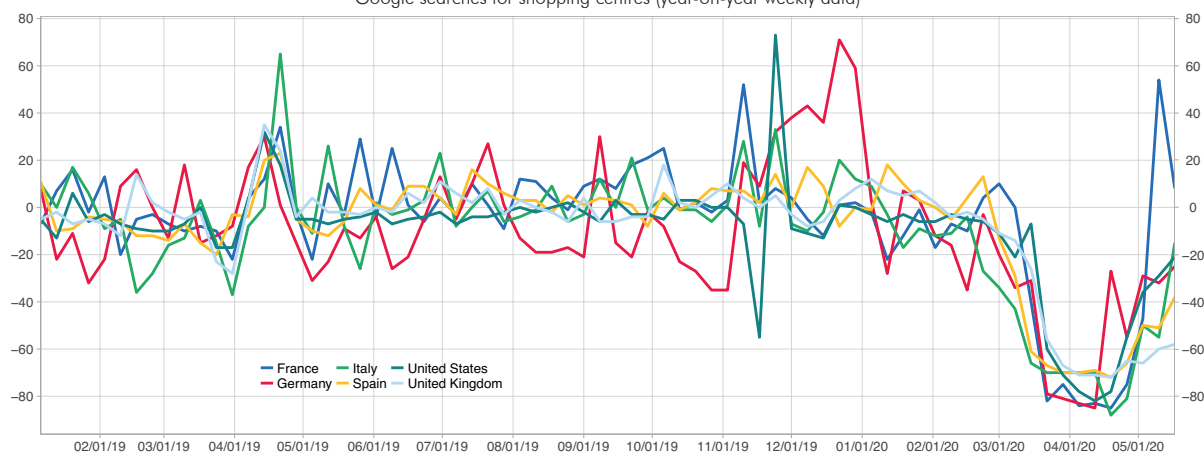
Table 1 - Indicator of people frequenting public places in April in the advanced countries
in %

Indicators	Google Maps Mobility: retail trade and entertainment			Google Maps Mobility: food shops and pharmacies			Google Maps Mobility: public transport		
	7 May	16 May	6 June	7 May	16 May	6 June	7 May	16 May	6 June
Germany	-40	-35	-20	-1	-6	-2	-28	-28	-32
France	-76	-51	-26	-27	-12	-1	-70	-43	-37
Italy	-63	-61	-28	-28	-26	-10	-52	-53	-40
Spain	-84	-76	-37	-38	-31	-10	-64	-59	-40
United States	-29	-30	-20	-3	-3	-2	-42	-34	-34
United Kingdom	-67	-74	-63	-15	-25	-17	-62	-58	-56
Japan	-31	-40	-18	1	-12	1	-44	-55	-29

Note: comparison of numbers of people frequenting different places on a given date compared with a reference situation. For the most recent data, this is given by the median attendance at these locations between January 3 and February 6, 2020
Source: Google Maps Mobility

3 - Google Trends search queries for shopping centres suggest an upswing in activity in the Eurozone and the United States

Google searches for shopping centres (year-on-year weekly data)



Note: search volumes are the average number of searches for different shopping centres in the largest cities in the countries.
Source: Google Trends, INSEE calculations

beginning of June it stood at only 10% below its 2019 level in Spain, 25% in Italy and 35% in Germany. In France, the number of shopping-centre-related queries in the first week of June was actually 6% higher than the 2019 level. In the United States, the number of queries rose rapidly in May and even exceeded the levels for the same week in 2019 (+18%). In contrast, the recovery was almost imperceptible in the UK at this stage: at the end of May, queries were still around 60% below their 2019 levels.

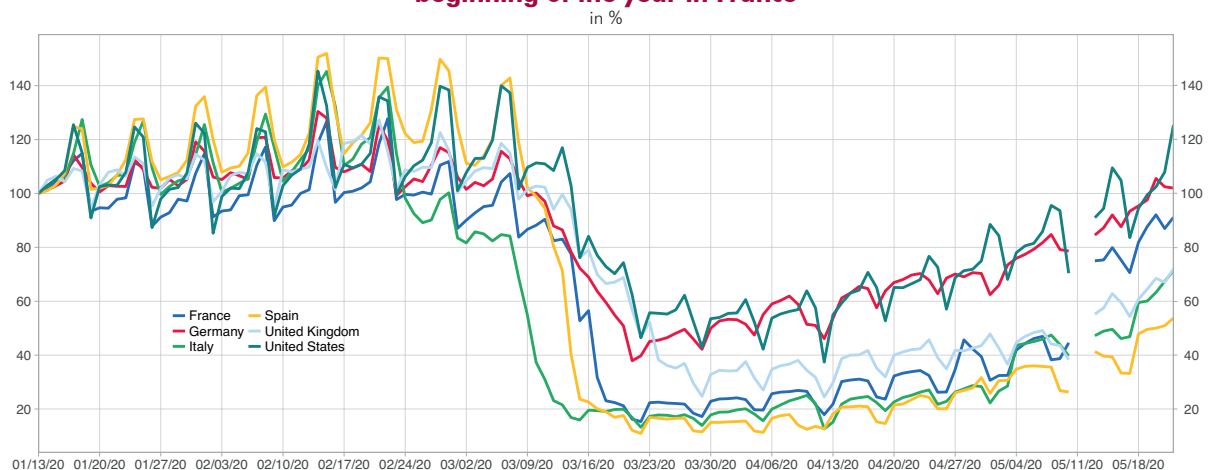
The situation regarding the number of visits to public places, especially non-food retail outlets, as represented by the *Google Maps Mobility* indicators (*Table 1*), seems to be relatively similar for the four major European economies. On 5 June, for example, visitor numbers to these centres were down by 26% and 28% in France and Italy, and almost 20% in Germany. These indicators therefore suggest that the rebound in the consumption of non-food goods continued in early June, particularly in countries that had imposed the strictest lockdown measures (France, Italy, Spain). Indeed, the reduction in the number of visitors to non-food retail outlets decreased by 25 percentage points in France between mid-May and early June, by nearly 30 points in Italy and 40 points in Spain, compared with only 15 points in Germany. In the United States, the number of visitors to retail stores and entertainment venues was around 20% below normal levels in early June, after dipping to 30% in mid-May. In the United Kingdom, however, the number of visitors to non-food retail outlets and entertainment venues has picked up slightly but remains at around a third of its usual level, after dropping by 82% during the first days of lockdown.

The gradual recovery of output and consumption has been accompanied by a return to transport use

Both output and consumption are closely linked to the movement of people, regardless of the means of transport used. According to the Apple mobility indicator, which aggregates route search data on the Apple Maps application, searches for routes by car continue to increase in all countries (*Graph 4*), with some slight differences: searches in early June returned to January levels in France and Italy, in connection with the possibility of unrestricted nationwide movements in these two countries. However, the recovery appears to be at a more advanced stage in Germany, the United States, France and Italy than in Spain. Indeed, the freer movement of Spaniards only begins in phase 3 of the lifting of lockdown measures, which at present only concerns just under half of the Spanish population. In the United States, the number of searches for car routes has now surpassed the level of early January.

Moreover, according to the *Google Maps Mobility* indicator, public transport passenger numbers in France at the beginning of June were 37% lower than during the reference period from 3 January to 6 February 2020, which is an improvement compared to mid-May, when they were 43% lower (*Table 1*). In Italy and Spain, this reduction in passenger numbers stood at around -40% in early June, compared with -53% and -59% in mid-May, respectively. In the United Kingdom, the decline remains substantial (-56%, after -58% in mid-May). In the United States, public transport passenger numbers have risen

6 - The Apple Mobility indicator suggests a steady upswing and a return to levels similar to the beginning of the year in France



Source: Apple Mobility reports. Journey search indicators, base 100 on 13 January 2020. Data for 11 and 12 May are not available

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slightly, but remain approximately a third below their usual level. However, while the number of commercial flights in the United States has recovered slightly, standing at around 68% (after -78%) below normal (Table 2), the number of passengers measured by the passages through Transport Security Administration security checks has decreased by approximately 85% compared to 2019.

Finally, the TomTom index of road congestion in major European cities shows a very gradual return to car use. In Germany, the road congestion index remains very close to its level over the same period in 2019, at 3% lower in the first week of June (Table 2). In France, the rebound has been quite sharp, with the congestion index in early June being 13% lower than in 2019, after dropping by nearly 26% in mid-May and 61% in early May. Road traffic levels remain very low in the United States, at 78% below the 2019 levels, and in the United Kingdom, where the congestion index has dropped by 65%.

In the United States, the recovery is also reflected by the renewed vigour of the labour market. According to employment data released by the Bureau of Labor Statistics (BLS) in early June, approximately 3.8 million jobs were created in May and unemployment fell to 13.3% after 14.7%. In particular, employment grew strongly

in accommodation, food services and leisure (+1.2 million), in construction, education and health services, and in the retail trade. However, the BLS warns against interpreting this level of unemployment too favourably: as in April, many employees who were temporarily laid off reported having a job while being absent from work, and to a much greater extent than usual. In accordance with international conventions on measuring the labour market, they were counted as being in employment. Their numbers are such that had they been counted as unemployed, the resulting unemployment rate would have been three percentage points above the announced level. This reservation already applied to the April data, however, and therefore does not call into question the reported drop in unemployment in May.

In April 2020, the unemployment rate in the Eurozone increased by 0.2 percentage points to 7.3% of the labour force. In Spain, the unemployment rate reached 14.8% compared to 3.5% in Germany and 8.7% in France. In May 2020, the number of jobseekers slowed significantly, particularly in Spain with an increase of nearly 27,000 people after +280,000 in April. In Germany, the number of jobseekers rose by 238,000 in May, bringing the unemployment rate to 6.3% according to the Federal Employment Agency. ■

Tableau 2 – Indicator of road traffic conditions in major cities and air traffic

in %

Indicators	Road traffic (congestion index)			Air traffic		
	week of 11 May	week of 18 May	week of June 1 st	week of 11 May	week of 18 May	week of June 1 st
Germany	-1	-6	-3	-43	-65	-46
France	-61	-26	-13	-71	-62	-50
Italy	-66	-16	-12	-80	-70	-58
Spain	-58	-10	-9	-76	-80	-75
United States	-76	-78	-65	-76	-72	-68
United Kingdom	-69	-65	-52	-90	-90	-88
Japan	-50	-40	-28	-80	-80	-75
China*	-53	-53	-49	-65	-62	-60

* For China, the variation is not that of road traffic but the variation of all types of interurban public transport.

Source: TomTom website for road traffic in major cities, difference between daily average of traffic congestion index from 11 to 15 April and average of the index in 2019; Flightradar24 website for air traffic, ratio of the number of flights cancelled to the number of flights usually scheduled in the country's 3 largest airports

“High-frequency” data are especially useful for economic forecasting in periods of devastating crisis

The magnitude and suddenness of the shock caused by the Covid-19 pandemic have lessened the relevance and the predictive power of the short-term indicators commonly used to measure and forecast economic activity. Short-term economic monitoring during this time has therefore focused on using new data sources, produced at a higher frequency than monthly or quarterly. In normal times, these indicators are usually relatively ineffective for forecasting and are sometimes more volatile than the main economic aggregates – apart from new data used to monitor French activity since the Covid-19 crisis, but which are outside the scope of this study, which is concentrating on international comparisons–. However, for the four main Eurozone economies, the United States and the United Kingdom, these new data account for a large proportion of variation in the traditional production and consumption indicators. Thus while awaiting these monthly survey results, high-frequency data have proved useful for analysing and estimating activity. As a consequence, in times of crisis, as we are currently experiencing, high-frequency indicators provide additional information to that in the business tendency surveys giving a better understanding of the loss of activity in the very short term.

The predictive power of the usual indicators based on monthly business tendency surveys deteriorates as a crisis approaches and during it

In normal times, the outlook analysis and short-term forecasting carried out by INSEE are largely based on the business tendency surveys. One of the methods used to forecast economic activity –e.g. production or consumption– consists in calibrations¹ using the new information provided each month by business or household surveys. The business tendency surveys are for the most part published monthly, like the other indicators (retail sales, car registrations) used to forecast major economic aggregates, while the forecasts of economic variables are for the most part measured quarterly. In the calibration models, surveys are used up to the most recent one available, for example up to the survey for May for a Q2 forecast. Apart from times of crisis, this method provides good quality forecasts (Dubois, 2006).

However, in times of major crisis or great economic instability, these methods are less suitable. The 2008 crisis provides an example, as demonstrated in one of the focus studies in the *Point de Conjoncture* of 9 April 2020: the operational framework described here was only able to realise the magnitude of the shock very gradually. The current crisis is another example of this: the usual indicators were available only monthly and were sometimes published relatively late, given the unprecedented and very sudden nature of the shock, and the disruption in econometric relationships in these circumstances due to the scale of the crisis. This resulted in a move towards a new way of short-term monitoring, involving estimates of activity in real time using alternative data sources.

