

Springer Proceedings in Business and Economics

Alina Mihaela Dima

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Razvan Catalin Dobrea *Editors*

Economic Recovery After COVID-19

3rd International Conference
on Economics and Social Sciences,
ICESS 2020, Bucharest, Romania

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ISSN 2198-7246

ISSN 2198-7254 (electronic)

Springer Proceedings in Business and Economics

ISBN 978-3-030-86640-2

ISBN 978-3-030-86641-9 (eBook)

<https://doi.org/10.1007/978-3-030-86641-9>

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Preface

This proceedings constitutes a selection of papers presented to the 3rd International Conference on Economics and Social Sciences, Innovative Models to Revive the Global Economy, ICESS 2020 Bucharest, Romania.

The COVID-19 crisis has practically imposed a new way of life and work globally, which offers research opportunities in terms of inquiring benefits and disadvantages, as well as finding solutions for individual safety and maintaining the efficiency of the economic, social and environmental systems. COVID-19's global spreading and the consequent drastic public response have quickly brought new economic policy challenges to the fore. Many researchers have responded by reviewing recent data and publishing brief articles in order to better comprehend the size of the issues confronting challenging regions and the best policy responses. It is critical that the scientific community provides a mechanism for this research to be published as soon as practicable. Our objective is that this collection of articles will contribute to a better understanding of the issues and policies surrounding the crisis, as well as serve as a constructive example of how the set of techniques for top-level research publications in economics should be expanded.

This volume is a collection of research findings and perspectives related to recent economic challenges determined by the global crisis due to COVID-19, resulted from a research project "Restart Economica" implemented by The Bucharest University of Economic Studies in the period April—August 2020 with the support of the Ministry of Education and Research from Romania. The project's main goal was to find solutions for the Romanian SMEs in order to help them survive the actual COVID situation and to support them through recommendations in order to avoid a real economic crisis. The data and the information collected derived from the main sectors of activity as follows: water distribution, sanitation, waste management, decontamination activities, building industry and real estate transactions, wholesale and retail trade, hotels and restaurants, fiscal environment, higher education, healthcare system, macroeconomic policies, public administration and regional development, consumers' behavior, banking sector, international trade in

goods, international trade in services, transportation and storage sector and agricultural sector. The presented data include the evolution, impact, main effects and challenges of the COVID-19 pandemic on each of these sectors.

The performance of the companies will be increased by delivering them researched recommendations after an integrated analysis is performed by economic experts. Moreover, economic recommendations were sent to the institutional and decision-making factors to develop enhanced policies destined for improving the economic situation. The economic and social effects of the pandemic phenomena have imposed the necessity in many countries of government interventions in order to maintain the stability of the system or innovative solutions.

Bucharest, Romania

Alina Mihaela Dima
Ion Anghel
Razvan Catalin Dobre

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Challenges in the Romanian Healthcare System in the Context of the COVID-19 Pandemic



Anghel Ion, Drăgoi Mihaela Cristina, Anica-Popa Adrian,
Ștefan Simona Cătălina, and Ciocodeică David-Florin

1 Analysis of the Healthcare Field

The public healthcare system in Romania rests on a centralized health insurance model, which is based on a two-fold command: the Ministry of Health (tasked with the general governance) and the National Health Insurance House (CNAS), a body that manages and administers the funds in public health care. The two entities, the Ministry of Health and CNAS, are represented at local level by public health county authorities and, respectively, by the county health insurance houses. The medical services are provided in the 41 counties and Bucharest based on the centrally agreed rules.

1.1 Number of Employees in the Healthcare Sector

In 2016, the medical sector accounted for almost 261,000 employees versus 215,000 employees in 2009, most of them healthcare professionals with secondary education and ancillary staff—support staff (56%), followed by medical doctors (24%), pharmacists and dentists (7% each). From the ownership point of view, it is noteworthy a reduction of the staff working in the public healthcare system, both in absolute terms,

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Table 1 Developments in staffing the public medical sector

Indicators	2009	2011	2012	2014	2015	2016	2017	2018
Total staff per 1,000 inhabitants	10.41	10.75	10.93	11.54	12.03	12.48	12.94	13.40
Doctors per 1,000 inhabitants	2.44	2.58	2.65	2.74	2.82	2.89	2.98	3.11
Pharmacists per 1,000 inhabitants	0.61	0.66	0.68	0.74	0.78	0.83	0.80	0.84
Medical nurses per 1,000 inhabitants	0.21	0.34	0.47	0.59	0.65	0.70	0.74	0.79
Number of nurses/1 doctor	2.57	2.40	2.33	2.35	2.37	2.40	2.43	2.40

Source adaptation after the National Institute of Statistics 2009–2016, 2017, 2018 and 2019

Note The WHO guidelines provide for a ratio of 2.5 per 1 medical doctor

from 169,080 people in 2009 to 152,942 people in 2018 and in terms of share, from 78.7% in 2009 to 58.5% in 2018. In 2009–2018, the number of staff in the private sector increased 2.3 times, i.e., it came to account for 108,441 persons (National Institute of Statistics 2009–2016, 2017, 2018, 2019) (Table 1).

In comparison with 2009, we can notice a significant improvement in the number of doctors and nurses per 1,000 inhabitants as well as the constant compliance with the adequate nurses-to-doctors ratio, in public sector.

