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EUROSYSTÈME

Economic research

Worldwide GDP decline in 2020: the relative impact of health restrictions, the responsiveness of public and private economic agents, and sectoral specialisation

The intensity of the pandemic (as measured by the number of people infected with the virus or dying from the disease) explains only a small share of the shock to GDP in the major economies in 2020. Half of the shock can be attributed to the scale of the response of both government authorities in terms of health restrictions and private economic agents. The other half can be explained by sectoral specialisation (mainly tourism, level of technological development), the pre-crisis demographic, social and economic situation and the impact of the fiscal stimulus introduced in 2020. In countries where a "managed quarantine" strategy was adopted, with the aim of strictly containing the pandemic rather than "living with it", the fall in GDP appears to have been less pronounced.

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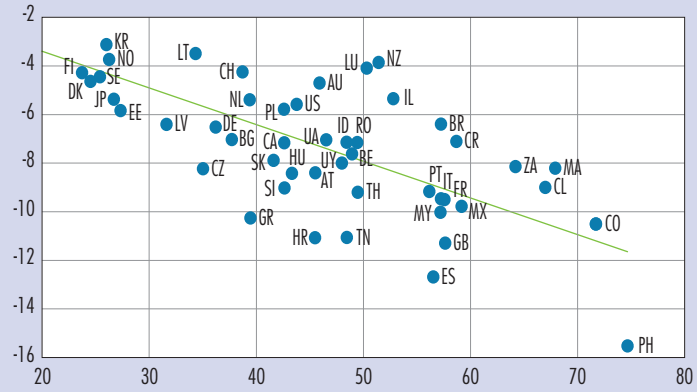
JEL codes
E6, F0,
H30, I10

50%
of GDP losses in 2020 were due on average to governmental measures to fight the pandemic and to the adaptation of private agents

5%
of the share of tourism in GDP cost an average of 1.4 point of growth in 2020

1.5 point of growth
of losses avoided on average in the event of rapid, strict and targeted quarantine measures

The greater the restrictions, the higher the shock to GDP in 2020
(x-axis: effective activity constraint indicator; y-axis: shock in GDP points)



Sources: International Monetary Fund, the Oxford Covid-19 Government Response Tracker – Blavatnik School of Government, Oxford University, Google Mobility data, Banque de France calculations.

1 GDP declined in 2020 with differences in magnitude across countries

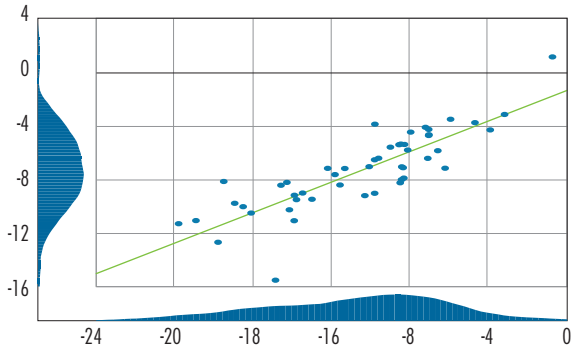
This paper studies the impact of the Covid-19 health crisis on economic growth in 2020 using a very large sample of countries (see Table A in the Appendix) from the Organisation for Economic Co-operation and Development (OECD). In order to assess the magnitude of the shock, we calculate the difference between actual GDP growth in 2020 and its forecast by the International Monetary Fund (IMF)[1] in the *World Economic Outlook* (WEO) of October 2019. Using the difference between actual and forecast growth enables us to take account of the differences in both potential growth and the positioning of countries in the business cycle. Consider the examples of Italy and the Philippines, both of which experienced a decline in GDP of comparable magnitude (–8.9% and –9.3%, respectively, in 2020). However, the Philippines was on a much higher growth trajectory than Italy before the Covid-19 crisis. This was reflected in the October 2019 WEO forecast where the IMF had forecasted a 6.2% rise in GDP in the Philippines in 2020, compared with only 0.5% in Italy. With this correction, we obtain a GDP shock of 15.5 pp in the Philippines, against 9.4 pp in Italy.

The magnitude of the shock to GDP proved to be uneven across countries. Chart 2 shows that South Korea suffered a smaller shock in 2020 than other countries, notably in Europe. In particular, the loss of GDP amounted to 8.1 pp in the euro area in 2020, compared with 5.6 pp in the United States. **However, the intensity of the epidemic seems to explain only a very small share of the decline in activity.** Thus, according to Chart 2, France, Italy, Spain and Sweden show the same prevalence at the end of 2020 (around 40 cases per thousand inhabitants), but the growth shock observed ranges from –4.4 pp for Sweden to almost –12.7 pp for Spain. In addition, the distribution of GDP losses in 2020 is very wide and essentially linked to the fall in GDP in the second quarter (see Chart 1).