Consequently, the most recent issues of INSEE's *Points de Conjoncture* used high-frequency indicators

to reflect the economic consequences of the health crisis. The main advantage of high-frequency indicators lies, by definition, in the fact that they are updated weekly or even daily, thus making it possible to monitor the situation in the economies almost instantaneously and compare them. For example, the number of Google searches for unemployment, available in *Google Trends*,² can be used as an indicator of job prospects, or even the number of jobseekers; *Google Trends* data on shopping centres can be a leading indicator of the number of visitors to retail outlets and hence of household consumption. Other high-frequency indicators, like electricity consumption and the concentration of nitrogen dioxide in the air can also indicate global economic activity (*Table 1*).

The purpose of this study is to assess the quality of these high-frequency indicators as advance signals of economic activity and analyse their performance compared with the traditional monthly indicators, such as the Industrial Production Index for production, retail sales for consumption. To increase the number of identification points, only high-frequency indicators available for a sufficiently long period and with at least a weekly frequency were considered. Lastly, the approach used in the relatively simple econometric models was to compare the explanatory power of high-frequency indicators rather than search for the best predictive models. The models selected do not necessarily reflect either the practices usually applied in forecasting – for example, consumer confidence is used in the models here to forecast retail sales in France for purposes of comparison, although it is rarely used in actual practice-, nor the practices currently used in France, based on bank card transaction data or scanner data from major retail outlets. Models were therefore chosen mainly for the purpose of comparing indicators in the different advanced countries. In France, bank card transaction

1. Calibrations are econometric regressions linking the economic variable that we are trying to predict, such as production for example, to monthly business tendency survey data or advanced indicators, such as retail sales or car registrations.

2. *Google Trends* are the result of searches on the Google search engine showing the popularity over time of certain search subjects or terms based on the number of searches by internet users.

data and scanner data have been extremely useful for estimating household consumption. Unfortunately, they are not made available by the national statistical institutes in the other countries at such a detailed level, which is why they have not been included in these comparisons.

In “normal” periods of the economic cycle, high-frequency data provide limited information compared with the usual indicators

In “normal” periods of the economic cycle, i.e. with limited variations in activity and thus excluding periods of crisis such as that of 2008-2009 or the current health crisis, high-frequency indicators do not significantly improve short-term forecasting of macroeconomic aggregates.

First, high-frequency indicators, such as Google searches, electricity consumption or air pollution, are very volatile (even when adjusted for climatic factors in the case of electricity consumption), much more so than macroeconomic aggregates in normal times (*Graphs 1 and 2*). Outside times of crisis, there is therefore the risk that high-frequency indicators could contain considerable statistical noise, blurring the short-term information.

Bortoli and Combes (2015) verified this using *Google Trends* data to forecast monthly household consumption. Google searches, like searches for certain products, can indeed reflect the volume of sales of these products. The authors show, however, that *Google Trends* does not make a

significant improvement to the forecast of aggregate consumption by households, only to the consumption of specific items, such as clothing-footwear, for example.

More systematically, our intention was to measure the ability of high-frequency indicators to reflect the variability of macroeconomic variables (IPI, retail sales, new car registrations, etc.) compared to the usual indicators. To do this, we compared the explanatory power of two multiple linear models (via the adjusted R^2 , the proportion of the variance in the endogenous variable that is predictable from the exogenous variables, adjusted to the number of variables introduced into the model), with one modelling the variable of interest using only the usual indicators (business tendency surveys) and the other adding high-frequency indicators from among those indicated in *Table 1*. By comparing these two models, the authors were able to show the contribution of information from high-frequency data orthogonal to that from surveys. To facilitate the comparison between models “with” and “without” high-frequency indicators, they were estimated over the same period, which was limited by the availability of these indicators: electricity consumption data was available from 2015, therefore the models forecasting the Industrial Production Index were estimated from 2015. For consumption and unemployment, the estimation period excluded the 2008-2009 crisis and started in 2012. To measure the average forecast benefit, the root mean square forecast error (RMSFE) was calculated for both models using a

Table 1 - Usual and high-frequency indicators used in this focus to estimate economic activity in different countries during the crisis

Macroeconomic aggregate	Usual monthly indicators	Availability of usual indicators	High-frequency indicators
Production	PMI Business tendency surveys IPI	PMI: available from the 20th of the month Business tendency surveys: available from the 25th of the month IPI: available about 40 to 50 days after the end of the month	Electricity consumption Concentration of NO ₂ in the air <i>Google Trends</i> “Unemployment”, “Credit”, “Crises” and “Consumption” Road freight indicator (Germany)
Consumption	PMI Consumer confidence Retail sales	PMI: available from the 25th of the month Confidence indicator: available from the 25th of the month	Electricity consumption; concentration of NO ₂ in the air <i>Google Trends</i> “Consumption”, “Shopping centre”, “Credit”, “Unemployment”, <i>Google Trends</i> on the topic of purchase of vehicles
Employment	Employment statistics Unemployment rate	Employment prospects indicator: available from the 25th of the month	<i>Google Trends</i> “Unemployment”

Notes:

- only the high-frequency indicators used in the prediction models presented later in this focus are listed here. As these models are standard in the different countries, some indicators available specifically in France and used in this *Point de Conjoncture* (e.g. bank card transactions) are omitted from this table. In fact, we do not have these data for the other countries monitored;
- data on the number of Google searches for “unemployment” were also used in the regressions on consumption and production for economic reasons. The number of jobseekers (potentially reflected by these searches) is strongly correlated with change in production. In addition, an increase in the number of jobseekers may have a negative effect on household consumption expenditure and encourage precautionary savings.

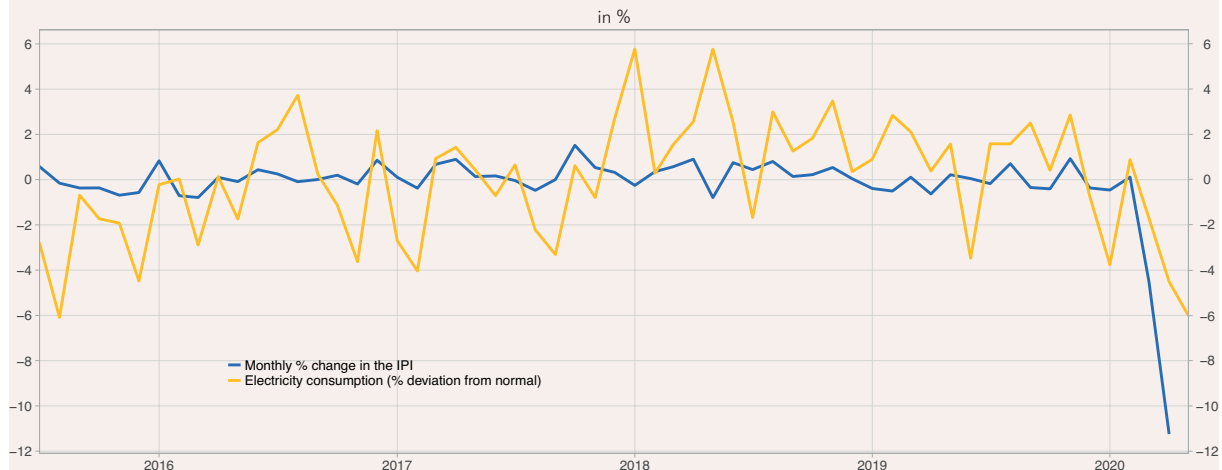
sliding window method.³ On each date, the model was estimated up to the last available piece of data, then the forecast was calculated for the next date and compared to the indicator actually observed to obtain the “out-of-sample” forecast error.

In normal times, using high-frequency indicators improves a linear model’s goodness of fit to the data only slightly. When modelling employment, for example, although *Google Trends* searches for unemployment may account for almost half of variations in the unemployment rate in the four main Eurozone countries or in monthly employment in the other advanced countries, once the Purchasing Managers’ Index (PMI) and employment prospects from the Directorate-General for Economic and Financial Affairs (DG EcFIN) survey become available, high-frequency data provide only very little extra information. The increase in the adjusted R^2 following the addition of these indicators is between

only 1% and 10% for an explanatory model of the French, German, Italian and Spanish unemployment rate. However, this last result can indicate the presence of an overadjustment of the model to the data. Improvement is also minimal for a model of household consumption in the Eurozone countries, measured from retail sales, and where the adjusted R^2 falls by almost 2% in Italy, and increases by only 2% and 3% in Spain and Germany respectively. High-frequency indicators seem to provide more significant information in a model of industrial production, especially in Germany, Spain and France, with an increase in the adjusted R^2 of between 8% and a little over 40%. Again, such a rise of 40% could indicate an overadjustment phenomenon. The addition of high-frequency indicators can result in a model not being sufficiently generalisable for a good forecast to be obtained with new observations. In other words, the model may wrongly pick up part of the risk of the data-generating process. For this reason, in order to

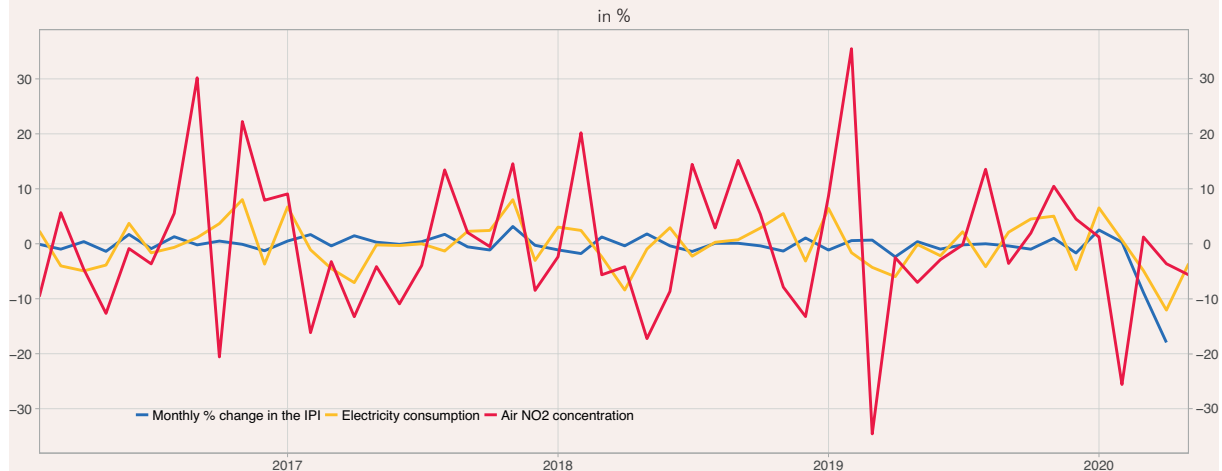
3. Models with or without high-frequency (HF) indicators were estimated over a period up to T, then used to forecast the point in T+1. The models were then estimated up to T+1 then used to forecast T+2 and so on.

1 - Outside times of crisis, high-frequency indicators (in this case electricity consumption) are more volatile than the IPI: case of the United States



Source: Federal Reserve, Energy Information Administration, INSEE calculations

2 - As in the United States, high-frequency indicators in Germany are more volatile than the IPI



Source: ENTSO-E, EEA, INSEE calculations

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measure the quality of the information provided by the high-frequency indicators, another criterion must be used. It must be able to assess the ability of a model to correctly forecast a new observation, which is excluded from the estimate sample. This criterion is the RMSFE.

In general, the use of high-frequency indicators makes no improvement to the quality of short-term forecasts in “normal” times, i.e. outside times of crisis. Thus the forecast error of French, German and Italian industrial production increased slightly, while reductions in forecast error remained very small, like that for Spanish industrial production. Electricity consumption data, however, are much more useful at a detailed level.