1.2 Financing Scheme in the Healthcare System

The healthcare system in Romania is about 80% funded from public sources, out of which around 63% from the National Health Insurance Fund (FNUASS) and 14% allocated by the Ministry of Health, in 2019. It is worthwhile that these public sources are also complemented by an estimated 20% out-of-pocket payments as well as by local budget allocations and funds of the different public bodies that own a medical network. The main financing drawback in the public system stems from the small number of individual contributors to the health insurance system and although the scheme is supposed to provide coverage for the health needs of a large number of citizens, the developments in the last few years are rather alarming. In 2019, only 25% of the total resident population accounted for insurance payers, 56% were non-paying and 19% non-insured.

Although healthcare expenditure has lately increased, spending per capita in Romania amounts to less than half of the EU average. In 2017, Romania's healthcare spending per capita was about EUR 1,029 (adjusted by purchasing power), whereas the EU average was EUR 2,884, in other words, 5% of the Romanian GDP (in comparison with the average GDP share in the EU of 9.8%). More than 75% of the

healthcare expenditure comes from public funds (79.5% in 2017), which is similar to 79.3% EU average.

The funding sources of the Romanian healthcare system are the following: FNUASS, government health expenditure, direct payments and the clawback tax. The main funding source is FNUASS, a fund that totaled approximately EUR 8.8 billion in 2019, out of which 73% employee contributions (cash), 14% public subsidies, 9% clawback tax and 4% contributions for sickness leave. The fund almost doubled in 2008–2019, from EUR 4.3 billion to EUR 8.8 billion.

The healthcare system in Romania points to an unsustainable situation, under the circumstances where contributions only amount to 49% and the spread is covered from the state budget (23%), out-of-pocket payments (20%), the clawback tax (6%), local budgets and other sources (2%).

If we consider that the share of the insurance payers is extremely low (approximately 25% out of the total resident population in 2019), the contribution amounts to 10% of the salary, one of the lowest shares in Europe and salaries in Romania are among the lowest in Europe; then, the financing of the system is unsustainable, since there cannot be significant differences between Romania and other EU member states with respect to cost (medication, medical materials, salaries).

Under these circumstances, the system is forced to keep alive an unsustainable cost pyramid in which 42% of the total health expenditure is still channeled to in-hospital care (versus 29% EU average). It is noteworthy that the total amount per capita is still lower in absolute figure, i.e., it overall represents about half of the health spending per capita in the EU.

Primary and out-of-hospital care account for 22% of the EU average spending (EUR 188/capita versus EUR 858/capita), whereas preventative care amounts to 20% of the EU average (EUR 18/capita versus EUR 89/capita), under the circumstances where the GDP per capita in Romania is only 63% of the EU average (EUR 18,000/capita versus EUR 30,000/capita) (Eurostat 2017) (Table 2).

Table 2 Expenditure on public health care in Romania versus the EU average (EUR/capita 2017)

Indicator	Ro	EU avg	Ro (%)	EU avg (%)	EUR/cap. expenditure (RO/EU avg.) (%)
In-hospital care	432	835	42	29	52
Pharmaceuticals	280	522	27	18	54
Primary and out-of-hospital care	188	858	18	30	22
Long-term care	65	471	6	16	14
Prevention	18	89	2	3	20
Other costs	46	109	4	4	42
Total	1029	2884	100	100	36

Source adaptation after Eurostat database, 2017

1.3 *Operational Capacities of the Romanian Healthcare System*

Romania used to have over 150,000 hospital beds in 368 hospitals. In the last few years, we can see that the number of beds has become relatively stable, of about 133,000 in 2018, slightly under the 2009 level, of 137,000. One also has to take into account that no significant and consistent investment has been made in the last few years.

The total number of hospital admitted patients dropped from 5.35 million in 2009 to about 4.2 million in 2018, on the one hand because the population dropped by more than 5.5% in the ten years under review and, on the other hand, due to the improvement of the healthcare system and the fact that the Romanian population may access the medical services provided in other member states of the European Union, a possibility that developed in time.

One of the major indicators in the calibration of the necessary healthcare expenditure is the average hospital stay, which went slightly down, from 7.4 days in 2009 to 7.2 days in 2018.

1.4 *Performance Results in the Healthcare System*

The public healthcare system does not yet rely on a consistent set of performance indicators, a situation that adds to underfunding the risk of spending the healthcare resources in an inefficient way.

Healthy life years, one of the relevant economic and social indicators, shows a widening gap from the EU average measure, although public health expenditure has markedly gone up and the private healthcare system has significantly developed (Table 3).

Table 3 Healthy life years developments in 2010–2018

Indicator	Ro	EU avg	Spread Ro versus EU avg	Gap Ro versus EU avg (%)
Healthy life years at 65 years old (2010)	5.5	8.4	−2.9	65
Healthy life years at 65 years old (2018)	6.1	9.9	−3.8	62
Healthy life years at birth (2010)	57.4	61.8	−4.4	93
Healthy life years at birth (2018)	59.4	64.0	−4.6	93

Source Eurostat database, 2020

Table 4 ECHI score—Romania versus the EU average

Indicator	Romania	EU average	Romania versus EU average (%)
Patient rights and information	96	101.26	94.81
Service accessibility/waiting time	175	157.06	111.42
Outcome	133	212.09	62.71
Range of medical services	52	84.46	61.57
Prevention	54	108.03	49.99
Pharmaceuticals	39	64.11	60.83
Overall EHCI score	549	696.83	78.79

Source adapted after Björnberg and Phang (2019, p. 20)

Other such analysis-relevant indicators are avoidable mortality (preventable and amenable) and unsatisfied medical care needs.