1 The IMF forecasts were in line with those of other institutions such as the OECD or Consensus Forecasts.

C1 Impact of the decline in GDP in Q2 2020 on GDP in 2020

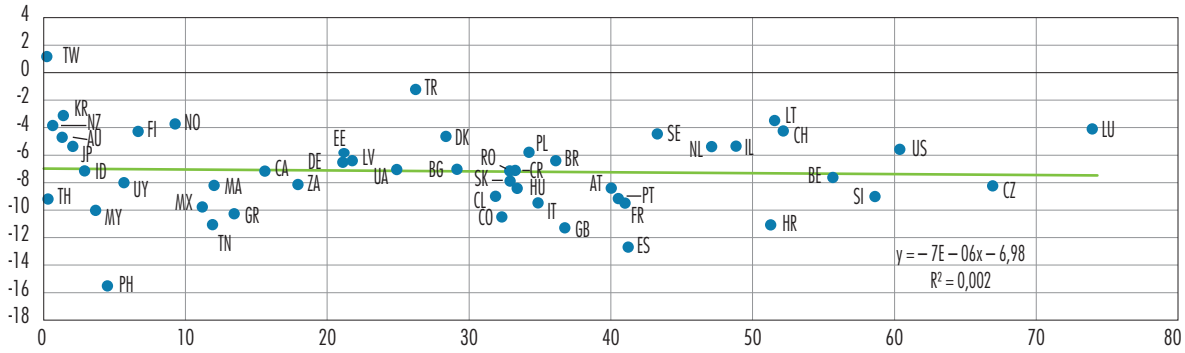
(x-axis: quarterly change in GDP in Q2 2020 in %; y-axis: shock in GDP points)



Sources: International Monetary Fund, national sources, Banque de France calculations.

C2 Relationship between the number of Covid cases and the shock to GDP in 2020

(x-axis: number of Covid cases per thousand inhabitants; y-axis: shock in GDP points)



Sources: International Monetary Fund, John Hopkins University, Banque de France calculations.
Notes: The ISO code/country name correspondence is available in the Appendix. There is no relationship between the number of Covid cases and the size of the impact on GDP.

2 The response of public and private agents could explain 50% of the shock to GDP observed in 2020

A multitude of factors explain the loss of GDP in 2020. First, we look at the univariate relationship (regressions that consider each of the explanatory variables one by one) between, on the one hand, our measure of the shock to GDP in 2020 and, on the other, 85 candidate variables (see table B in the appendix), grouped into seven categories:

1. **Structural macroeconomic characteristics:** a priori, countries that are highly dependent on the tourism/leisure sector or on private consumption should be more affected by border closures and the closure of shops and leisure facilities. The geographical concentration of value added (VA) may also have had a negative impact on GDP.

2. **Level of development, demographics and health:** a priori, countries with a high share of fragile population (elderly, smokers, diabetics, people exposed to cardiovascular diseases) will be inclined to put in place stricter measures to protect them, which could have a negative impact on GDP. Good demographic and health indicators (life expectancy, human development index, number of available hospital beds) could contribute to mitigating the health crisis. Conversely, the high population density could increase the circulation of the virus.

3. **Fiscal responses:** the expected sign of the fiscal response is ambiguous. On the one hand, countries having been affected by the largest shock are most likely to have put in place the strongest support measures. On the other hand, it is also possible that some countries reacted to a lesser extent, especially given their limited fiscal space, thus experiencing larger GDP declines. Finally, the size of the fiscal response may itself depend on the strategy for dealing with the pandemic. Several fiscal support measures are tested: those that have an impact on the budget balance in 2020 (through the change in the primary balance), but also those that are broader by integrating cash measures (such as tax deferrals) that do not have an impact on the balance[2] in 2020, or recapitalisation measures. Finally, we include automatic stabilisers in these discretionary measures.

4. **Response of authorities and economic agents:** in order to take into account the impact of the measures taken to fight the pandemic on the economy, we first construct an effective activity constraint index (EACI) which represents the combination of "official" (or "de jure") restriction measures and de facto constraints measured through mobility data. This indicator aims to capture the actual measures taken by governments through different components of the Oxford Stringency Index and their impact on travel as measured using Google Mobility data. These will also reflect the impact of the Covid-19 crisis on people's behaviour without necessarily being constrained by prior government intervention. The higher the EACI in 2020, the greater the cost to the economy. We then seek to capture the impact of different strategies (Baker et al., 2020) for fighting the pandemic. We choose two relatively opposite strategies: the "managed quarantine" strategy where all possible actions are taken to contain the pandemic (e.g. China, Taiwan, Australia, New Zealand, Norway, Iceland, Vietnam, Pacific Islands, etc.) and the "mitigation" strategy where actions are taken sequentially and aimed at significantly reducing the number of cases, smoothing the peak, preventing hospital overcrowding and protecting the most vulnerable (the majority of developed countries). We look at whether countries that were impacted by the pandemic at a later stage were able to benefit from a learning effect. Finally, we test whether good governance[3] and its corollary on household and business confidence had a positive impact on GDP.