In the United States, where details of monthly consumption are available 30 days after the end of the month and which is therefore forecast instead of retail sales, adding *Google Trends* “shopping centre” and “unemployment” accounts for some of the variations, but does not improve the forecast

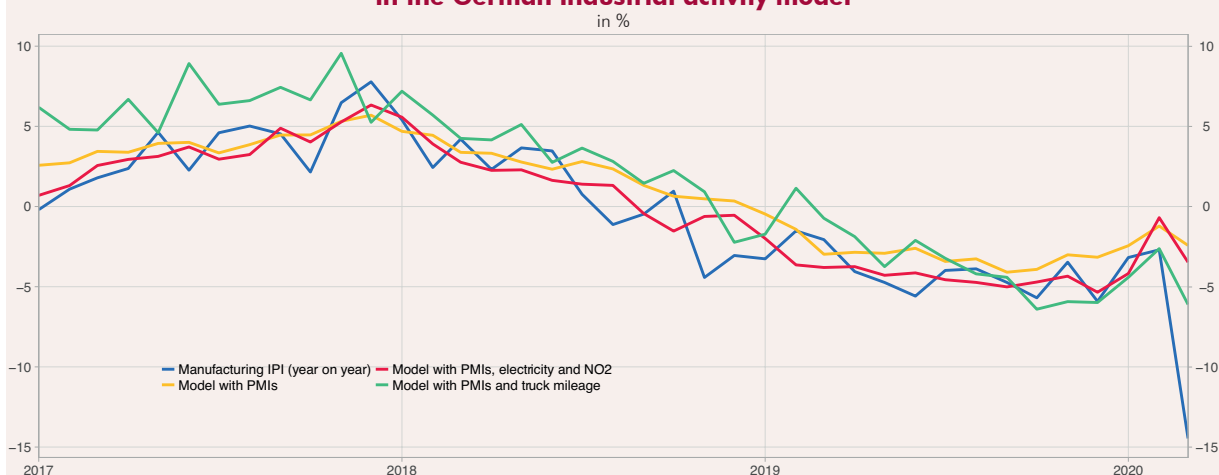
for monthly consumption in the United States. In the United Kingdom too, these high-frequency indicators do not improve the forecast for household consumption, although some can be used to improve the forecast for certain specific consumer items, such as car registrations, for example.

Finally, in the United States, employment statistics for a given month are published on the first Friday of the following month (except when this is a public holiday or falls on the 1st of the month). These figures are therefore available rapidly, with the result that high-frequency indicators provide much less information than in France and Germany and are therefore less useful in this case than for forecasting industrial production or household consumption.

It is during periods of crisis that certain high-frequency indicators provide a better understanding of loss of activity

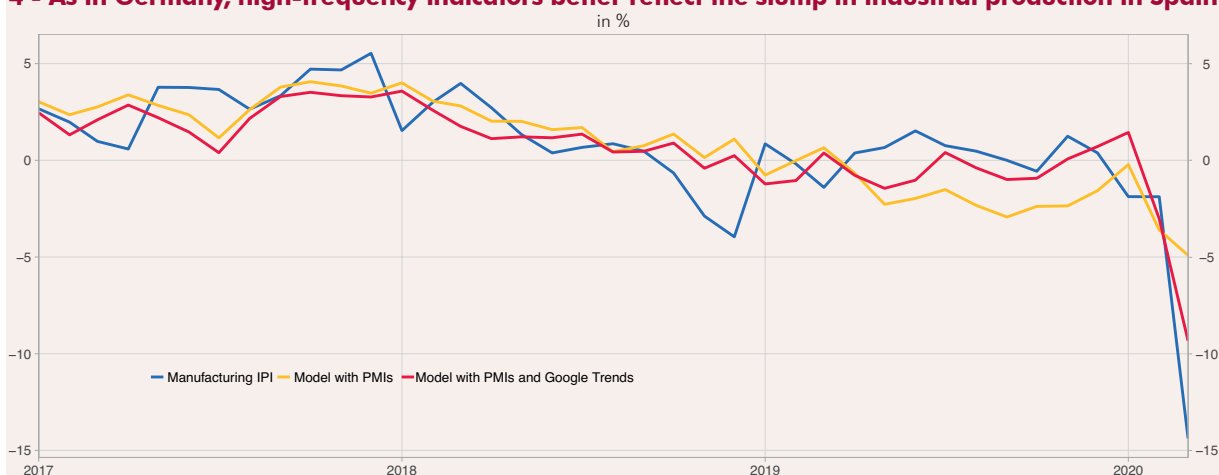
In times of crisis, high-frequency indicators provide better estimates of the magnitude of the shock

3 - Truck mileage data, Google Trends and concentration of NO2 in the air add significantly to PMIs in the German industrial activity model



Source: Destatis, EEA, Google Trends, INSEE calculations

4 - As in Germany, high-frequency indicators better reflect the slump in industrial production in Spain



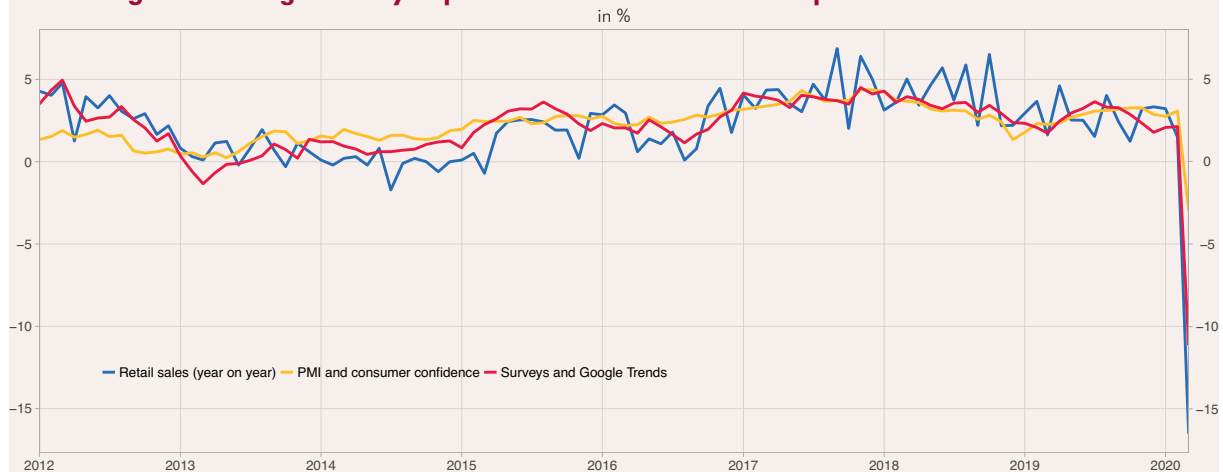
Source: Eurostat, Google Trend, INSEE calculations

than the usual indicators. Thus, using PMIs alone, estimates of the effect of the health crisis on industrial production in March 2020 were expected to reach -2.4% and -7.5% in Germany and France respectively, against -6% and -12% when adding the high-frequency indicators, compared with an actual decline of a little over 14% and 19% respectively in Germany (Graph 3) and France. In Spain, high-frequency indicators also give a better appreciation of the actual decline in activity in March 2020, but less so in Italy. The drop in industrial activity observed in March in Spain was -13% and that estimated by adding high-frequency indicators (mainly Google Trends) was around -9.3% (against -4.9% using only PMIs, Graph 4). However, the difference between the estimated and the actual scale of the shock remains high, at around 4 to 7 percentage points depending on the country. Consequently, despite the use of high-frequency indicators, the econometric models have difficulty in reflecting the scale of the drop in actual activity.

Regarding the drop in consumption, high-frequency indicators provided a significant forecast benefit. For example, while retail sales fell by more than 16% in France in March, the magnitude of the shock estimated by the standard indicators was only -3% , against a decline of -11% forecast with the introduction of Google Trends data (Graph 5). However, these forecast gains are less significant for employment and consumption in Germany, Spain and Italy.

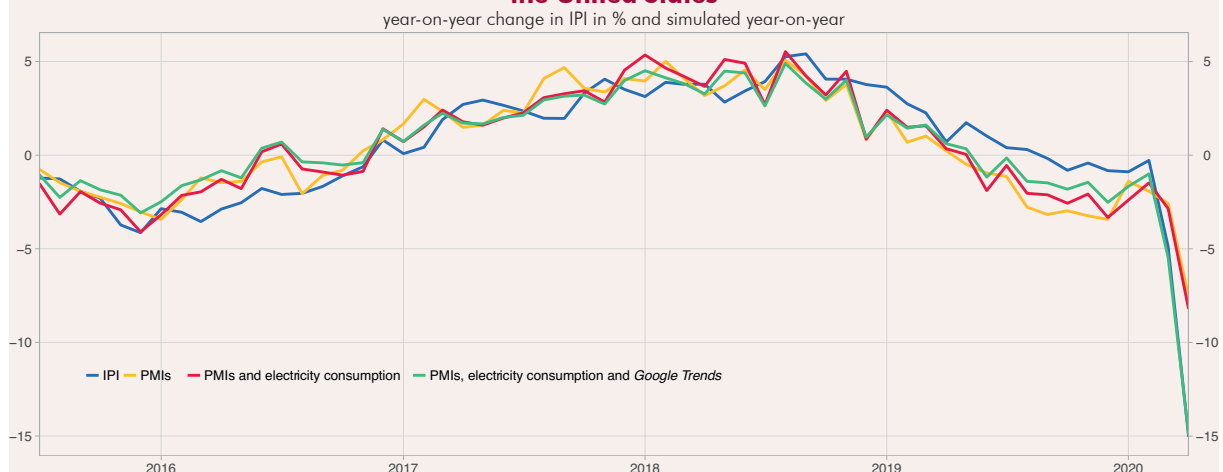
In the United Kingdom, electricity consumption did not provide any additional information. However, the addition of pollution did provide some significant information: the adjusted R^2 (in-sample) increased by 90% , to 64% . In the United States, electricity consumption and Google searches for “unemployment” provided additional information to that from the PMIs for the Industrial Production Index (Graph 6): the R^2 increased by 20% when these two high-frequency indicators were added

5 - Google Trends significantly improved the estimate of the drop in retail sales: case of France



Source: Google Trends, Eurostat, INSEE calculations

6 - As in Germany, high-frequency indicators improve the representation of industrial production in the United States



to the regression alongside the Institute for Supply Management's PMI. However, out-of-sample, i.e. when in order to forecast each point, the model is estimated on data available on this date (hence up to date $T-1$), the average forecast error decreases only very slightly. The addition of high-frequency indicators, such as electricity consumption or *Google Trends* on unemployment, greatly improves the forecast of the decline in activity in the United States (*Graph 3*). Out-of-sample, the improvement in the forecast is less but still considerable.

Ultimately, in most cases the high-frequency indicators did not provide any significant additional information to that in the business tendency surveys and brought only limited improvements

to economic forecasts during "normal" times. However, in times of crisis with drastic and large-scale variations in economic activity, the usual models proved to be unsuitable for predicting economic activity. High-frequency indicators can then be used to improve forecasts a little. However, some of the high-frequency data used specifically for France but outside the scope of this study, such as scanner data or bank card transaction data, are an invaluable source of information for short-term monitoring.

The expertise and analytical skill of the economic forecaster are needed to adjust and modify the econometric models for a better understanding of the change in activity. ■

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Commodity prices

The economic crisis caused by the coronavirus epidemic has caused considerable disruption to world commodity prices. The prices of oil, food and industrial commodities are highly volatile.

The decline in demand for oil has led to a significant drop in oil prices. The price of WTI oil was even briefly negative.¹ The price of European Brent plummeted, losing nearly 67% between early March and its April average of \$17 per barrel. Since the start of the global health crisis, the oil market has been hit by the largest drop in consumption in the history of the oil industry. Supply, driven by the OPEC countries, has remained abundant in a market that was already somewhat in surplus before the crisis. Crude oil stocks in the United States have increased by 21% since early March, and in mid-June reached their highest level since April 2017. These historic decreases in prices have caused many agricultural and industrial commodity prices to tumble in their wake.

The prices of agricultural commodities used for fuel production have fallen significantly. For example, the prices of sugar and corn, which are used to produce ethanol, fell by 14% and 12% respectively between 2 March and 12 June. The extent of the drop in corn prices is all the more significant as the decline in demand for fuel – due to the implementation of measures to contain the health crisis – has coincided with a record harvest this year. This has led to an increase in corn stocks in the United States, the world's largest producer, while in Brazil, sugar has been redirected to the production of food products rather than fuel. The drop in palm oil prices can also be explained by the decline in demand from producers of biodiesel, almost three quarters of which is produced in Brazil and the USA.

Conversely, the crisis has led to an increase in the prices of certain products such as meat. Indeed, American slaughterhouses have reduced their production because of the epidemic, leading to a contraction in supply and a sharp rise in prices. According to the U.S. Department of Agriculture, beef production in the last week of April was 25 percent lower than at the same time last year. This drop in production triggered both a sharp rise in the price of beef ready for consumption (+125% between 2 March and 11 May) and a fall in the price of livestock.