In this context, the overall performance of the Romanian healthcare system can also be pictured in terms of satisfaction of the patients' core needs—split into major areas of interest (Table 4): (1) service accessibility/waiting time, (2) patient rights and information, (3) range of provided medical services, (4) preventive actions, (5) pharmaceuticals and (6) outcome. All these different dimensions are addressed in questionnaires that are filled out by patients from 34 countries, based on which the national healthcare systems are given a total score—Euro Health Consumer Index (EHCI). The following table shows the results for each of these areas, as well as the overall EHCI score (Björnberg and Phang 2019).

It emerges that, except for the accessibility of the medical services, health care in Romania scores under the EU average, with the widest gap in prevention actions. This situation is also reflected in the overall EHCI score, where Romania ranks last out of the 34 countries under review.

1.5 Medium- and Long-Term Dynamics

In the long term, we expect to see a higher demand for healthcare workers as well as an increase in expenditure. The higher demand for medical doctors stems from the savings of the upper middle class (featuring higher income and a fast-paced increase of the population over 65).

The major challenges are: pandemic risk, population aging, the increase in the number of disabling conditions, changes in disease profile, higher income of the general population and higher expectations.

Additional challenges for Romania are: securing the adequate funding of the system in the next period, demographic developments, the aging of the healthcare staff, feminization of the profession and increased pressure at the workplace (notably in the public hospitals).

2 Impact of the COVID-19 Pandemic on the Healthcare System

2.1 *Materials and Methods*

The analysis of the current situation of the Romanian healthcare system was aimed at conducting a research that would yield topical and relevant data about the impact of the COVID-19 pandemic, both from the perspective of those directly engaged, i.e., the medical staff and medical unit managers and that of different other stakeholders. The research pursued several objectives:

1. To establish the direct and indirect effects of the COVID-19 crisis on the overall healthcare system, on the organizations within the system as well as on their different functional components;
2. To identify the main challenges that the medical staff and the managers of the medical units were faced with in their effort to manage the COVID-19 crisis;
3. To identify whether the different features of the health organizations yield any significant differences with regard to the manifestation of the elements mentioned before, which would allow to capture a more nuanced representation as well as to design measures that would address specific root causes of the particulars of each organization;
4. To identify short-, medium- and long-term actions aimed not only at managing the current situation and at mitigating the effects of the COVID-19 crisis, but also at increasing the responsiveness of the Romanian healthcare system in front of similar potential challenges in the future.

The first stage in achieving these objectives consisted of the collection and analysis of the secondary-source data, which helped us build an overall image on the social and economic effects of the sanitary crisis as well as on their repercussions healthcare-wise.

The second stage focused on a deeper analysis of the healthcare system, by means of an online survey that we conducted on August 5–15, 2020. The survey targeted healthcare personnel who played an active role in managing the COVID-19 crisis, i.e., the medical staff and the managers of different healthcare organizations.

Considering that healthcare organizations were supposed to have suffered a different impact based on their different features and that the suggested measures must be tailored to concrete situations, the surveyed population included respondents from all the Romanian development regions as well as from hospitals, outpatient units, pharmacies, individual medical practices, etc., both from the public and the private systems. In order to ensure the representativeness of the sample, both with regard to its size and structure, we designed a sampling framework that included accredited suppliers for the entire range of medical services that work with county health insurance houses—the contact data of the medical services suppliers is public, on the webpage of the county health insurance houses.

The 11 questions included in the questionnaire—predefined or open answers—were structured so as to facilitate the collection of the data needed to achieve the research objectives. In this paper, only those reflecting the impact of the current situation on the core activity of the medical units and main difficulties encountered in the medical practice were analyzed.

The questionnaire was sent in electronic format (Google Forms) to the email addresses of the providers of medical services in a 10-day time slot. We collected 373 responses, out of which 5 respondents declined; therefore, we processed 368 questionnaires altogether.

Considering the size of the research sample (368 respondents) as well as the territorial breakdown, since the respondents represent healthcare units in different development regions (National Institute of Statistics 2020), we may conclude that the sample is representative at national level, with results yielding a margin of error of $\pm 5,1\%$.

2.2 Analysis of the Healthcare Impact of COVID-19 Based on Secondary-Source Data

The emergence of COVID-19 as a global pandemic disrupted the operation of all companies across the world. The virus has significantly hindered the economy and social life and generated, alongside the pandemic, a world economic crisis.

Aware that numerous countries were faced with difficulties and that the cases would skyrocket, the World Health Organization declared the state of global pandemic on March 11, 2020 and urged all national governments to “fully mobilize the healthcare systems, the medical equipment and the workers in the national medical system.” The WHO also advised to distribute antiviral protection equipment as well as other medical materials in accordance with the national plans (Cadis 2020).

At the beginning, the crisis caused by the number of infections put pressure on the sanitary systems across the world, as the need for ICU ventilators was very high.

At that time, the Romanian public system had about 2500 ICU beds, which could be made available to treat the severe cases. Also, the big private players claimed that they were in close contact with the authorities and offered to make their equipment available, if necessary.