2 The budget balance, which is the financing capacity/need of general government, is the difference between government receipts and expenditure. The latter mainly includes intermediate consumption, compensation of employees, social benefits, subsidies and other transfers to households and companies, interest expenses and gross fixed capital formation. Thus, acquisitions of financial assets (nationalisation or recapitalisation of companies for example) are not recorded as government expenditure.

3 The governance index is constructed according to the methodology of Demertzis and Raposo (2018); see note b) on page 13, Table Tb.

5. **Degree of intensity of the pandemic:** are the countries that experienced the greatest decline in GDP in 2020 those that were the most affected by the epidemic (rate of positive cases, total number of cases or deaths per capita, number of deaths per available hospital bed)?

6. **Technological development:** a high degree of technological development (considerable weight of e-business, good development of the Internet network, high number of teleworking jobs already in place before the crisis, large share of sectors where teleworking is rapidly operational, weight of new information and communication technologies – NICTs), should help mitigate the impact of lockdown measures.

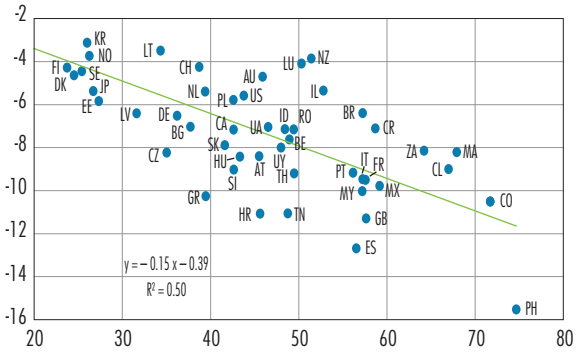
7. **State of the economy before the crisis:** the countries that entered the crisis with better economic fundamentals (positive output gap, positive savings, low unemployment rate, growth accumulated over the last few years, etc.) should be able to better manage the loss of income resulting from the interruption of activity during lockdown. Conversely, countries with limited fiscal space (high government debt to GDP or government debt to tax revenue, negative public balance) may experience a larger fall in GDP given their limited capacity to implement fiscal stimulus.

The results of the estimations from step 1 (see Chart 3 and box) show that the measures of activity constraint (EACI) could explain 50% of the losses in GDP in 2020. Thus, countries having strongly constrained activity, such as Spain, the United Kingdom, France and Italy, suffered a greater shock to GDP than countries having less constrained activity, such as the countries of northern Europe, South Korea and Japan.

In order to refine our results, we looked for combinations of variables that would enable us to identify the most significant and discriminating factors to explain the falls in GDP in 2020. We therefore estimated several thousand equations in order to find the best combinations of variables and obtain a good stability of the estimated coefficients. Applying the estimated average coefficients to the distribution of the selected explanatory variables, we found that the difference in the level of the EACI between a country in the first quartile (Q1) of the distribution (Switzerland) and a country in the third quartile (Q3, the United Kingdom or Spain) could explain a 1.6 percentage point difference in GDP losses (see Chart 4).

C3 Link between the intensity of restrictions and the level of GDP in 2020

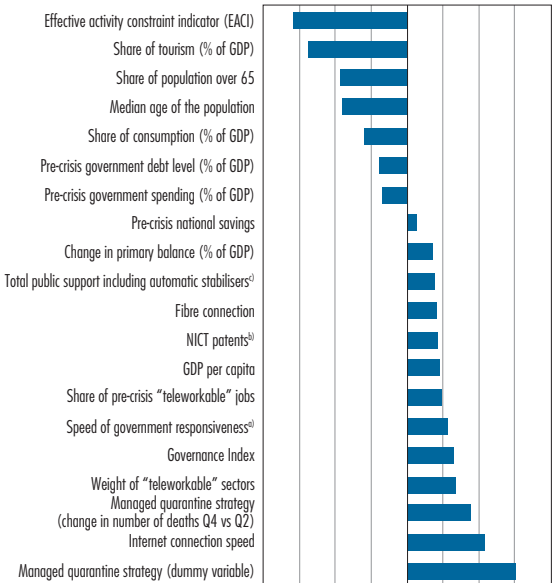
(x-axis: effective activity constraint indicator;
y-axis: shock in GDP points)



Sources: International Monetary Fund, the Oxford Covid-19 Government Response Tracker – Blavatnik School of Government, Oxford University, Google Mobility data, Banque de France calculations.