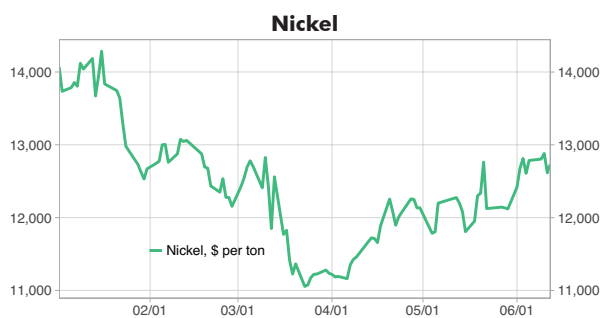
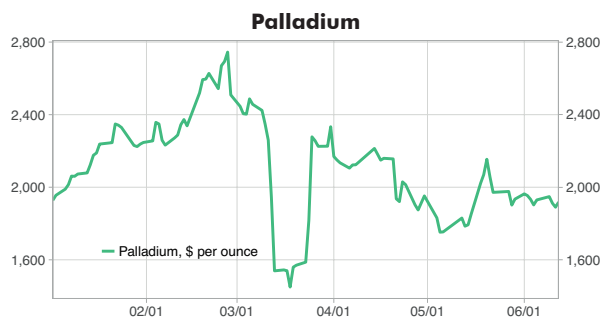
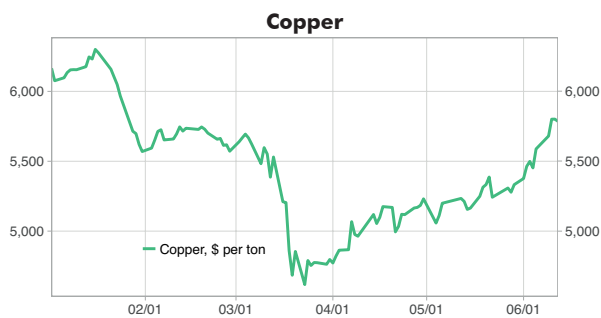
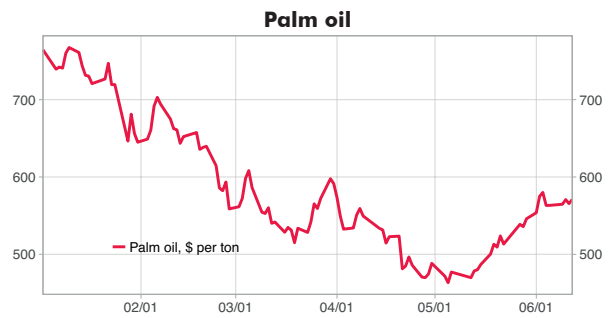
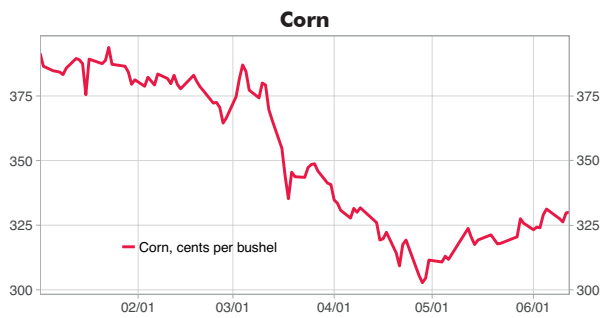
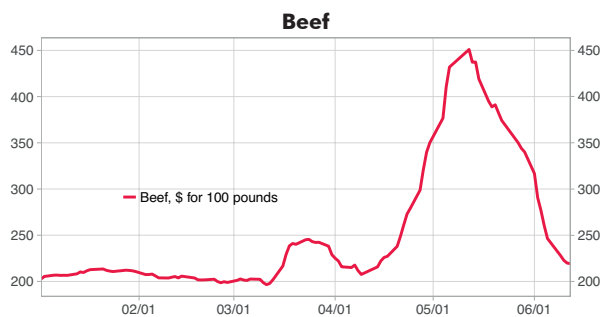
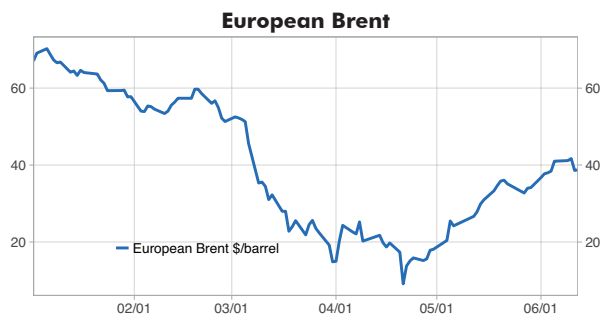
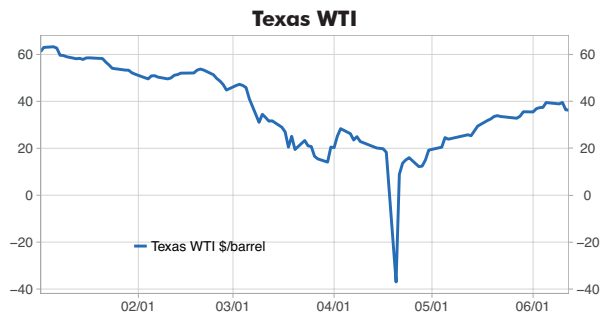
The health crisis has simultaneously reduced supply and demand for industrial commodities. It initially shut down certain sectors of industrial activity, particularly in China. Industrial commodity prices have therefore fallen. As a result, motor vehicle manufacturing, the construction sector and steel plants have all slowed down and the prices of zinc, nickel, copper and palladium have fallen dramatically. As for palladium, motor vehicle manufacturing accounts for almost 85% of the total demand for this resource, which is used to manufacture exhaust pipes that filter the particles emitted by cars.

In a second phase, the major mineral producers were in turn affected by the health crisis, which reduced supply and buoyed up prices. The lockdown measures imposed in Canada, the United States, Latin America, and South Africa, reduced mining activity by 20% for zinc and nickel, and 15% for copper. In addition, delivery times have been extended due to a reduction in the number of trucks on the road, increased health checks, and problems with the supply of chemical reagents required to process the minerals. ■

1. On Monday 20 April, the price of a barrel of West Texas Intermediate (WTI) Oil for May delivery plummeted to a negative price of almost -\$38 for the first time in history. This contract, expiring at the close of business on the next day, meant that sellers had to find buyers who were ready to take delivery of the goods. As demand was weak and US storage capacity was almost saturated at that time, buyers were scarce and sellers therefore preferred to sell at a loss.

International developments

Commodity prices in 2020



— Food
 — Industrial
 — Oil
 Source: DataInsight

The coronavirus epidemic hit a Chinese economy already weakened by structural and cyclical factors

Sabrina Abdelmalek
Thomas Ouin-Lagarde

Département de la conjoncture

The Covid-19 health crisis hit an already slowing Chinese economy, weakened not only by cyclical factors that were present before the crisis happened but also by more structural factors.

Thus, even before the health crisis that led to a 6.8% downturn in activity at the start of 2020, Chinese activity had been slowing for several years, reaching an annualised growth rate of +5.9% in Q4 2019, against +12.3% at the start of 2010. This slowdown was the result of structural factors (ageing population, slowdown in productivity) intensified over several quarters by cyclical factors, in particular trade tensions with the United States. The coronavirus epidemic is a new short-term shock, on an unprecedented scale and in a context where the Chinese growth model was already in question.

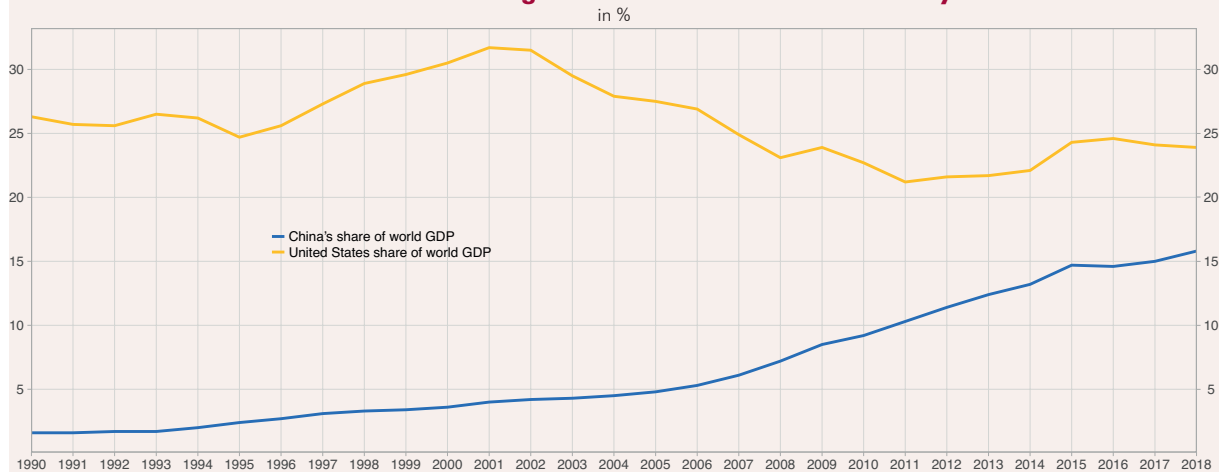
The engines of Chinese growth were struggling before the crisis

The Chinese economy has grown rapidly over the past few decades, following a very rapid catch-up process (Graph 1). In 1990, China represented less

than 2% of global GDP; in 2018, it represented almost 16%, according to the World Bank.

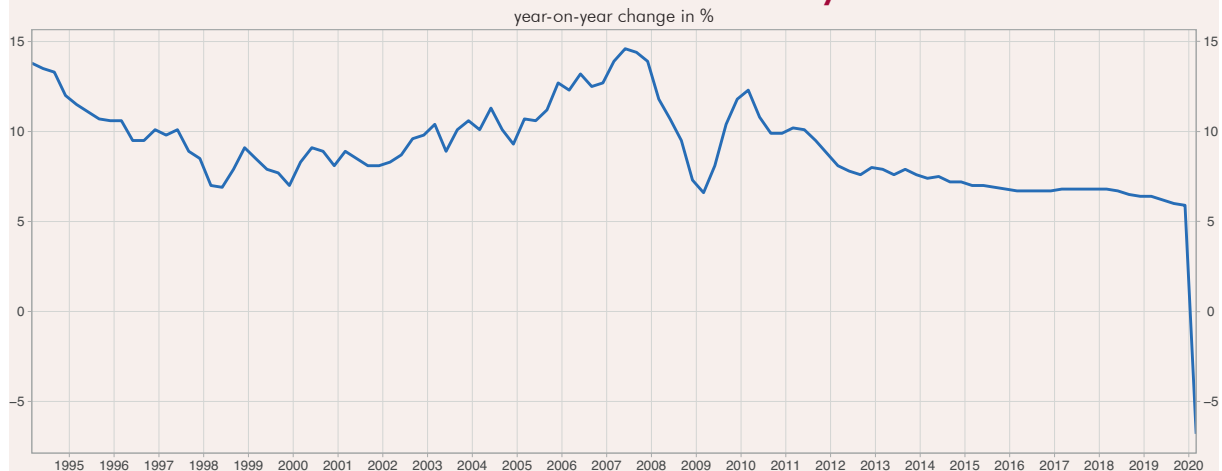
However, even before the recent fall in GDP linked to the health crisis (-6.8% year-on-year in Q1 2020), Chinese activity had been slowing for several years,

1 - China's economic weight has increased over the last 20 years



Note: GDP in current dollars
Source: World Bank

2 - China's GDP has slowed almost continuously since 2010



Source: National Bureau of Statistics of China (NBSC)

International developments

dropping to a growth rate of less than 7% since 2015 against 10% in 2011 (Graph 2). The trade war with the United States definitely accentuated this deceleration in 2018-2019 affecting foreign trade directly and domestic demand indirectly. However, this slowdown had started even before the emergence of trade tensions, which suggests that it is not only cyclical but also structural in nature. The traditional engines of Chinese growth, exports and investment, were running out of steam and consumption was struggling to take over.