On March 23, 2020, the Private Medical Service Suppliers Association (PALMED), an organization that includes the large private healthcare networks, required an analysis of the situations provided under Order 74,527 of March 23, 2020, which suspended for 14 days any hospital admission for surgery procedures, in-hospital therapy or interventions for all cases, excepting life-threatening conditions that could not be rescheduled. According to the president of PALMED Cristian Hotoboc: “We need an urgent analysis of the situations where we can actually apply this order, we cannot do it overnight. There are many different types of situations and such restrictions can cause the loss of human lives. Someone who suffers from a

chronic condition or a patient under palliative care do not count as medical emergencies, but releasing them from hospital may end up in complications or, even worse, in death. The Romanian health care system is already insufficient, so we cannot afford to restrict access to medical services even more” (Ziarul Financiar 2020a).

The pandemic touched the sore spot of understaffing in the Romanian medical system—a 17.4% deficit, according to the Sanitary Solidarity Federation, i.e., public hospitals are short of about 40,000 employees, doctors and nurses, in comparison with the standard ratio. At country level, the most severe understaffing is felt in Mehedinți, Giurgiu, Galați and Olt, whereas the best staffed are the hospitals in Bistrița and Harghita. The former category was not only the least prepared to fight the COVID-19 pandemic, but also the hardest hit (Ziarul Financiar 2020b).

On March 26, 2020, Ziarul financiar (2020a) already singled out the serious difficulties emerging at national level, more precisely:

- There were already 153 people infected with the new coronavirus among the medical workers and ancillary medical staff, i.e., 15% of the total number of infections;
- The outbreaks of Bucharest and Suceava marked a high infection rate for doctors, with 36 and 90 medical workers infected, respectively;
- The Romanian College of Physicians asked the authorities to test patients and doctors, even if they did not match the established criteria;
- In a context where the need for medical equipment and pharmaceuticals is critical at global level, Romanian authorities should urgently restart local production.

In the same period, the number of patients admitted in private clinics plummeted to less than half, which reduced the income of the doctors from the private system. Some private clinics even suspended their activity altogether (Bădescu 2020).

A particular case is the impact of COVID-19 on dentistry services. Since dentistry is a medical profession that supposes direct and close contact with the patient, the measures taken at national level in order to curb the spread of the new coronavirus specifically targeted the activity in this field. Thus, during the lockdown initiated by the president of Romania, according to the Military Ordinance no. 1, Article 1, the activity of dentistry practices was suspended and only a limited number of practices, which were authorized by the Public Health Directorates, were allowed to provide emergency dental care in that period. Consequently, dentistry, a medical field that mainly operates as a private practice, was strongly affected by the COVID-19 pandemic. Dentistry practices practically recorded no revenue, although fixed operating cost stayed largely unchanged. The effect was equally felt by the patients who saw themselves forced to postpone or discontinue dental treatment. Even if dental practices reopened after May 15, 2020, the additional measures (natural under the circumstances of a pandemic), such as cleaning and disinfecting, the increase of time between patients, the need for additional individual protection equipment etc., added new cost elements, which were felt by the dentists, but finally incurrent to the paying patients.

The economic impact of COVID-19 is highlighted in the next table, which shows a 15% drop in the FNUASS collected contributions in March 2020 versus March

2019 and especially an increase of the subsidies, i.e., RON 826 billion in March 2020 versus RON 40 billion in March 2019 (2023% more year-on-year). It is also noteworthy that the collected insurance contributions in May 2020 are 85% of the amounts collected in May 2019 (Table 5).

2.3 Analysis of the Healthcare Impact of COVID-19 Based on Primary-Source Data

In order to deepen the direct analysis of the healthcare system, on August 5–15, we conducted an online survey that targeted the persons who played an active role in managing the COVID-19 crisis, i.e., the medical staff and the managers in the healthcare organizations. From the point of view of territorial distribution, the shares of the respondents representing the medical organizations headquartered in different development regions and the shares of the respondents in the sample are not very different from the shares of the medical units in Romania in 2018 (National Institute of Statistics 2020). As expected, the largest share of the respondents originates from București-Ilfov Region (17.12%), whereas at the bottom of the representation are the southwest (10.05%) and central regions (8.42% of the total number of respondents).

The first cluster of questions was aimed at the impact of the COVID-19 crisis on the healthcare organizations (on the whole) as well as on their various functional components. The analysis of the answers yielded the following:

- In most of the cases, there was an adjustment of activities so as to prevent the spread of COVID-19, with adjustment averaging 35.33% for management activities and 52.88% for the core medical activities of the units.
- Telework can also be seen as another type of adjustment, although it is more frequent in management activities (17.39%) and less frequent in the provision of medical services (8.97%).
- Unfortunately, in some situations the activity was altogether suspended (not an unexpected outcome, though), although it was less noteworthy when it came to the management activities.
- The distribution analysis based on the type of delivered medical services mainly yielded the following (Table 6):
- Except for dental care practices, most of the medical units reported an adjustment of their core activities, i.e., they had to take preventative measures in order to curb the spread on COVID-19.
- Dental practices make a particular situation, since more than half (58.33%) reported that they had to temporarily suspend their activity, whereas 33.33% related that they had to adjust and take preventative measures in order to curb the spread on COVID-19.
- Regarding to the stay of the activity, we note that the measure was not really necessary except for 0.91% of the general practice offices and none of the pharmacies.