C4 Difference in GDP impact in 2020

(difference in GDP impact between a country in the first quartile and a country in the third quartile of the distribution of each selected explanatory variable)



Source: Banque de France estimates.
Note: In the second quarter, the difference in the level of the EACI between the country in the first quartile (Switzerland) and the country in the third quartile (United Kingdom or Spain) implies a 1.6 point higher loss of GDP for the latter.
a) Level of the Oxford Stringency Index on the day the number of cases exceeds 100 in country *i*.
b) New information and communication technologies.
c) Fiscal measures (excluding guarantees).

BOX

Estimation methodology

In order to explain the divergence in GDP losses across countries, the following cross-sectional equation is estimated:

$$Y_i = c + \beta.X_i + \mu_i \quad (1)$$

where Y is the measure of GDP loss of country *i* in 2020 and X is a vector of *k* variables reflecting the characteristics of economy *i* along different dimensions and *μi* the residuals. Two econometric challenges emerge: (i) the large number of potential explanatory factors and their correlation; and (ii) the absence of an a priori "true" statistical model to be tested. With an unknown true model, there are a large number of possible independent variables. Depending on the model selection procedure, the conclusions may vary considerably. We proceed in two stages:[1]

- Stage 1: based on the univariate results, we select the effective activity constraint indicator (EACI) as the main explanatory variable (pivotal variable) and estimate bivariate equation (1) with the 83[2] remaining variables using three econometric methods (Ordinary Least Squares – OLS; Robust Least Squares; Least Absolute Shrinkage and Selection Operator – Lasso[3]):

$$Y_i = c + \alpha.EACI_i + \beta.X_i + \mu_i$$

At the end of this stage, it appears that the share of tourism in the economy is an important factor in explaining the fall in GDP.

- Stage 2: we use the share of tourism as a second pivotal explanatory variable and estimate a model containing three to five variables in a sequential manner with (i) a third explanatory variable; (ii) models combining the addition of two explanatory variables; (iii) models combining the addition of three explanatory variables:

$$Y_i = c + \alpha.EACI_i + \gamma.Tourism_i + \beta.X_i + \mu_i$$

For each of the three sequences, we rank each equation by the share of variance explained (R^2) and use only those that explain two-thirds of the GDP loss. The estimated average coefficients correspond to a weighted average of R^2 and are relatively non-volatile.

Despite the large number of variables, the estimates may suffer from omitted variable bias and in the absence of a country fixed effect, it is not possible to control for "structural" country effects. In particular, the countries affected in the second quarter will see their GDP in 2020 fall more significantly than countries affected in the fourth quarter.

1 A variable selection method with a 5-variable combinatorial search routine among the 85 variables with the highest R^2 confirms the choice of the EACI as a pivotal variable.

2 We do not include the Oxford Stringency Index, which is already used in the construction of the EACI.

3 The penalised model approach addresses the problem of multicollinearity between variables in situations where all the variables are kept. With the Lasso method, it is possible to select one variable from a group of correlated variables, the one most related to the target, masking the influence of the others. Penalisation enables us to automatically eliminate the variables considered irrelevant, and this method is particularly suitable for problems where the number of explanatory variables is high (in relation to the number of events) or in the case of collinearity. The Lasso method uses the L1 standard corresponding to the Manhattan standard (distance that corresponds to a right-angle move on a checkerboard as opposed to a Euclidean distance that corresponds to a straight-line move).

3 The countries' sectoral specialisation partly explains the remaining disparities in GDP losses

Sectoral specialisation and the structure of the economy (share of tourism and/or consumption) also play an important role, since the countries most dependent on tourism experienced the greatest losses in GDP in 2020. Thus, the difference in dependence on tourism implies an additional loss of 1.4 percentage points (see Chart 4 above).

A "healthy" economy before the pandemic (growth, output gap, unemployment rate, public finances, etc.) helped to mitigate the shock. On the contrary, limited fiscal space led to larger declines in GDP. High levels of government spending or government debt before the crisis appear to have been a handicap, as they resulted in a difference between a country in the first quartile and a country in the third quartile of respectively 1.3 and 0.2 percentage points (see Chart 4). Finally, the structure of the population (share of the population aged over 65, median age) also explains the difference in shock impacts between countries.