In a context of global slowdown, trade tensions with the United States accentuated the slowdown in Chinese exports

In 2018, in a global context already affected by the slowdown in foreign trade, the United States introduced a succession of increases in customs duties (in July, August and September 2018) on a total of \$250 billion of annual imports of Chinese products. China countered with tariff measures

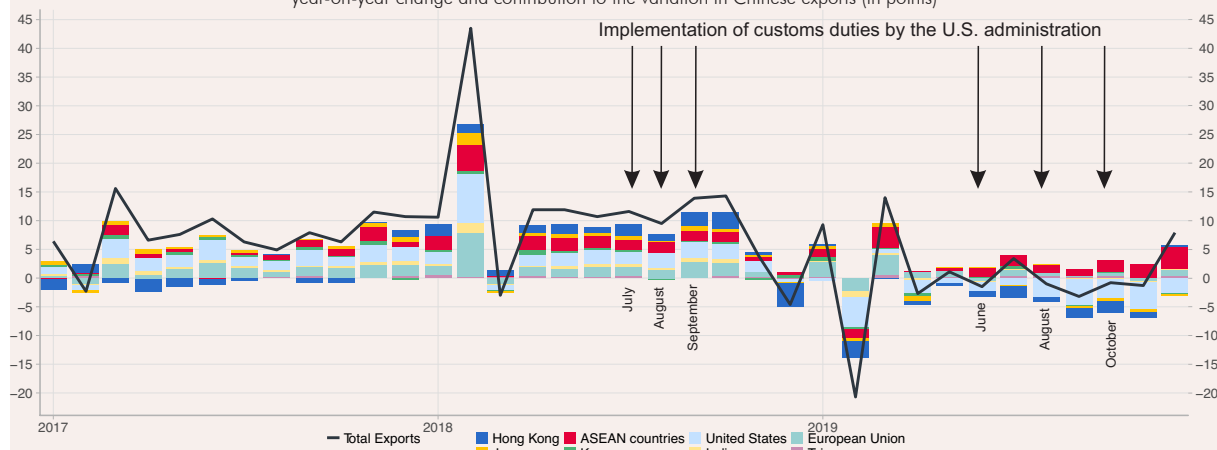
on \$110 billion of imports from the United States. After this series of increases in customs duties, Chinese exports slowed after the end of 2018, with the exception of a few one-off increases linked to anticipated hikes in customs duties (as happened in June 2019, Graph 3). In addition to the direct consequences on deliveries of goods from China to the United States, tensions between the two countries and the increased protectionism started to weigh indirectly on world demand via effects on value chains, business confidence and investment.

Customs tariffs seem to have had an effect on the development of trade in taxed goods. Chinese exports to the United States (main destination country along with Japan, excluding Hong Kong) declined over several quarters. In August and October 2019 in particular, total Chinese exports fell while exports to ASEAN countries¹ increased. It therefore seems that there was a slight reorientation of exports towards Asia, but this did not entirely offset the drop in exports to the United States (Graph 3).

1. ASEAN (Association of Southeast Asian Nations) is a free-trade area which includes Myanmar, Brunei, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Vietnam and Thailand.

3 - Main contributions by country to variation in Chinese exports

year-on-year change and contribution to the variation in Chinese exports (in points)

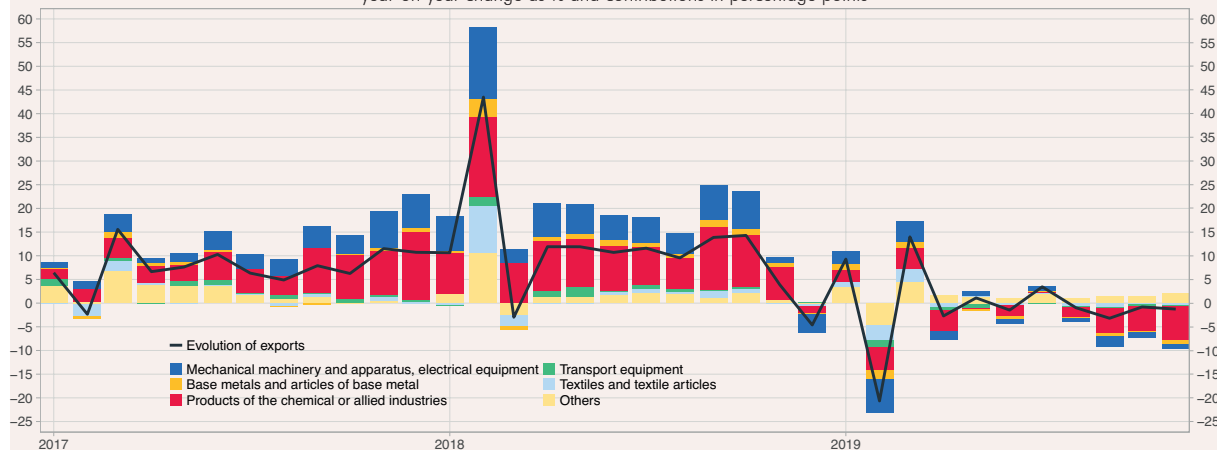


Note: contributions from destination countries and year-on-year change in exports are by value and not seasonally adjusted.

Source: NBSC, General Administration of Customs of China (GACC)

4 - Main contributions by product to variation in Chinese exports

year-on-year change as % and contributions in percentage points



Source: NBSC, GACC, INSEE calculations

Analysis of the main Chinese export sectors before the health crisis reveal three in particular (machinery and mechanical appliances, chemical products, and textiles, *Graph 4*). These sectors, which had been the driving force behind Chinese exports until the end of 2018, were no longer able to sustain them in 2019.

The contribution of exports of machinery and mechanical appliances to the United States decreased after the customs tariffs were put in place, but increased to the ASEAN countries and other Asian countries (*Graph 5*). It is possible that some trade flows were diverted from China to other ASEAN countries then redirected to the United States. However, of these countries, only Vietnam has massively increased its exports to the United States, from 30% to 40% year-on-year. The hypothesis that large quantities of goods are being transited through other Asian countries in order to avoid the hike in customs tariffs does not seem to have been verified

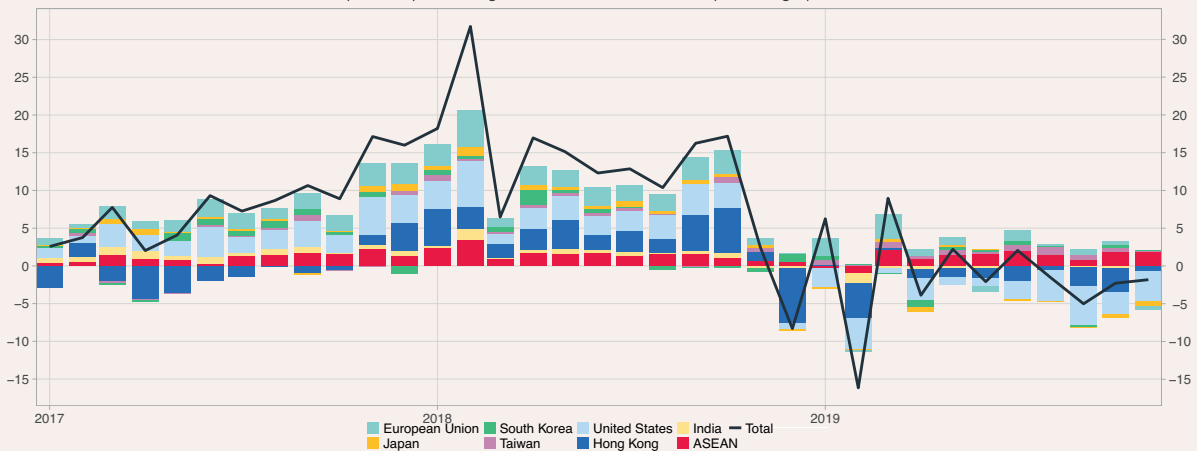
empirically at this stage. The United States have also been able to change their sources of supply, but once again, the rise in US imports from some Asian countries, especially Vietnam, has not offset the decline in purchases of Chinese products.

Chinese exports of chemical industry products have also fallen, but mainly those going to Hong Kong and the European Union (*Graph 6*). Conversely, exports from branches of the chemical industry to the United States have continued to increase, even after the customs duties were put in place. Exports of these products to the ASEAN have also increased.

In October 2019, China and the United States signed a trade agreement by which China agreed to increase its imports from the United States by around \$200 billion, while the United States would lower some customs tariffs. The implementation and effects of this agreement appear uncertain, however, especially in the current context.

5 - Main contributions to variation in exports of machinery and electrical equipment, by country

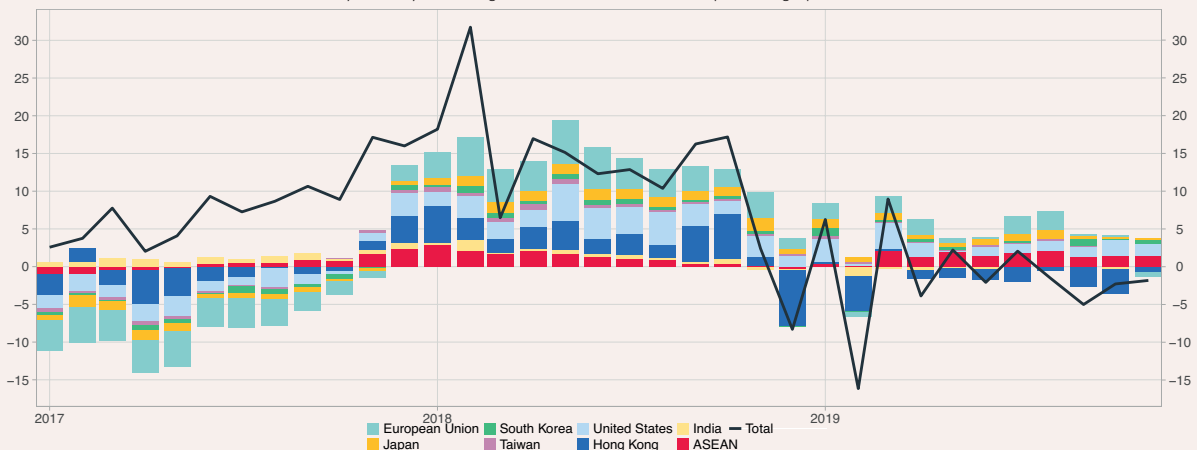
year-on-year change as % and contributions in percentage points



Source: NBSC, GACC, INSEE calculations

6 - Main contributions to variation in exports of chemicals and chemical industry products, by country

year-on-year change as % and contributions in percentage points



Source: NBSC, GACC, INSEE calculations

International developments

Chinese growth is based less and less on the assembly trade

Trade tensions with the United States are not the only cause of the slowdown in exports prior to the health crisis. Assembly trade, i.e. the assembly and reexport of products and imported spare parts, represented almost 25% of exports in 2019 against 40% in 2011 (Graph 7). This decrease in assembly trade demonstrates the change in China's economic model, which was originally turned towards the assembly and export of labour-intensive goods (textiles, mechanical equipment), but has moved to a model focusing more on the domestic market and the production of goods with a higher value-added.

Relatively unproductive investment

In 2018 according to the World Bank, the share of investment (gross fixed capital formation, GFCF) as a proportion of GDP was 42% of GDP against 46% in 2013. The slowdown affected both corporate

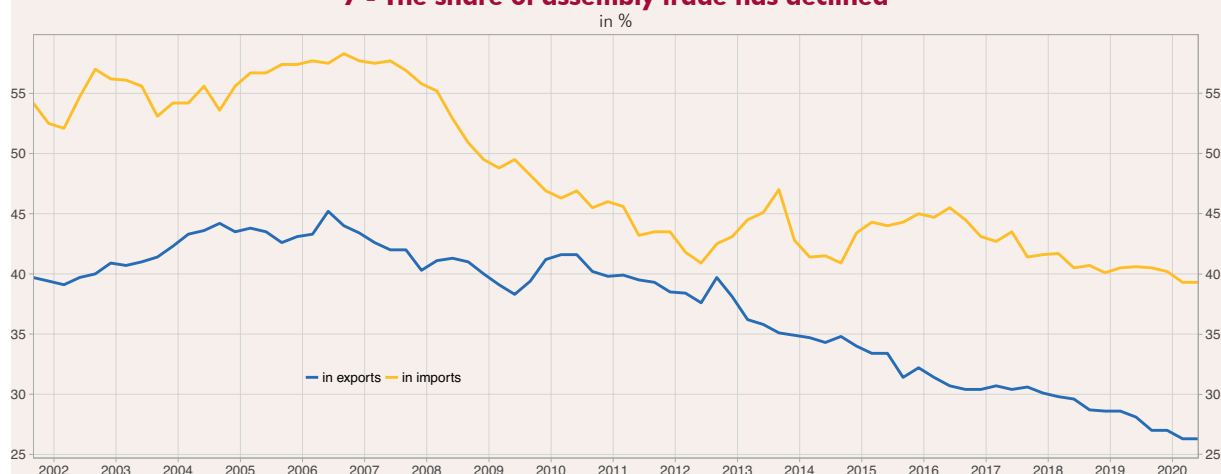
investment (Graph 8) and real estate investment, one of the drivers of Chinese growth in the 2010s, except during a crisis in 2015-2016 (Graph 9). There were several reasons for this slowdown in investment: on the one hand, the shrinking of credit and on the other hand, earlier "overinvestment" linked to overabundant household savings which facilitated the financing of investment projects that were sometimes not very productive. Investment did indeed increase greatly in the 2000s, until around 2013, contributing to about half of GDP growth. This increase in investment led to the emergence of production overcapacity, which is hampering investment today. Chinese authorities and businesses are now trying to reabsorb these overcapacities.