Table 5 Monthly dynamics of FNUASS revenues in 2020 (RON thousands)

Indicator	Program for 2020	Collected in Jan. 2020	Collected in Feb. 2020	Collected in March 2020	Collected in April 2020	Collected in May 2020
Total revenues	42,293,540	2,843,582	3,694,101	3,246,524	2,660,271	3,343,357
Current revenues	36,817,782	2,918,700	3,642,993	2,427,908	2,628,881	3,291,783
Insurance contributions	33,502,223	2,909,804	2,714,740	2,267,681	2,534,144	2,392,303
Out of which payments due by insured employees	30,957,644	2,743,022	2,501,846	2,103,004	2,389,330	2,236,276
Subsidies	5,364,254	25,968	24,940	826,133	25,486	26,453
Year-on-year situation	Progr. 2020/progr. 2019	01.2020/01.2019	02.2020/02.2019	03.2020/03.2019	04.2020/04.2019	05.2020/05.2019
Total revenues	101%	102%	109%	120%	100%	94%
Current revenues	102%	102%	110%	90%	103%	92%
Insurance contributions	103%	102%	107%	85%	100%	85%
Subsidies	94%	165%	152%	2032%	98%	105%

Source <http://www.cnas.ro/>

Table 6 Impact of the current situation on the core activity of the medical units based on type of medical care

Impact	Type of medical care						
	GP (%)	SA (%)	H (%)	PH (%)	MR (%)	P (%)	DM (%)
Temporarily suspended	0.91	8.70	11.76	0.00	33.33	7.14	58.33
Adjusted to telework	13.24	10.87	2.94	20.00	11.11	10.71	8.33
Adjusted to the preventative measures taken to limit the spread of COVID-19	56.16	71.74	73.53	70.00	55.56	64.29	33.33
Not affected	9.59	6.52	2.94	0.00	0.00	3.57	0.00
Work is more intense than before	18.26	2.17	8.82	0.00	0.00	10.71	0.00
Not applicable/I do not know	1.83	0.00	0.00	10.00	0.00	3.57	0.00

Note GP = Primary medical care/general practitioners, SA = Specialized medical assistance, H = Hospital, PH = Pharmacy, MR = Medical rehabilitation, P = Paraclinical investigations, DM = dentistry medical services

Source own elaborations based on the survey results

Throughout this period, the medical and non-medical staff had to cope with countless difficulties in their professional activity. The survey results emphasized that the biggest difficulties were the lack/shortage of protective equipment and adjustment to the new working conditions, both mentioned by about half of the respondents (50.82% and 47.01%, respectively). In descending frequency order, the other major difficulties refer to the following: poor cooperation from some patients (31.25%), lack of/failure to implement procedures (22.01%), extended working hours (12.23%), lack of/failure to create medical circuits (10.60%), poor engagement from some colleagues (8.70%) and defective organizational management (3.80%).

Besides choosing an answer from a predefined list of difficulties that they encountered in their professional activity, 5.89% of the respondents also mentioned other difficulties, such as: ambiguity with regard to information, deficiencies in the organization of the healthcare system, poor coordination between different organizations and ministries with respect to the adopted decisions, deficiencies with respect to coordination and engagement of bodies such as the Directorate for Public Health, Bucharest Health Insurance House or city halls, increased operating expenditure for a shrinking number of patients, difficulties and delays in the reimbursement of the medical services by the health insurance houses, as well as negative repercussions on the staff.

It is also noteworthy that 6.25% of the respondents stated that they encountered difficulties in the performance of their professional activity.

Based on the type of healthcare services provided by each medical unit, the respondents highlighted the following major difficulties (Table 7):

Table 7 Main difficulties encountered in the performance of professional activity based on the type of medical care provided

Difficulties	Type of medical care						
	GP (%)	SA (%)	H (%)	PH (%)	MR (%)	P (%)	DM (%)
Lack/shortage of protective equipment	60.73	42.39	32.35	10.00	27.78	42.86	27.78
Lack of/failure to implement procedures	27.85	20.65	14.71	0.00	11.11	17.86	11.11
Lack of/failure to create medical circuits	12.79	11.96	11.76	0.00	11.11	17.86	2.78
Adjustment to the new working conditions	45.21	46.74	55.88	50.00	38.89	46.43	55.56
Extended working hours	15.07	6.52	11.76	0.00	5.56	3.57	13.89
Defective organizational management	5.02	4.35	5.88	0.00	5.56	3.57	2.78
Poor engagement from some colleagues	10.50	6.52	17.65	0.00	16.67	14.29	5.56
Poor cooperation from some patients	32.88	32.61	29.41	30.00	27.78	50.00	27.78
No difficulties	5.94	6.52	0.00	10.00	16.67	0.00	0.00

Source own elaborations based on the survey results

- Irrespective of the type of medical assistance provided, the difficulties that the healthcare workers most often encountered were the following: lack/shortage of protective equipment, adjustment to the new working conditions and poor cooperation from some patients.
- Lack/shortage of protective equipment and lack of/failure to implement procedures are most often singled out by GPs.
- Adjustment to the new working conditions and poor engagement from some colleagues were most often noted by the respondents from the hospital environment, whereas lack of/failure to create medical circuits and poor cooperation from some patients were most often singled out by respondents from medical units that provide paraclinical investigations.
- The largest share of the medical units where respondents singled out that they encountered difficulties in performing their activity corresponded to the medical rehabilitation facilities and to pharmacies.