Conversely, three factors appear to have limited the shock. First, the fiscal stimulus (with an impact on the 2020 balance and total measures) limited the impact of the lockdown by around 0.4 pp between a country in the first quartile and a country in the third quartile (see Chart 4). The relatively low coefficient of the fiscal stimulus can be explained by:

- the sharp rise in the savings rate linked to supply constraints (closure of shops during lockdown) but also to uncertainty which led to a fall in consumption;

- support to low-income households, which raised consumer spending, but the latter had few positive externalities on the firms most affected by the Covid-19 shock, thus mitigating its effects on employment (Chetty et al., 2020). These results suggest that traditional macroeconomic tools – which stimulate aggregate demand or provide liquidity to firms – are less able to restore employment when consumer spending is constrained by health measures that reduce its multipliers;

- the choice of strategy for fighting the pandemic may have an impact on the GDP shock and hence on the size of the fiscal stimulus (Hosny, 2021), thus altering the econometric relationship. Hosny finds that a faster and more targeted lockdown was associated with weaker fiscal responses.

The quality of the country's governance also appears to be an important factor in limiting the impact of the fight against the pandemic. Indeed, strict compliance with instructions and constraints by private agents helps to limit the spread of the virus. In particular, the "managed quarantine" strategy produced better economic results than the "live with it" strategy: by choosing the "managed quarantine" strategy, governments were able to strongly mitigate the economic shock (to the tune of 0.9 to 1.5 percentage points depending on the measure chosen). Furthermore, the speed of governments' responsiveness[4] (in terms of health measures) linked to their instantaneous response may have slightly attenuated the negative impact of lockdown measures (by around 0.6 percentage point); good governance is also associated with a lower loss (0.6 pp). These results are consistent with those found in other studies (Aghion et al., 2021).

Lastly, the degree of technological development (Internet network and speed, development of e-commerce, development of teleworking, share of "teleworkable" jobs) is also a factor of discrimination between countries that have mitigated the shock. In particular, the difference in the economy's ability to adapt through the propensity to have recourse to teleworking (share of so-called "teleworkable" jobs before the crisis) and the weight of sectors where teleworking is relatively easy to implement rapidly also played an important role in limiting the loss of GDP (respectively 0.5 pp and 0.7 pp). Financial health (national savings) appears to be a discriminating

4 Rapidly implemented health measures may have mitigated losses if they led to a more rapid easing of constraints. The two measures of "responsiveness" chosen are the level of the Oxford Stringency Index on the day the number of cases exceeds 100 in country *i*; and the level of the Oxford Stringency Index on the day the number of cases exceeds 100 in country *i* weighted by the number of days since 28 January 2021 (the day China exceeded 100,000 cases), which is supposed to capture the learning effect for countries affected later.

factor between countries, albeit of limited magnitude (0.1 pp), as is the level of wealth (0.4 pp).

Our results are in line with the work of the IMF (Furceri et al., 2020; Hosny 2021), Kochańczyk and Lipniacki (2021) and Sapir (2020). Contrary to expectations, the intensity of the pandemic (number of cases or deaths) had no direct impact on GDP. In addition, the deterioration in household and business confidence did not have a differentiated effect on GDP, nor did the geographical concentration of the population or economic activity. Finally, while the proportion of elderly people in the population is associated with a greater decline in GDP, this is not the case for the high share of the so-called fragile population. On the other hand, hospital capacity[5] (number of beds per capita) had an impact on the GDP shock.

Finally, the shock to GDP in 2020 was less strong in the United States than in Europe. At least 80% of the difference can be explained by non-fiscal factors (see *Eco Notepad* post No. 229). The stronger Covid-19 induced constraints on activity in Europe, and more particularly in France, Italy and Spain, would explain more than 40% of the divergence with the United States. This factor is amplified by the difference in sectoral specialisation (exposure to tourism).

5 This variable is probably not the best approximation, the real constraint being the capacity of intensive care units, but data for the whole panel are not available.

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Appendix

TA List of countries in the panel

AU	Australia	DK	Denmark	JP	Japan	PT	Portugal
AT	Austria	ES	Spain	KR	South Korea	RO	Romania
BE	Belgium	EE	Estonia	LT	Lithuania	SK	Slovakia
BG	Bulgaria	FI	Finland	LU	Luxembourg	SI	Slovenia
BO	Bolivia	FR	France	LV	Latvia	SE	Sweden
BR	Brazil	GB	United Kingdom	MA	Morocco	TH	Thailand
CA	Canada	GR	Greece	MX	Mexico	TN	Tunisia
CH	Switzerland	HR	Croatia	MY	Malaysia	TR	Turkey
CL	Chili	HU	Hungary	NL	Netherlands	TW	Taiwan
CO	Colombia	ID	Indonesia	NO	Norway	UA	Ukraine
CR	Costa Rica	IE	Ireland	NZ	New Zealand	UY	Uruguay
CZ	Czech Republic	IL	Israel	PH	Philippines	US	United States
DE	Germany	IT	Italy	PL	Poland	ZA	South Africa

TB Statistical description of the series

The set of regressors comprises 85 variables grouped into seven categories: 1) Structural macroeconomic characteristics; 2) Level of development, demographics and health; 3) Fiscal responses; 4) Response of authorities and economic agents; 5) Degree of intensity of the pandemic; 6) Technological development including: 6.a) Weight of e-commerce; 6.b) Development of the Internet network; 6.c) Weight of new information and communication technologies (NICT); 6.d) Impact of teleworking; 7) State of the economy before the crisis. The data sources and key descriptive statistics are presented in the table below.

