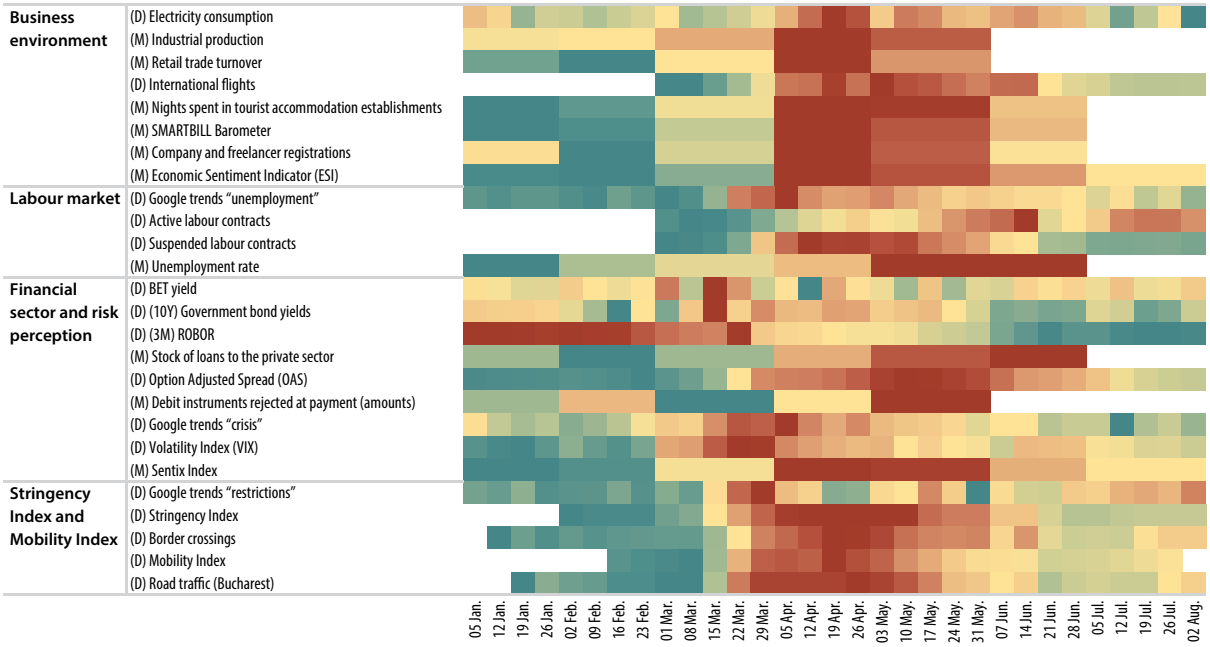
Box 2. Indicators monitoring economic activity amid the COVID-19 pandemic

Following the outbreak of the pandemic crisis, since the magnitude of its effects and their distribution in time are difficult to anticipate *ex ante*, the data collection and analysis of real time series are essential in monitoring the economy's dynamics in response to the across-the-board restrictions imposed by the authorities and, subsequently, to their gradual easing.

Tracking economic activity via a number of higher-frequency indicators (especially informative are the daily measures, but also standardised monthly indicators, such as the volume of industrial production, make the analysis more comprehensible thanks to their broad scope)[1] has the potential of capturing watersheds in economic activity well in advance of the NIS-released GDP figures[2], thereby allowing a real-time snapshot of the economy's response to the authorities' administrative measures. The endeavour helps improve the dataset underlying the near-term forecasts and, implicitly, the accuracy of macroeconomic projections supportive of formulating monetary policy decisions.

Chart A. Signals sent by high-frequency indicators



Note:

(1) The colours (green) and (red) show the major improvement and worsening respectively of the signals sent by indicators on economic conditions and (yellow and orange) the transition situations. The nuances are the result of a conditioned formatting of observations, each observation being assigned a colour of a certain intensity, depending on the position in the distribution of historical values.

(2) Daily indicators "(D)" were aggregated as a weekly average, while for the monthly indicators "(M)" the same value was considered, for simplicity of illustration, throughout the month (an alternative procedure could be to scale the signal strength with the Stringency Index or with the Mobility Index, leading however to the forced correlation of the signals provided by all monthly indicators, covering different economic sectors).

(3) The last day of each represented week is reported on the time axis.

(4) The analysis is based on information available by 28 July 2020.