Besides the analyses of the answers collected from the entire sample, which helped shaping an overall image of the problematics addressed in the survey, the research also highlighted numerous particular aspects which are rather specific to each development region, to the type of ownership and to the kind of medical care provided by the medical units, all of them useful to project short-, medium- and long-term actions. Equally useful were the opinions and suggestions that the respondents

expressed when they answered the open questions and we are grateful for their engagement.

3 Suggested Measures Aimed at Mitigating the Effects of COVID-19 and at the Recovery of the Field on the Short, Medium and Long Terms

The suggested measures in the field of health care equally address punctual aspects and more general orientations, which are meant to generate better responsiveness, should to those generated by the COVID-19 pandemic occur again. They represent the synthesis of the quantitative and qualitative research that we performed in this study, some of them relying on the answers we received at the open questions that we included in the previously described questionnaire.

The new circumstances generated by the COVID-19 pandemic turned everyone engaged in the different healthcare specialties into “first-line” workers, irrespective of whether they conduct their activity as medical workers in hospitals, as GPs, dentists or pharmacists. Consequently, some measures and actions are of general nature, transgress medical specialties and can be beneficial for all medical fields. We only list a few:

- Efficient management of the available financial and medical resources—rearranging financing scheme priorities according to the needs and eliminating useless or discretionary investment and expenses. Such goals can be achieved through:
 - Lower political involvement in the healthcare system or cooperation with experts in the field of economics in order to make resource-use more efficient;
 - Better matching the number of positions in the healthcare system with the real local and regional needs and filling positions through transparent and methodologically correct selection procedures;
- Consistency in the adoption of decisions—preliminary debates and discussions with all the social and professional categories concerned by the decisions;
- Creation of equitable and fairly remunerated jobs—based on the work done, an approach that would ensure human resource retention in the healthcare system;
- Closer focus on prevention programs—Prevention is undoubtedly less costly than medium- and long-term interventions and results in a better general health status.
- Parallel investment in the education system—A population that has access to information and good-quality education services can have a clearer understanding of things and embraces a more responsible response to the measures enforced by the authorities in order to protect the common good.
- Specific financial support for the SMEs that operate in the medical field;
- An overarching approach to the concept of quality of life—besides ensuring access to good-quality medical and education services, it also takes an adequate infrastructure that would limit the number of road injuries and reduce transit as well

as commuting time, etc.), a reduction in air, ground and water pollution, an end to massive deforestation, in other words the protection of the environment; practically speaking, the general population health status is directly affected by all these factors, not only by the deficiencies in the healthcare system;

- Eradication or reduction of corruption to the largest possible extent at all levels of the administration and support for professional pathways based on ethics.
- Furthermore, in order to counter the spread of COVID-19 and support the efforts made by all the categories of medical staff, there are other measures to be considered, such as:
 - More substantial checks and sanctions for those who do not comply with social distancing, disinfection and the mandatory mask-wearing in crowded and closed spaces;
 - Wide-scale testing of the population and compensation (at least partial) of the cost of testing;
 - Subsidizing the cost of masks and of disinfectant solutions for the vulnerable social categories/categories found at and under the threshold of poverty;
 - Regulation of staggered export in order to replenish national stocks;
 - Repeated population information (without inducing any panic) about the medical and social effects of COVID-19 infection—to that end, it is also useful to inform the population about the economic and social cost of the disease (both at individual and local/national level);
 - Attracting volunteers for all the activities associated with the fight against COVID-19.

4 Conclusions

The data and the information presented in this study reflect without any doubt the countless challenges in the healthcare system, all of them having repercussions first of all on the citizens' state of health and then on economic productivity. It is a well-known fact that a population that enjoys a good health status is, on the one hand, more productive and, on the other hand, puts less pressure on the budgetary health expenditure.

The context of the COVID-19 pandemic requires a set of immediate actions in order to curb the unfortunate sanitary and socioeconomic effects that we have already explained. Nevertheless, we ought to warn on the need of equally adopting an overall approach that should include medium and long-term measures, since the healthcare system cannot improve through short-term actions, but requires a long-term vision that relies on the strategic input of all the direct and indirect stakeholders engaged in or affected by the healthcare system.

Moreover, integrated investment targeting the education system, as well as the economic capacity of the country will make it easier to manage the effects of any economic or sanitary crisis like those that we have experienced in the past 15 years while also spending less of the government funds.

Comparative figures between the past decade and 2019 indicate that we have made progress and partly reformed and strengthened the system, but the indicators regarding the general state of health and healthcare financing are very disturbing. Thus, although in comparison with the previous decade, the developments are encouraging, we must note that only by implementing articulated reform actions throughout the system and by investing more in health care can we build a solid foundation for the medical staff and patients alike, which would help attain a better general state of health and counter the emergency situations or cases through avoidable morbidity and mortality. Last but not least, an economy based on sustainable growth, on a well-educated human capital, on accessible and good-quality public services, on large investment projects in all the key areas is much more resilient to any type of macro-instability.

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The Impact of COVID-19 Crisis on the Romanian Agricultural Sector



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1 Introduction

Agriculture operates in two systems, with different speeds. The first, and the closest to the level of current technical–scientific progress, is the industrial, intensive type. It is the system in which the results register sustained rhythms, the behavior in the market is more and more competitive, and it is positioned, especially, in the lowland areas, where the suitability is highly favorable for cereals and oleaginous.

The second is the traditional slow-moving system away from the market. It is the dominant system in over 3.2 million small and very small entities and is based on family, property, and self-consumption.