Household consumption struggled to fill the gap

Faced with the slowdown in the traditional drivers of Chinese growth (exports, investment), consumption found it difficult to fill the gap. In 2018, it represented only around 39% of GDP.²

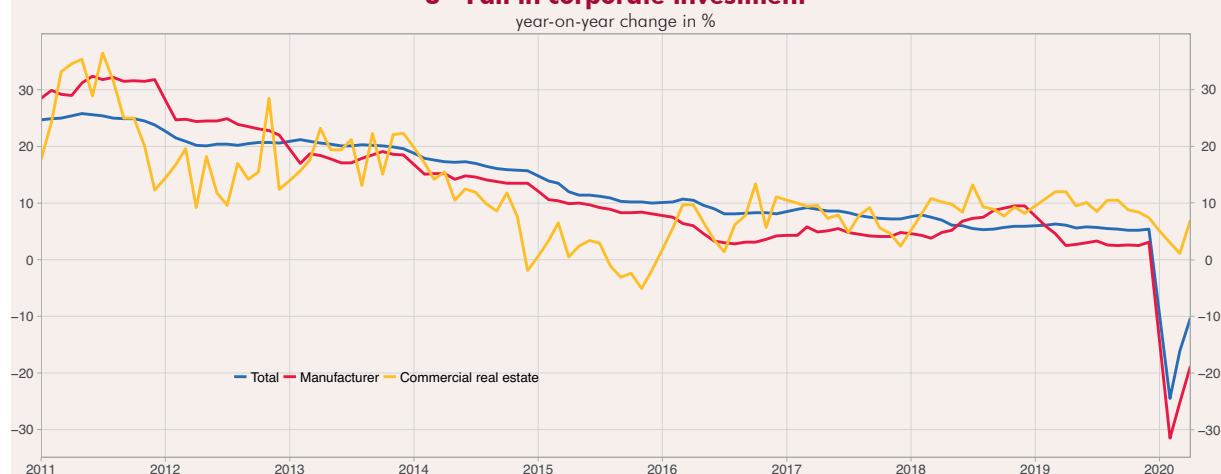
2. Data from CEIC Data, an economic data provider, using figures from NBSC

7 - The share of assembly trade has declined



Source: GACC

8 - Fall in corporate investment



Source: NBSC

Rising food inflation reduced disposable income. Consumer prices continued to accelerate in 2019 especially in food due to an epidemic of swine fever, since the weight of pork prices in the CPI is considerable. This rise in inflation reduced purchasing power and hence household consumption, which could have accentuated the economic slowdown already visible before the health crisis.

The trade war also affected household consumption

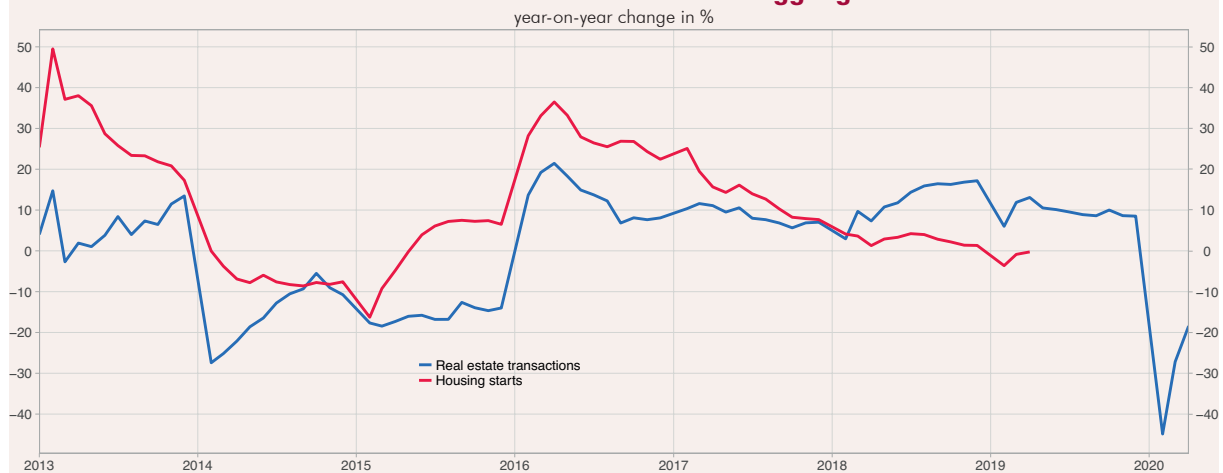
The trade war with the United States also affected household consumption adversely through difficulties in the export sector and their consequences for the labour market. The conflict led to a confidence shock prompting households to increase their precautionary savings, and employment slowed: export businesses hired fewer new employees or reduced their workforce. The fall in employment affected households' purchasing power and their consumption.

Two indicators suggested the slowdown in consumption even before the health crisis: retail sales (*Graph 10*) and car registrations (*Graph 11*). The contraction in car sales was also the result of a structural slowdown in the sector and the end of tax incentives to purchase, implemented between the end of 2015 and the start of 2018.

Trade-off between financial stability and economic growth

Although they have slowed recently, corporate loans, both public and private, remain high in China: at the end of 2019, loans to non-financial enterprises amounted to more than 160% of GDP. The Chinese authorities attempted to contain the increase in loans without penalising growth, but they were facing a short-term slowdown that was magnified by the health crisis. They tried to reduce high-risk debt: as a result, the proportion of loans granted at a rate below the reference rate halved in 2018 (*Graph 12*).

9 - The real estate market is struggling



Source: NBSC

10 - Slowdown in retail sales



Source: NBSC

International developments

Conversely, in order to support growth, they lowered the cash reserve ratio (reserves that commercial banks must hold with the central bank, proportional to deposits) several times in 2018 and 2019, in order to keep in check the negative effects of the US customs duties on imports from China.

In the context of the slowdown in consumption and investment, the money supply appears to have been decelerating for several years (*Graph 13*). This slowdown in China's money supply, which was particularly severe in 2018, can be considered as the result of the slowdown in activity or as its cause: after monetary expansion from autumn 2015 to autumn 2016, the monetary authorities effectively hardened their monetary policy from 2018 to fight against excessive debt and shadow banking, namely non-bank loans.

In fact, strong growth in the last two decades essentially reflected a technology and capital catch-up phenomenon. This catch-up now seems complete and the Chinese economy appears to be close to the technology frontier. The Chinese authorities are trying to rebalance the economy, on the one hand towards domestic demand and on the

other hand towards a better quality of investment and production. China hopes to move upmarket, to develop its high value-added industries and place itself at the forefront of the most advanced technologies, for example in aeronautics, artificial intelligence and telecommunications. Spending on research and development (R&D) has therefore increased sharply, reaching 2.1% of GDP in 2017 (*Graph 14*). Even if the various short-term shocks and the production overcapacities are absorbed, Chinese activity is unlikely to return to its previous rate of growth. In addition to the negative cyclical uncertainties in recent years, the slowdown in the Chinese economy is in fact also structural and can be explained by long-lasting factors, notably of a demographic, social and environmental nature.

Even before the health crisis, China was already facing several sociodemographic and environmental challenges

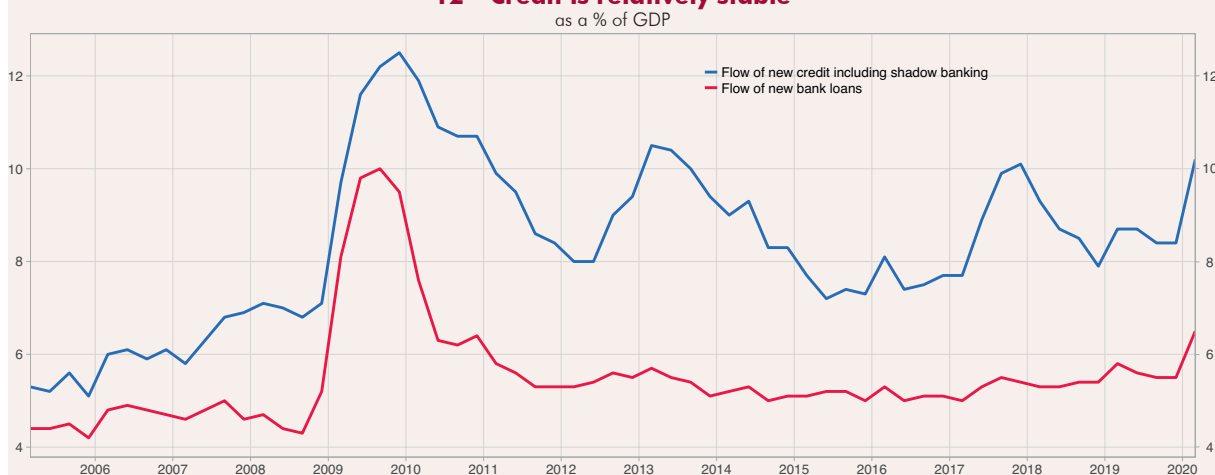
The Chinese population is ageing (*Graph 15*). Notably, the birth rate is declining significantly, falling to 1.05% in 2019, its lowest level since 1949, according to the NBSC (National Bureau of Statistics of China), the Chinese national statistical institute.

11 - The end of tax incentives penalised car registrations



Source: China Association of Automobile Manufacturers

12 - Credit is relatively stable



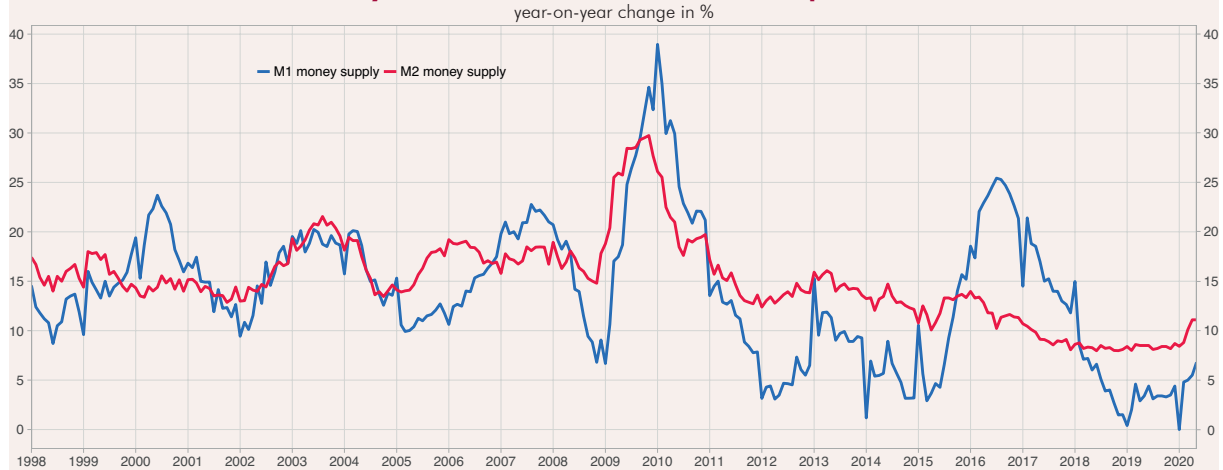
Source: People's Bank of China

This ageing of the population has two consequences. First, it affects the available labour force, especially as it is accompanied by a drop in the labour force participation rate, both in men and women, mainly because people are studying for longer and better schooling is provided for adolescents (*Graph 17*).

The labour force participation rate nevertheless remains high compared to the advanced countries.

Second, the ageing population and the resulting rise in the old-age dependency ratio (*Graph 16*) represent a challenge for social protection and pensions. Improving social protection and the

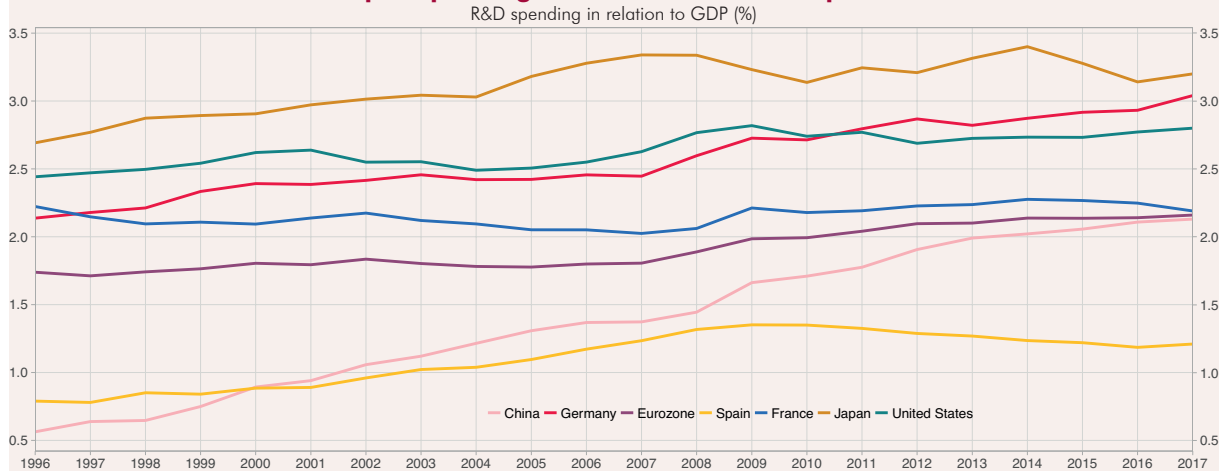
13 - The monetary slowdown could hold back consumption and investment



Note: the M1 aggregate combines demand deposits, coins and notes. The M2 aggregate includes the M1 aggregate and term deposits with an agreed term of maturity of less than or equal to two years, deposits with an agreed term of maturity of less than or equal to three months and short-term loans.