Categories	Variables	Sources	Mean	Median	Maximum	Minimum	Standard deviation	Skewness	Kurtosis	No. Obs.
GDP shock	2020 GDP shock	IMF (WEO October 2019)	-7.30	-7.10	1.20	-51.50	2.90	-0.03	3.90	52
Structural macroeconomic characteristics	VA geographical breakdown index	OECD	0.51	0.53	0.69	0.20	0.10	-0.91	3.98	39
	VA geographical concentration index	OECD	0.14	0.12	0.43	0.05	0.07	2.01	8.97	39
	GDP per capita (log)	WDI	10.21	10.29	11.45	8.84	0.60	-0.56	2.82	51
	Share of consumption (% of GDP)	WDI	75.26	76.14	95.23	42.37	9.31	-1.10	6.18	50
	Share of leisure (% of GDP)	WDI	0.18	0.17	0.30	0.11	0.04	0.81	3.70	41
	Share of manufacturing sector (% of GDP)	WDI	14.95	13.16	32.39	5.14	5.62	0.78	3.71	48
	Share of service sector (% of GDP)	WDI	62.79	62.23	79.77	45.05	6.29	0.11	3.72	51
	Share of tourism (% of GDP)	WTTC	3.92	3.04	11.55	1.44	2.41	1.40	4.32	51
	Share of exports (% of GDP)	WDI	0.53	0.43	1.96	0.14	0.35	1.98	8.40	41
	Share of manufacturing and agricultural sector (% of GDP)	WDI	37.21	37.77	54.95	20.23	6.29	-0.11	3.72	51
Level of development, demographics and health	Extreme poverty	WDI	1.74	0.70	18.90	0.10	3.26	3.98	20.64	40
	Gini index on gross income	SWIID	47.34	45.68	67.43	31.18	7.94	0.66	3.20	38
	Gini index on net income	SWIID	33.48	32.08	52.15	23.10	7.74	0.81	2.80	42
	Life expectancy (log)	WDI	79.07	80.23	84.63	64.13	4.09	-1.22	4.84	52
	Smoking rate	WDI	33.07	33.10	76.10	13.50	12.57	0.99	4.67	50
	Average temperature	CEPII	12.02	10.06	26.25	-7.14	7.61	0.29	2.69	49
	Median age	WDI	39.21	41.40	48.20	25.20	6.09	-0.78	2.51	52
	Population density	WDI	127.09	93.11	527.97	3.20	126.67	1.65	5.10	51
Health system	Share of the population over 65	WDI	15.36	16.82	27.05	4.80	5.53	-0.46	2.20	51
	Share of deaths due to cardiovascular disease	WDI	191.71	151.94	539.85	79.37	106.56	1.30	3.99	52
	Rate of diabetics in the population	WDI	6.89	6.80	16.74	3.28	2.46	1.67	7.01	51
	Number of hospital beds per 1,000 inhabitants (log)	WDI	1.24	1.19	2.57	0.00	0.64	-0.08	2.44	51
	Human development index (log)	WDI	-0.17	-0.14	-0.05	-0.40	0.10	-0.83	2.60	51