Source: NBR calculations

1 Other central banks in the region also proceeded to tracking developments in economic activity via relatively high-frequency indicators. See for reference the Magyar Nemzeti Bank, which conducted a similar analysis in its latest *Inflation Report* (June 2020).

2 Data on quarterly GDP dynamics are published with a lag of roughly 45 days since the end the quarter (and those on GDP components with a lag of 65 days).

The assessment covers a broad range of indicators (Chart A; Table A) on the business environment (industry, trade and tourism) and the labour market, which are representative segments of the real economy. The list continues with financial, risk perception and confidence indicators and, last but not least, the stringency index of restrictions and measures of their impact on mobility respectively. In some instances, in the absence of identifying some of these indicators in the case of Romania, external variables were included as proxy, due to their representativeness for the Romanian economy as well (VIX and Sentix indices respectively).

Table A. Sources of and changes to indicators

Indicator	Source	Change
(D) Electricity consumption	Transelectrica	%, y-o-y
(M) Industrial production	NIS	%, y-o-y
(M) Retail trade turnover	NIS	%, y-o-y
(D) International flights	EUROCONTROL	%, y-o-y
(M) Nights spent in tourist accommodation establishments	NIS	%, y-o-y
(M) SMARTBILL Barometer	SMARTBILL	%, y-o-y
(M) Company and freelancer registrations	National Trade Register Office	%, y-o-y
(M) Economic Sentiment Indicator (ESI)	European Commission	level
(D) Google trends "unemployment"	Google	%, y-o-y
(D) Active labour contracts	Labour Inspection	%, y-o-y
(D) Suspended labour contracts	Labour Inspection	%, y-o-y
(M) Unemployment rate	NIS	level, seasonally adjusted
(D) BET yield	Reuters	average/week
(D) (10Y) Government bond yields	Investing	average/week
(D) (3M) ROBOR	NBR	average/week
(M) Stock of loans to the private sector	NBR	%, y-o-y
(D) Option Adjusted Spread (OAS)	Bloomberg	average/week
(M) Debit instruments rejected at payment (amounts)	Bloomberg	%, y-o-y
(D) Google trends "crisis"	Google	%, y-o-y
(D) Volatility index (VIX)	Reuters	average/week
(M) Sentix Index	Bloomberg	level
(D) Google trends "restrictions"	Google	%, y-o-y
(D) Stringency Index	Oxford University	average/week
(D) Border crossings	Romanian Border Police	%, y-o-y
(D) Mobility Index	Google	average/week
(D) Road traffic (Bucharest)	tomtom.com	average/week

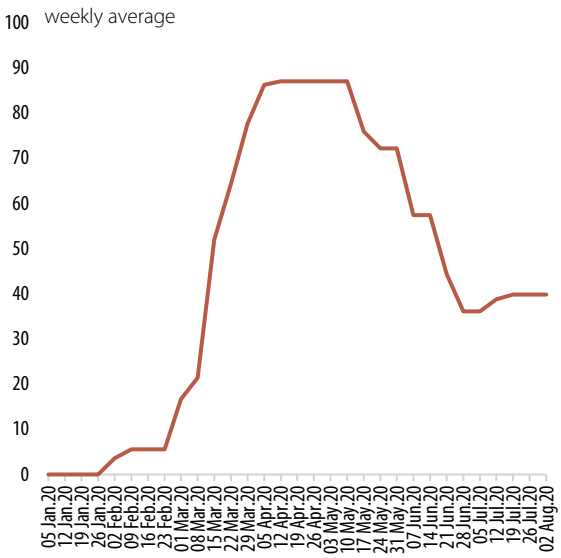
Given the surge of the COVID-19 pandemic in the latter half of March (which led the authorities to respond by instituting the state of emergency[3] and adopting a set of military ordinances[4]), the strongest effects of the pandemic crisis on economic activity are assessed to have become manifest in 2020 Q2. The

3 The state of emergency was introduced for 30 days, starting 16 March, and subsequently extended for another 30 days. The state of alert was introduced for 30 days, as from 18 May, and subsequently extended by 30 days on 17 June and 17 July respectively.

4 In particular, Military Ordinance No. 3/25 March 2020 introduced the obligation to fill in a self-declaration form covering movement outside household/residence, with the grounds listed therein being strictly limited.

stringency index[5] of restrictions (Chart B) calculated for Romania reflects the severity of the restrictions applied by the authorities, the highest intensity being visible in April.