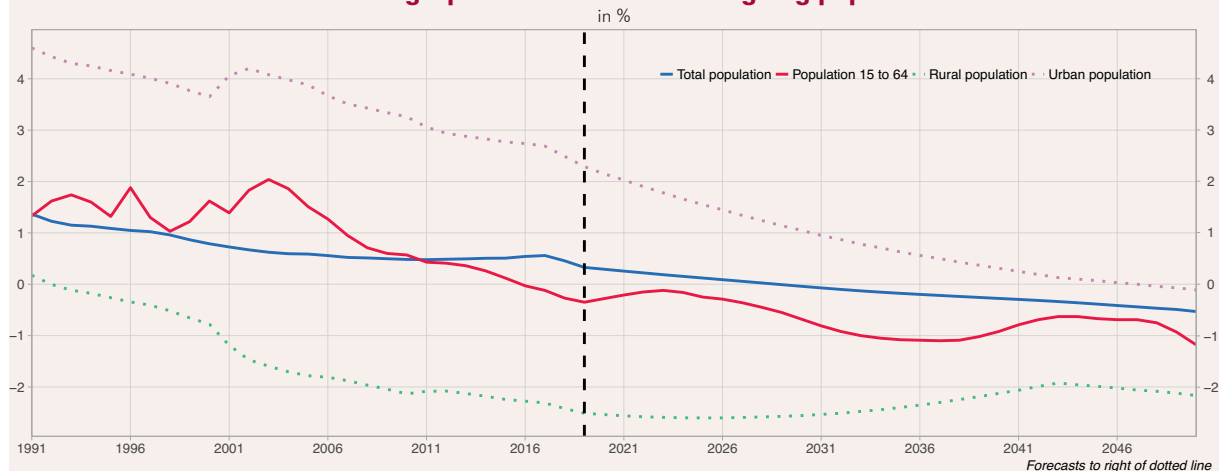
Source: People's Bank of China

14 - Catch-up in spending on research and development in China



Source: World Bank

15 - Demographic slowdown and an ageing population



Source: World Bank

International developments

pension system are important issues if the savings ratio, which is very high in China, is to be brought down and consumption increased.

Inequalities are both a consequence of and a risk for economic growth

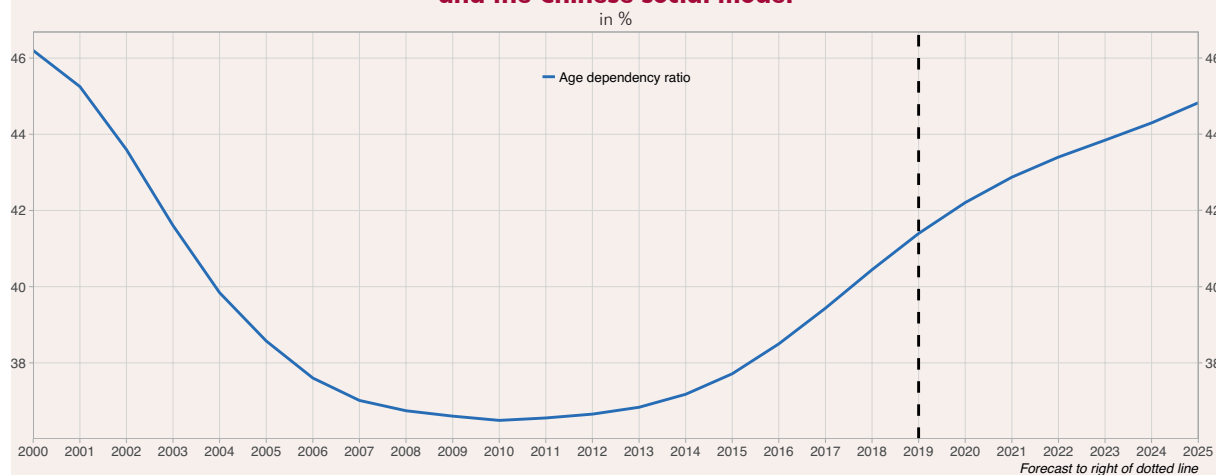
China is said to have passed the “Lewis turning point”: the surplus labour force resulting from the rural exodus and available for work in the manufacturing branches and the services sector now appears to have been fully absorbed (Zhang, Yang and Wang, 2011). The labour market is therefore becoming more and more strained, leading to an increase in wages and a loss of competitiveness.

Consumption is hampered by the weakening of external demand and also by the slowdown in household incomes. In fact, the cumulative rise in

wages has degraded cost-competitiveness, which may account for companies outsourcing outside China to countries with lower wage costs and relocating to western countries. In addition, the slowdown in income following the decline in activity and the end of the catch-up process is holding back consumption (Graph 18). However, the rise in unemployment caused by the health crisis could increase the severity of the challenges facing social protection and exacerbate the drop in consumption.

Household consumption is also held back by the Hukou system. The Hukou is a passport dependent on the administrative regions, giving access to the social protection provided in these regions. Migrant workers originally from rural areas and working in the cities have rural Hukous and therefore do not have access to social protection in the cities or

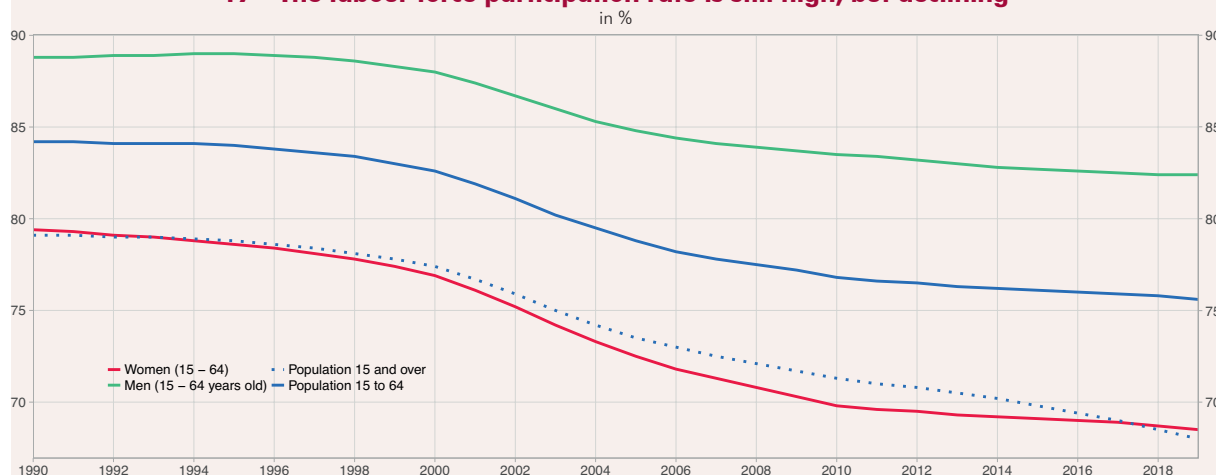
16 - The ageing population presents significant challenges for social protection and the Chinese social model



Note: the dependency ratio is calculated as the ratio of the numbers in the population aged under 15 or over 64 to the number aged 15 to 64.

Source: World Bank

17 - The labour force participation rate is still high, but declining



Source: World Bank

regions where they are working. These inequalities with regard to social protection are a strong incentive to save.

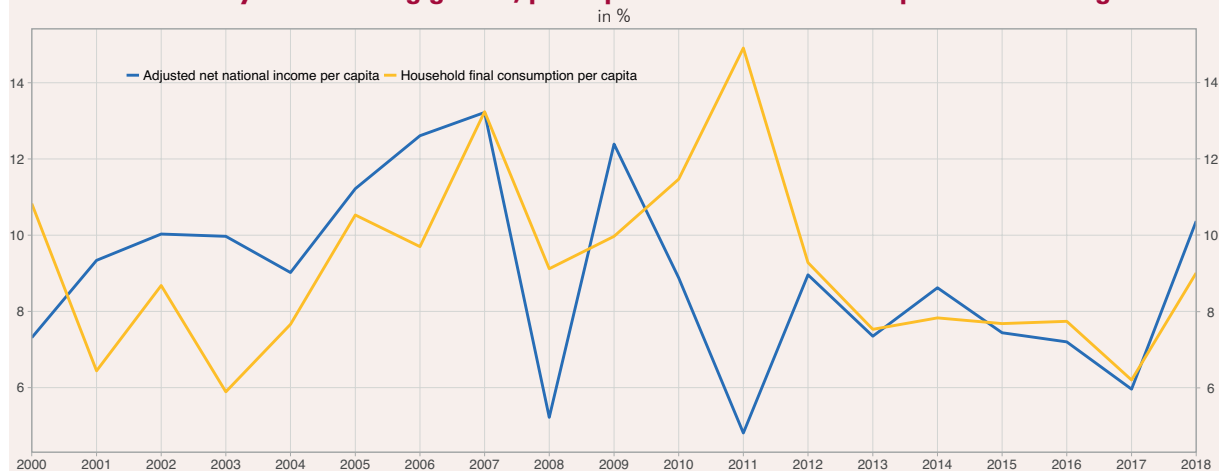
Reducing inequalities between provinces, in terms of income, social protection and infrastructure, has therefore become one of the goals of Chinese economic policy. There are significant interprovincial inequalities stemming from several factors: the share of industry in value-added, infrastructure, the degree of decentralisation and the degree of openness to international trade. The coastal provinces, then the central provinces were first to develop better infrastructure, they had access to more cheap labour, and benefitted from economies of scale through the growth of conurbations. The reduction in equalities by developing infrastructure, especially the construction of motorways, bridges and dams (e.g. the Three Gorges Dam) has sustained growth so that production factors could be reallocated to the central provinces, whereas the provinces in the North and the West have developed more slowly. However, these areas could benefit from more outsourcing from the coastal regions and thus develop in their turn.

Environmental protection is another major challenge for Chinese growth

The Chinese economic model, growth based on exports and industrialisation, has led to significant greenhouse gas emissions and high levels of pollution (*Graph 19*): China has developed and established itself, becoming “the World’s Factory”.

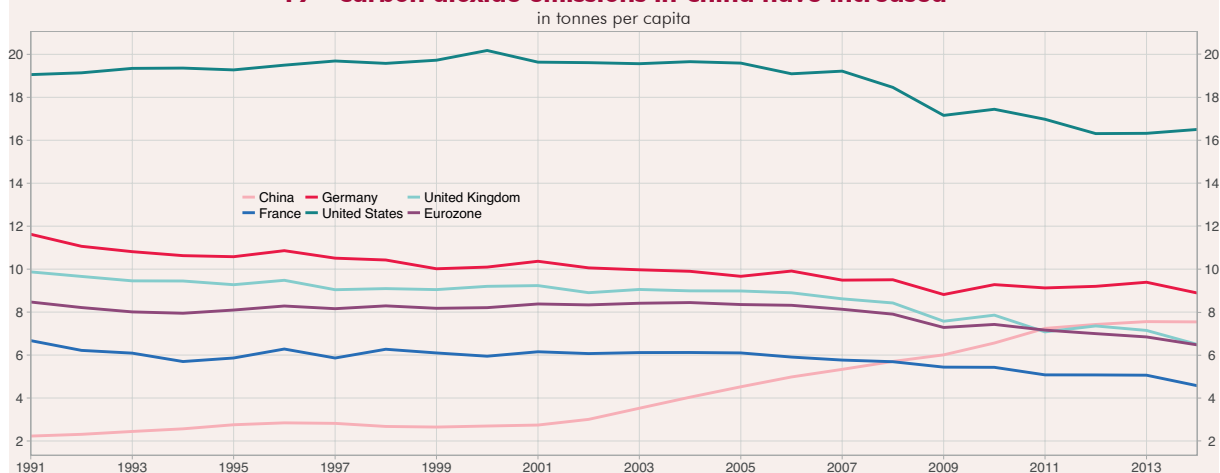
As a result of internal pressure, both from the new urban and more highly qualified middle classes, and from increased international cooperation, especially through the Kyoto Protocol and the Paris Agreement, the Chinese authorities are trying to reduce this pollution. The Chinese population are still exposed to very high levels of air pollution, which has major consequences for health: in 2015, 7% of healthcare spending was attributable to pollution (Barwick et al., 2018). According to the OECD, the cost in well-being caused by air pollution (fine particulate matter, ozone) represented 8.6% of GDP in 2016 (Roy and Braathen, 2017). Chinese cities are at saturation point from car traffic, which adds to pollution.