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Categories	Variables	Sources	Mean	Median	Maximum	Minimum	Standard deviation	Skewness	Kurtosis	No. Obs.
Fiscal responses	Discretionary fiscal measures (above the line): accelerated expenditure/ deferred income	IMF	2.10	1.27	7.88	0.00	2.22	1.30	3.81	30
	Discretionary fiscal measures (above the line): total excl. accelerated expenditure/ deferred income	IMF	5.39	4.86	19.45	0.65	3.49	1.62	6.97	48
	Discretionary fiscal measures (above the line): excl. health	IMF	4.82	4.30	19.19	0.45	3.48	1.83	7.85	45
	Discretionary fiscal measures (above the line)	IMF	6.90	6.20	19.45	0.83	4.21	0.91	3.51	49
	Discretionary fiscal measures (above the line): incl. automatic stabilisers	IMF	10.93	10.92	21.58	4.64	3.97	0.68	3.22	31
	Economic support index[a]	Oxford University	67.25	70.74	100.00	0.00	21.78	-0.64	3.38	52
	"below the line" liquidity measures excl. guarantees	IMF	0.87	0.46	6.05	0.00	1.17	2.78	11.99	36
	"below the line" liquidity measures: guarantees	IMF	6.30	4.17	32.78	0.18	6.81	2.21	8.05	39
	Liquidity measures incl. guarantees	IMF	6.92	4.39	32.98	0.45	6.98	2.23	8.28	44
	Total support excl. automatic stabilisers	IMF, OECD	13.61	12.00	39.93	0.83	9.16	1.19	4.55	48
	Total support incl. automatic stabilisers	IMF, OECD	12.82	11.39	37.68	4.80	6.06	2.44	10.42	31
	Change in primary balance (2020 vs 2019)	IMF	-6.19	-6.13	-1.26	-12.44	2.84	-0.21	2.11	49
	Government spending (% of GDP)	OECD	44.98	47.19	63.09	18.12	11.14	-0.51	2.38	47
Response of authorities and economic agents	Effective Activity Constraint Indicator (EACI)	Banque de France	46.69	46.53	76.01	16.99	13.99	-0.01	2.48	51
	Governance index[b]	World Bank	4.64	5.47	10.68	-4.26	4.33	-0.37	2.02	52
	Managed quarantine strategy (dummy variable)	Baker (M.) et al. (2020)	0.14	0.00	1.00	0.00	0.35	2.04	5.16	52
	Managed quarantine strategy (variation in the number of deaths between Q2 and Q4)	John Hopkins University	434.75	430.49	1243.91	0.00	326.08	0.35	2.37	52
	Level of the health constraint sub-indicator at the 100-case threshold weighted by the number of days late relative to 28 January	Oxford University	1,873.42	1,527.01	7,440.68	0.00	1,491.58	1.30	5.20	52
	Level of the health constraint sub-indicator at the 100-case threshold	Oxford University	41.91	37.45	90.74	0.00	25.28	0.29	2.10	52
	Number of days to reach 100 cases since 28 January	John Hopkins University	40.96	41.00	82.00	19.00	10.08	0.90	7.11	52
	Business confidence	OECD	99.12	99.43	101.32	96.03	1.13	-0.37	3.24	39
	Consumer confidence	OECD	99.70	99.54	102.49	96.49	1.27	-0.25	3.37	37
	Level of the Oxford Stringency Index at the 100-case threshold	Oxford University	39.86	37.61	75.00	6.25	18.95	0.23	2.07	52
	Oxford Stringency Index	Oxford University	68.10	70.00	93.78	24.21	12.56	-0.79	4.98	52
	Level of the Oxford Stringency Index at the 100-case threshold weighted by the number of days late relative to 28 January	Oxford University	1,741.78	1,509.01	6,036.02	281.25	1,170.68	1.23	4.94	52

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Categories	Variables	Sources	Mean	Median	Maximum	Minimum	Standard deviation	Skewness	Kurtosis	No. Obs.
Degree of intensity of the pandemic	Number of deaths per available hospital bed	John Hopkins University	0.05	0.01	0.24	0.00	0.07	1.44	3.91	51
	Rate of positive cases	John Hopkins University	0.06	0.03	0.42	0.00	0.08	2.86	11.31	48
	Total number of cases per million (log)	John Hopkins University	7.03	7.28	9.59	2.93	1.40	-0.63	3.14	52
	Total number of deaths per million (log)	John Hopkins University	3.80	3.96	6.73	-1.22	1.83	-0.47	2.72	52
Technological development: e-commerce and Internet	Business-to-consumer online sales index	OECD	77.98	82.80	96.40	38.90	15.91	-0.93	2.70	49
	100 mbps Internet connection	OECD	36.58	35.58	88.55	0.10	23.29	0.29	2.41	30
	30 mbps Internet connection	OECD	61.08	68.00	98.87	8.60	24.67	-0.65	2.64	31
	Access to fibre	OECD	30.63	21.96	81.65	0.16	24.12	0.66	2.33	36
	Share of households with Internet access > 30 mbps	OECD	86.08	88.19	99.80	58.47	11.62	-1.00	3.00	27
	Share of rural households with Internet access > 30 mbps	OECD	62.64	64.14	98.90	9.32	23.09	-0.31	2.52	27
	Online purchases	UNCTAD	56.97	60.18	86.75	10.21	20.45	-0.57	2.50	37
	Share of online sales (% of GDP)	UNCTAD	2.98	2.40	9.30	0.80	1.94	1.24	4.24	39
	Share of online buyers (% of population)	OECD	42.80	43.00	84.00	5.00	24.48	-0.01	1.74	51
	Share of online buyers (% of Internet users)	OECD	51.00	53.00	87.00	7.00	24.16	-0.26	1.82	51
Technological development: weight of R&D NICT	Business R&D spending (% of GDP)	OECD	1.26	0.96	4.23	0.07	0.94	1.21	4.35	36
	NICT patent	OECD	19.98	15.17	53.86	6.17	12.51	1.15	3.41	32
	Business spending on R&D information (% of GDP)	OECD	0.34	0.22	2.44	0.00	0.50	2.96	11.96	36
Technological development: impact of teleworking	Share of pre-crisis "teleworkable" jobs	Dingel (J.) & Neiman (B.)	0.34	0.35	0.53	0.15	0.08	-0.25	2.85	37
	Share of pre-crisis "teleworkable" jobs in the European Union	Eurostat	14.81	11.60	35.70	0.70	10.35	0.51	2.14	29
	Financial sector VA (% of total VA)	OECD	5.92	4.84	27.28	2.04	4.09	3.85	20.01	40
	VA of the information and telecommunication sector (% of total VA)	OECD	4.83	4.59	11.19	1.76	1.94	1.42	5.31	40
	VA of the sciences sector (% of total VA)	OECD	9.50	9.71	15.22	1.82	2.69	-0.19	3.58	39
	VA of the "teleworkable" sector (% of total VA)	OECD	19.92	18.59	45.84	10.13	6.11	1.95	9.44	39