Integration into the European Union has been beneficial in terms of economic growth, especially for the industrial system. Dynamism and competitiveness in the market are recognized and appreciated forces.

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For traditional entities, integration, which has allowed the influx of cheaper foreign products and increased state aid, has meant in significant proportions, the removal and, what is really worrying, the abandonment of agricultural activities.

Currently, on the rural, but especially on the agriculture act two important natural risk factors, respectively, prolonged drought and coronavirus pandemic, factors that can induce a strong and deep crisis, with multiple effects in Romanian society. The drought, which began in August and September 2019, has already compromised much of the autumn crops (wheat, barley, oats), and in the crops sown in spring, the plants do not have the necessary water resources for germination and growth. The coronavirus pandemic, although it started in the first part of March 2020; however, its effects can be as harmful as drought, even more so because:

- It overlaps and amplifies the effects of the swine fever that brought down the herd of pigs with millions of heads;
- It restricts the movement of the population and, implicitly, of the labor force, fact that will compress the economy through all its components;
- It can generate a strong food crisis, with much more acute manifestations than in 1945–1946, recognized as the worst in recent history. Now, unlike then, peasant families, even if they have a much-improved standard of living; however, their vulnerability to risk factors is arguably much higher due to:
 - High dependence on public aid;
 - Volatility of ties with agriculture;
 - Decrease, until the disappearance of the interest for the establishment of stocks of agricultural products in households, and, equally, for the breeding of animals.

Also, the impact of COVID-19 on the agricultural systems is an important aspect that was considered by all the stakeholders, not only from Romania. Haqiqi and Horeh (2021) reached the conclusion that in the USA the impact of COVID-19 was higher on the small-scale farmers and that the innovations and technical progress may exclude pandemics effects. Obviously, the impact of the COVID-19 was quite high on agricultural exports (Lin and Zhang 2020), and on the system itself in several countries around the world (Middendorf et al. 2021; Gu Wang 2021).

The issue is much more important as the organic food market will develop more (Stoian and Caprita 2019), the sustainable development of agriculture represents the new trend (Pargaru et al. 2019; Drăcea et al. 2020) and any shocks may even crash the agri-food system. Moreover, the circular economy will be introduced in the agriculture system also (Busu and Trica 2019), as the innovation may be the development key of the field business. Obviously, the strategic success factors need to be modeled (Mazurencu-Marinescu and Pele 2012) in order to implement innovation into the agriculture and, nevertheless, the European funds for agriculture are one of the key factors (Dinu 2020).

Therefore, there is no other possibility for Romanian agriculture to be developed then to consider the pandemic context, to draw conclusions, and to implement the necessary measures in order to eliminate as much as possible the effects and minimize the negative impact.

Thus, the COVID-19 impact is huge on the economy and the agri-food sector just takes its part.

2 Evolution of the Sector

2.1 Number of Employees

In agriculture, the employed population decreased from 2.4 million people to 1.76 million people, respectively, by 27%. Of these, on average 112 thousand people (5.3%) were employees, their share during the period increased to 7.3% and 129.3 thousand people, respectively. Out of the total number of people employed in agriculture, 0.3% (6.7 thousand people) were employers, which increased significantly, to 12.4 thousand people in the last year (Fig. 1).

Even if the first two categories increase, the general downward trend is given by the other two categories in which more than 90% of people employed in agriculture are found: self-employed and unpaid family workers. On average, self-employed workers have a share of 47.3% (1.033 million people), but they register a decrease of 29%. Of those who deal with agriculture, 47% are unpaid family workers, so we can emphasize through this indicator the traditional part of agriculture, they are on a downward slope, decreasing in the analyzed period by 30%, reaching 766 thousand people.

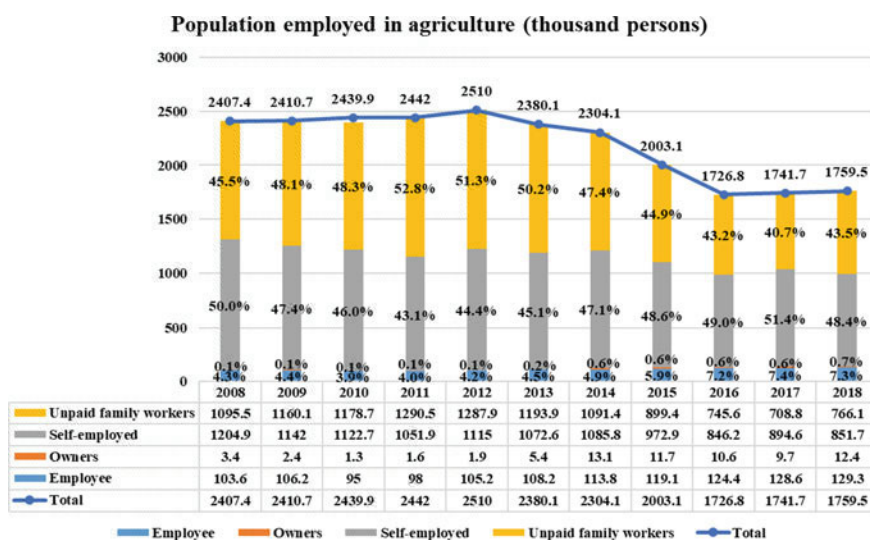


Fig. 1 Dynamics of the number of employees. *Source* own processing based on NIS data, 2020 (National Institute of Statistics 2020)

From the point of view of evolution, those employed in agriculture registered an average annual growth rate of 2.24%, from 103 thousand people to 129 thousand people, the average number being 112 thousand people, from this value there is an average deviation of 12 thousand people which determines a coefficient of variation of 10.7%.