18 - After years of strong growth, per capita income and consumption are slowing



Source: World Bank

19 - Carbon dioxide emissions in China have increased



Source: World Bank

International developments

Measures have been put in place to encourage the use of hybrid or electric vehicles and renewable energy (solar power, wind power), for example the introduction of subsidies for the purchase of electric vehicles. After a sharp rise in carbon dioxide emissions per capita over the course of the 2000s, China managed to stabilise them in 2010 at a similar level to the main European economies (*Graph 19*). Relative to the purchasing power parity dollar of GDP, Chinese carbon dioxide emissions have declined, but are still higher than in the other major economies (*Graph 20*). Notably, China has reduced the concentration of fine particulate matter and greenhouse gases in the largest megacities (Beijing, Shanghai). According to a study by the Centre for Research on Energy and Clean Air (CREA), an independent research body, emissions of fine particulate matter or PM 2.5 (fine particles of less than 2.5 micrometres diameter) would appear to have decreased across all of China and notably by 48% in Beijing between 2015 and 2019. However, ozone emissions increased between 2015 and 2019 and emissions of PM 2.5 appear to have increased in the year from Q4 2018 to Q4 2019. The health crisis has nevertheless had the effect of slowing this increase temporarily. An extended slowdown or a change in the Chinese economic model would have significant consequences for the other economies.

Over the years, China has become a major trading partner of most of the large economies

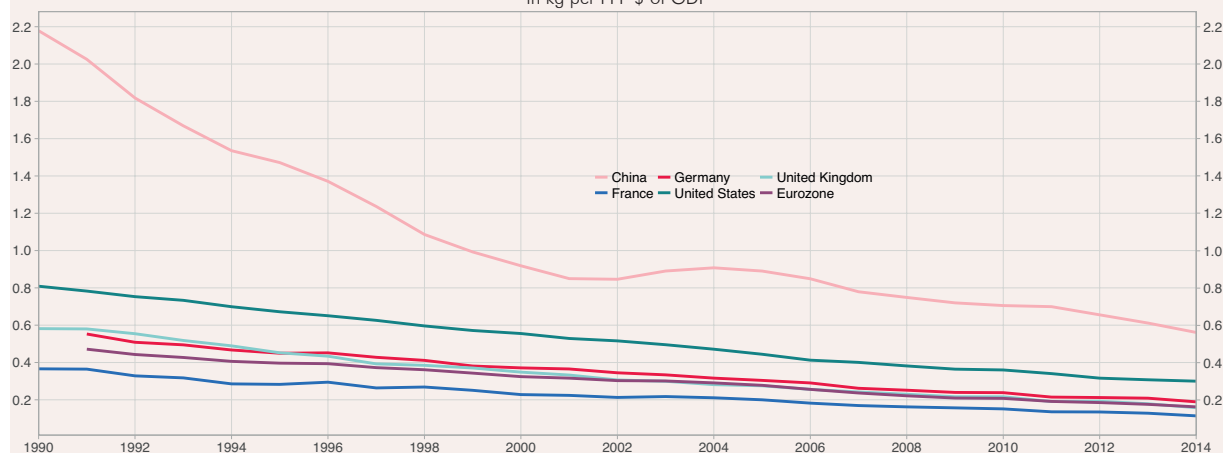
Japan in particular and the Eurozone countries, especially Germany, are highly vulnerable to Chinese demand. *Graph 21* shows the structure of Chinese trade in 2019. The countries of Asia and the European Union are China's main suppliers: in 2019, 13.6% of Chinese imports came from countries of the ASEAN and 13.3% from the European Union. Taiwan (8.3% of Chinese imports), South Korea (8.4%) and Japan (8.3%) were also major suppliers.³

In terms of Chinese exports, the European Union (17.2% of Chinese exports) and the United States (16.7%) are China's primary customers, followed by the ASEAN countries (14.4%) and Hong Kong (11.1%).

The importance of China in the production process of the main economies has increased significantly over the last two decades. In return, China has become an increasingly important partner for the other countries. *Graph 22* shows the share of bilateral trade with China in the imports and exports of the countries usually monitored in *Conjoncture in France*.

3. Australia, not shown in the graph, supplies about 4% of Chinese imports.

20 - Carbon dioxide emissions per purchasing power parity dollar of GDP have declined
in kg per PPP \$ of GDP



Source: World Bank

China is both an important supplier and a major customer for Japan: 23% of Japanese imported goods come from China and about 18% of Japanese exports of goods go to China. China is also a major supplier for the United States (approximately 18% of US imports), but less of a customer (only 6% of US exports); the same for the United Kingdom (9% of UK imports and about 6% of exports). Finally, China is an important partner for Germany, with about 7% of German imports and exports. However, exports represent about half of Germany's GDP.

Of the countries monitored in *Conjoncture in France*, Germany and Japan are highly exposed to Chinese activity

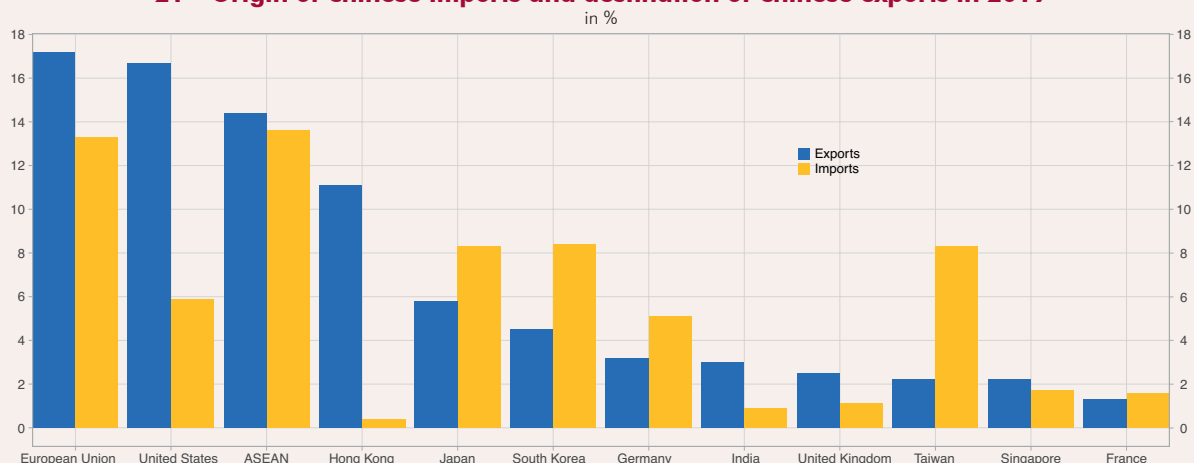
By reversing the Inter-Country Input-Output (ICIO) tables, the value-added content of direct exports to China can also be calculated for a large number of countries⁴ (*Graph 22*). Among the countries monitored, those incorporating most value-added in their exports to China are Germany (about 2.5% of German GDP), then Japan (2.1% of Japanese GDP).

The ICIO tables can also be used to calculate the value-added produced by the different countries and contained in Chinese domestic final demand (*Graph 3*). On this basis, the countries most exposed would appear to be Taiwan (10.0% of GDP), South Korea (6.9%) and Germany (2.8%). According to this calculation, 1.1% of French GDP would be serving Chinese final demand.

The coronavirus pandemic has therefore come at a time of fragility in the Chinese economy and represents an additional negative economic shock, in a context already affected by trade tensions with the United States. In contrast to 2008-2009, when the economic recovery after the crisis was sustained in part by Chinese demand and the stimulus package introduced by the Chinese authorities, an economic crisis in China or a change in the Chinese economic model could hamper the economies of its partners. ■

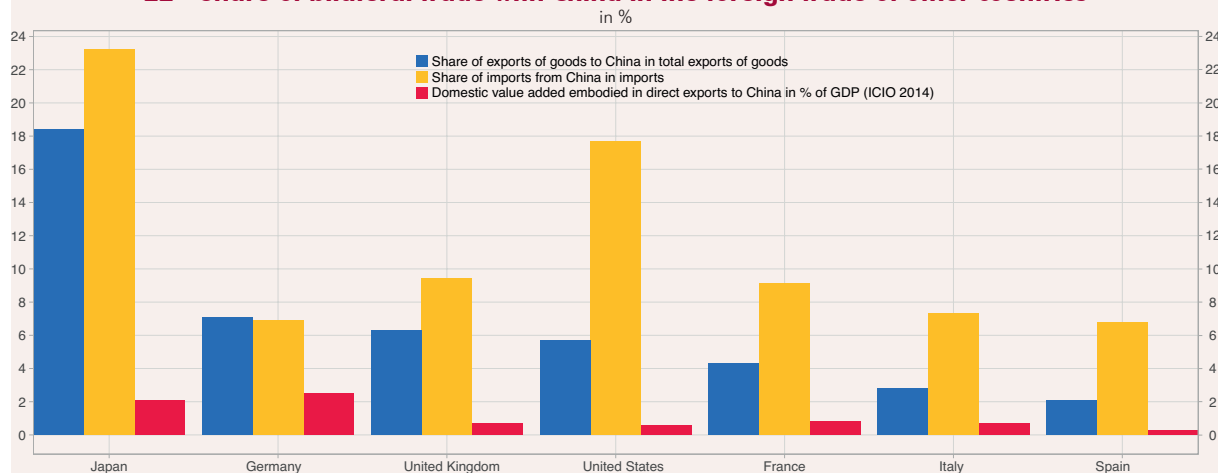
4. For a description of the method, see for example the article, "Assessing the impact of Brexit on the economic activity of the UK's closest partners: the trade channel", in INSEE's *Conjoncture in France*, March 2019.

21 - Origin of Chinese imports and destination of Chinese exports in 2019



How to read it: on average in 2019, the European Union represented 17.2% of Chinese exports and supplied 13.3% of Chinese imports. Source: GACC, NBSC

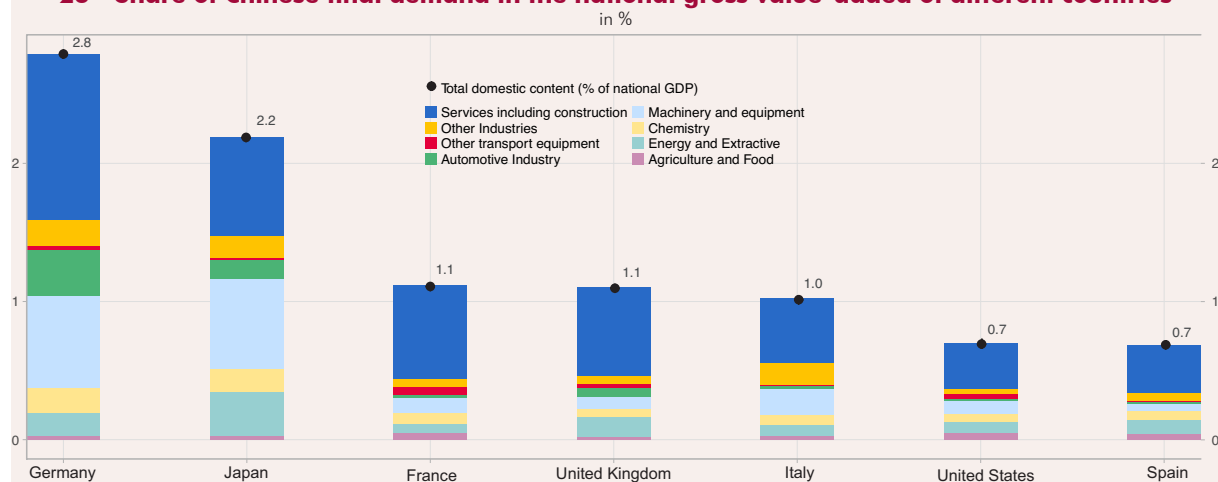
22 - Share of bilateral trade with China in the foreign trade of other countries



How to read it: In 2014, the amount of domestic value-added in French exports to China was 0.8% of French GDP

Source: Eurostat, Ministry of Economy and Finance of Japan, OCDE, ONS, Bureau of Economic Analysis, WIOD, INSEE calculations

23 - Share of Chinese final demand in the national gross value-added of different countries



Source: WIOD 2014, INSEE calculations



Institut national de la statistique et des études économiques
Chief manager : Jean-Luc Tavernier
Head Office: 88 avenue Verdier - CS 70058 - 92541 Montrouge Cedex
Phone: +33 01.87.69.50.00
Website: <http://www.insee.fr>