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Categories	Variables	Sources	Mean	Median	Maximum	Minimum	Standard deviation	Skewness	Kurtosis	No. Obs.
State of the economy before the crisis	Government debt (% of GDP)	IMF	66.87	59.44	246.90	11.79	41.73	2.16	9.06	52
	Government debt/tax revenues	World Bank	302.23	257.73	1,379.69	39.63	214.91	2.88	14.50	52
	Public balance (% of GDP)	IMF	-3.90	-3.66	4.41	-10.28	2.67	0.05	3.90	52
	Current account (% of GDP)	IMF	0.70	0.03	11.45	-9.29	4.06	0.42	3.21	52
	Household financing capacity (% of GDP)	OECD	1.82	1.96	9.47	-4.38	3.13	0.25	3.41	38
	Business financing capacity (% of GDP)	OECD	-0.09	0.26	6.42	-22.67	4.91	-2.64	13.25	37
	Financing capacity of the economy (% of GDP)	OECD	0.90	0.85	9.92	-21.22	5.54	-1.36	7.70	39
	Output gap	IMF	335.57	335.73	337.44	329.21	1.56	-2.69	12.13	25
	Pre-crisis average growth (2017/2019)	National	3.08	2.77	8.89	0.72	1.58	1.29	5.30	51
	Savings in the economy (% of GDP)	IMF	22.88	22.61	36.09	6.72	6.63	-0.17	2.81	52
	Pre-crisis unemployment rate (%)	National	7.78	6.31	30.66	1.22	4.97	2.34	10.38	52

Source: Banque de France estimates.

Notes: VA for value added. CEPII: *Centre d'études prospectives et d'informations internationales*; IMF (WEO): International Monetary Fund (*World Economic Outlook*); OECD: Organisation for Economic Co-operation and Development; SWIID: Standardized World Income Inequality Database; UNCTAD: United Nations Conference on Trade and Development; WDI: World Development Indicators (World Bank); WTTC: World Travel and Tourism Council (World Bank).

a) Index calculated by The Oxford Covid-19 Government Response Tracker by averaging the scores of the two sub-components: "Income Support" and "Debt/contract relief for households". The "Income support" sub-index takes the form of the provision of wages or direct cash payments for those no longer in work (either occasionally or unemployment) and can take on three values: 0 – no income support; 1 – government replaces less than 50% of lost wages (or if a flat sum, less than 50% of median wages); 2 – government replaces 50% or more of lost wages (or if a flat sum, more than 50% of median wages). The "Debt/contract relief for households" sub-index represents the freezing of financial obligations (e.g. suspension of loan repayments, or cessation of services such as water supply or prohibition of evictions) and takes on three values: 0 – No; 1 – Narrow relief, specific to one kind of contract; 2 – Broad debt/contract relief.

b) The governance index is constructed according to the methodology of Demertzis and Raposo (2018) by summing for each country the scores for the six dimensions of the Worldwide Governance Indicator of the World Bank: 1) Voice and accountability; 2) Political stability and absence of violence; 3) Government effectiveness; 4) Regulatory quality; 5) Rule of law; 6) Control of corruption. The scores for each of the six indicators can range from –2.5 to +2.5, so that the overall indicator can range from –15 to +15. It is expected that the degree of resilience of the economy to the Covid-19 shock, resulting from the quality of behaviour of private and public economic agents, will be greater in countries with higher-quality governance and private and public institutions.

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