2.2 Gross Value Added

The gross value added, in agriculture, registered an increasing evolution in the analyzed period, registering a total increase, in 2019 compared to 2008 by 38%. If in 2008, there was a gross value added of about 30.8 billion lei, in 2019 it increased to 42.6 billion lei (Fig. 2).

The lowest gross value added was recorded in 2009, being 27.1 billion lei, immediately with the outbreak of the economic crisis of that period, and the second-lowest value was recorded in 2012 when the value of production was low given small productions in the vegetal sector due to the climatic conditions.

On average, the gross value added was 32.3 billion, with a deviation of 4.8 billion, which determined a coefficient of variation of about 15%.

The increase in GVA was due to the increase in the value of production and less to the reduction in intermediate consumption, so it can be said that this increase is due to either the increase in production or the increase in the capitalization price.

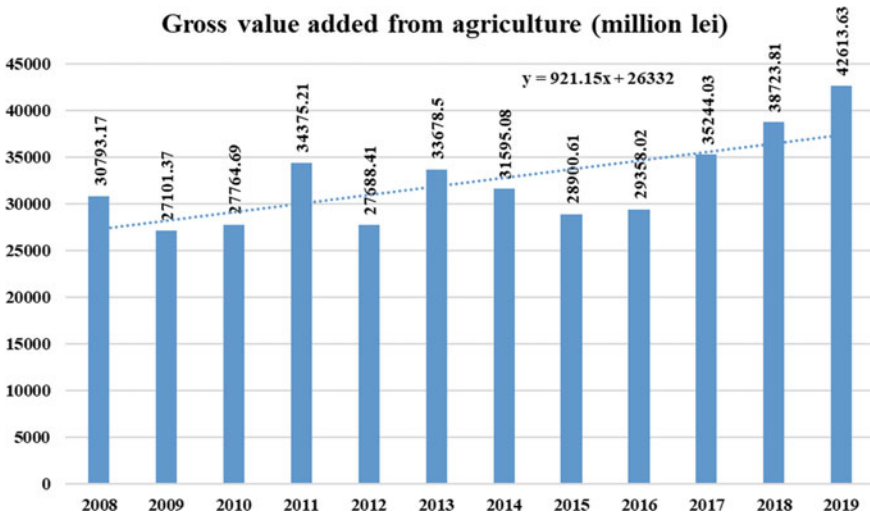


Fig. 2 Dynamics of added value. Source own processing based on NIS data, 2020 (National Institute of Statistics 2020)

The average annual growth rate was 4.63%, and if we analyze the equation of the trend line established in the graph, we can see that the value of the coefficient of x is 921.15, which may lead to the hypothesis that, annually, GVA increases, in the middle, with 921 million lei.

2.3 Investments

Investments in the agricultural sector (agriculture, forestry, and fishing) are increasing during the analyzed period, registering a minimum level of them (2.66 billion lei) in 2010, when the most intense economic crisis was felt, at new in the country, and the maximum value was registered in 2017, the investment level being 5.88 billion lei (Fig. 3).

Overall, the average investment in this sector of the economy was 4.125 billion lei, with a rather high deviation of 1.1 billion lei, which determined a coefficient of variation of 26, 6%.

In the last year, the value of investments in agriculture increased by 67% compared to the first year, but in this period, there were also decreases; thus, calculating the pace, there is an average annual increase of 4.97%.

In addition to the agricultural sector, industry is also registered in the branches of the economy, and it includes several sub-branches, including the manufacturing industry, which includes the categories of food industry and beverage industry. Adding the level of investments in these two categories to the agricultural sector, the investment level of the agri-food sector was determined.

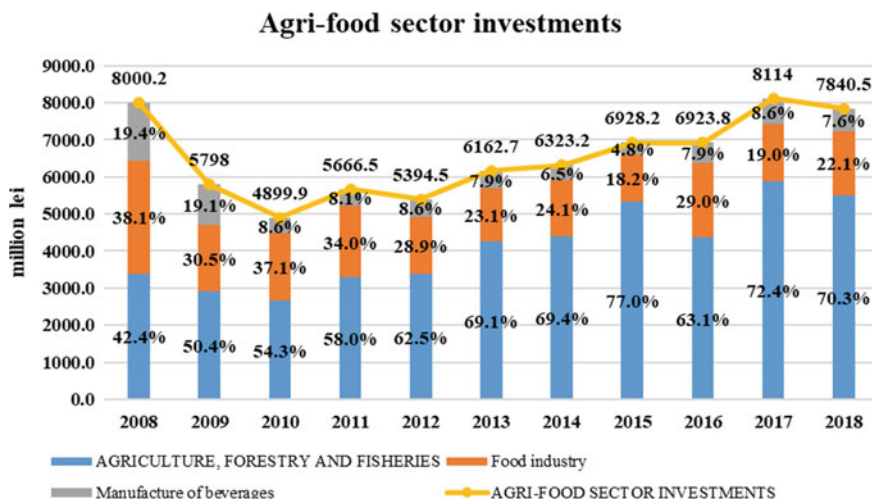


Fig. 3 Investment dynamics. Source own processing based on NIS data, 2020 (National Institute of Statistics 2020)