Chart B. Stringency Index



Source: NBR calculations based on data released by Oxford University

The reviewed indicators highlight a major contraction in economic activity, amid the sectors vulnerable to social distancing being hard hit (especially transport and accommodation and food service activities and, to a lesser extent, industry and trade) and worsening confidence. The gap seen in the intensification of signals can be explained, especially as regards monthly indicators, by their release with a relative lag against the dramatic change of the economic environment once the state of emergency was declared. Since mid-May, when mobility restrictions have gradually started to be lifted, the signals conveyed by the available indicators have been improving progressively.

An in-depth analysis of the developments in these indicators has revealed, in respect of the business environment, gradual declines in electricity consumption since the first days of April amid a temporary disruption in the activity of large economic agents, car manufacturers in particular, or the shift to teleworking. As for trade, a sharp fall in the growth rate of retail trade turnover has already been recorded in March, followed by steep contractions over the next two months, when the industrial production index[6] experienced a similar trend as well. Moreover, the business environment worsened significantly in terms of the number of company registrations and freelancers, as well as the turnover of SMEs, as reflected by the SMARTBILL Barometer[7] readings (down by about 20 percent and 15 percent in April and May respectively). The strong deterioration of the financial standing of some companies is mirrored in the evolution of amounts from rejected debit payment instruments.

The intensification of mobility restrictions at a global level has also led to a setback in airline activity. The number of international flights declined steadily in annual terms, down 17 percent in mid-March and briskly reaching 76 percent in the final week of the month. The steepest downturn occurred around the Easter holidays, when airlines were forced to ground their fleets almost completely, resulting in an approximately 90 percent contraction in activity compared to the same year-ago period.

5 It measures the authorities' response to the pandemic and is based on 17 indicators providing information on school closing, travel restrictions, income support for citizens, international support or health measures.

6 For industrial production, in order to make the interpretation of signals easier, nuances are obtained based on the values calculated starting January 2018.

7 The indicator (available at: https://smartbill.ro/barometru) measures the evolution of turnover of SMEs in Romania in a sample comprising more than 20,000 companies, generally small-sized enterprises.

On the labour market, the number of suspended labour contracts on grounds associated with the state of emergency provided strong signals of the economy's slowdown, given the temporary closing of activity in some automotive, metallurgy and equipment manufacturing companies. The worsening of unemployment rate was contained amid labour retention measures implemented by the authorities, mainly via furlough schemes. As far as the number of active labour contracts is concerned, their decrease took place once the state of emergency was declared. This indicator's evolution clearly marked the point in time when restrictions were lifted in May and the government discontinued furlough payments once the state of emergency ended (except the categories of workers in sectors hit further by the keeping in place of administrative restrictions), as the activity resumed only partially.

Risk perception (e.g. the VIX index) and the economic agents' degree of confidence (the ESI indicator and Sentix index) also worsened when the pandemic broke out, suggesting the global nature of its impact. Online searches for keywords such as unemployment, crisis or restrictions multiplied once the state of emergency was declared. Shortly after detecting the first cases of coronavirus infections in Romania, restrictions depressed mobility (as captured by Google's Mobility Index and border crossings) and tourism was, in turn, affected (the first significant declines in the number of nights spent in tourist accommodation establishments). Investors' risk aversion is also reflected by the movements in financial indicators such as Option Adjusted Spread and the BET stock exchange index. Moreover, at the onset of the pandemic an increase could also be detected in the costs of long-term debt securities (the hike in 10-year government bonds yields over that period reached about 2 percentage points, yet subsequently saw a significant correction). Since mid-May, an across-the-board improvement in available indicators has been manifest.

April through July, the (3M) ROBOR rate incorporated the favourable impact of the recent NBR Board decisions on successive policy rate cuts and the narrowing of the symmetric corridor of interest rates on standing facilities around the policy rate. The stock of credit to the private sector recorded, starting in March, but especially in the months that followed, significantly slower annual rates after private agents, both financial institutions and potential borrowers, adopted a more prudent behaviour (a trend that was only partially offset by the implementation of government programmes aimed at further providing liquidity to privately-owned companies on advantageous terms of cost and guarantees).

In the current environment characterised by elevated uncertainty as to the magnitude of the pandemic fallout on the economy and the pace of economic activity returning to normalcy (closely connected to the set of measures taken by the authorities), it is necessary to continue monitoring this set of indicators and, depending on available data, even add new measures, insofar as they are relevant for capturing economic developments at sectoral level.