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Restrictive anti-Covid-19 government measures and the choice of citizens of the European Union at the end of 2020 between health benefits and economic relaxation - Statistical study

Abstract

This exposure is based on the responses of the European Union to the MEDEC question in a common questionnaire. More specifically, the MEDEC question has the following concrete wording: "What is your opinion on the consequences generated by two aspects imposed in Romania by the Covid-19 pandemic? Use for the answer a scale with six answer possibilities where the value 1 means that the health benefits are greater than the economic damage, and by score 6 you appreciate the situation of some economic damage greater than the health benefits. Response scores 2-5 indicate opinions between these two extreme positions". From a statistical point of view, the answer to the MEDEC question is regarded as an observation from an ordinal categorical variable.

The sample was completed in October 2020 and includes 24812 individuals interviewed in European Union between September 25 and October 7, 2020. Taking into account the answers received to the MEDEC question, the relations between the EU countries are specified. Practically is obtained the dendrogram resulting from an agglomerative hierarchical classification procedure. For the statistical analysis we have built the MVE indicator expressing Europeans' confidence in anti-Covid economic restrictions. MVE values bring new clarification of the hierarchical classification. We mention here that the initial database attached to the survey was subsequently weighted taking into account the real proportions into the European populations of the interviewed persons in relation to their country, age category, gender or place of residence.

Keywords: survey, Covid-19 outbreak, medical and economic restrictions, classification, MVE index

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Introduction

We recall that the Pandemic Covid-19 is extremely tough throughout the globe, having the characteristics of a generalized global crisis. Pandemic Covid-19 has greatly affected not only the global macroeconomic structure but has prejudiced human relations and relations between states, led to the collapse of the medical system in many countries, the welfare of the planet inhabitants has declined together with an increase in poverty.

The manifestation of Pandemic Covid-19 has accentuated inequalities present in society. Through lockdowns measures promoted by governments in Covid-19, it has long been emphasized the degree of isolation of individuals. The current pandemic has generated the loss of countless human lives and jobs, while increasing the risk of Covid-19 virus infection. There are complex medical problems, especially related to the health of the person, as well as extremely serious damage to the economies of the countries of the world by reducing production and implicitly of jobs. These facts also involve a sharp increase in firms debts. High inequalities during the pandemic are manifested on several plans: social (people with low incomes, affected ethnic minorities, worsening the situation of women in some countries), politics (differentiated government responses to virus management) or medical (medical system capacity to respond to requests). A discussion in this context is detailed by Bambra, Lynch & Smith.[1]

Baldwin and Weder Di Mauro[2] studied the impact of the coronavirus pandemic on the world economy: macroeconomic aspects, affected geographic areas (Middle East, North Africa), monetary finance, trade and contagion.[3] Bourne[4] seeks to explain the reason for economic measures taken by governments during the pandemic Covid-19.

Wu and Olson[5] proposed several complex mathematical models in the management risk analysis for financial operations during the pandemic. Joshi,[6] imposing certain restrictions from reality, reviews more mathematical models describing the spread of a virus in a community. There are also ways of diminishing the contagion rate.

At this pandemic stage, special importance is attached to public policies.[7] To strengthen and promote democracy, regardless of the type of anti-Covid restrictions that are taken by the various governments, the proposed anti-Covid measures must necessarily respect the law.[7,8] The generalized crisis Covid-19 has affected the mobility of people, socializing and inter-human connections, the health care system and its practices, leading to discrimination and marginalization especially socially. Given all these negative effects of the pandemic, Worth and Willis (2021) suggest several remedial actions in the future post-Covid phase of damaged social relations.

Since the 2019 manifestation of the Pandemic, the governments of the world have often reacted through coercive measures, aiming in particular the saving of the medical system and at the same time the economic system. As in other regions of the world, measures promoted by governments in the European Union have led to frequent dissatisfaction among those populations. We are interested in seeing to what extent European citizens are more inclined to accept government medical measures aimed at slowing the spread of Covid-19 virus

and salvation of human lives. However, this fact must be seen in opposition to the economic restrictions that can be determinant for the level of living of the population, especially in terms of providing a relatively decent living for persons with limited material resources.

We also mention the study promoted by Stefanescu,[9] research applied in the case of Romania. In this exposure we will partly extend the old research in the case of the countries of the European Union. Specifically, we will analyze the responses of people in the European Union to the MEDEC question from a common questionnaire referring to anti-Covid-19 government measures. We intend to highlight the presence of different ways of approach in the EU countries of the restrictive anti-Covid measures of a medical nature that are directed to the salvation of human lives, in opposition to the intention of the staggering of an economic disaster.

Methodological aspects

The question MEDEC which will be analyzed in the following has the following subject:

"What is your opinion on the consequences generated by two aspects imposed in Romania by the Covid-19 pandemic? Use for the answer a scale with six answer possibilities where the value R1 means that the health benefits are greater than the economic damage, and by score R6 you appreciate the situation of some economic damage greater than the health benefits. Response scores R2-R5 indicate opinions between these two extreme positions".

From a statistical point of view, the answer to the MEDEC question will be interpreted as an achievement of an ordinal categorical variable. So, necessarily in the statistical analysis, models specific to ordinal variables will be used.[10]

The sample was completed in October 2020 and includes 24812 individuals interviewed in European Union between September 25 and October 7, 2020. This sample includes the answers to the MEDEC question from 24812 citizens of the European Union.[11] The initial database attached to the sample was subsequently weighted taking into account the actual proportions in the populations of the European Union countries in relation to the age category, gender or type of residence.

Promoted statistical models will only take into account the actual R1-R6 responses and will not take into account the types of DK ("Don't Know") and NR ("non-response"). In the proposed statistical approach we will interpret.

European R1-R6 responses to the MEDEC question as observations made on a random variable that has six ordinal classes. By accepting an ordinal measurement scale and following the procedure suggested by Stefanescu[9] based on 10 axioms, I actually built the MVE (Medical Versus Economic anti-Covid restrictions). We have $0 \leq MVE \leq 1$. $MVE(X) = 0$ means that the entire population of the country X prefers medical anti-Covid government measures to the detriment of economic measures. On the opposite pole, by $MVE(X) = 1$, we signal that the entire population in group X supports anti-Covid economic measures.

In the case of $MVE(X) < 0.5$ the population in the country X opts priority for anti-Covid restrictions of a medical nature. If $MVE(X) > 0.5$ then the group X prefers more economic recovery measures to restrictions of medical nature. $MVE(X) \approx 0.5$ defines a balance situation for respondents in the X group. These respondents prefer "still as good" the two antagonistic options, medical restrictions or economic relaxation actions. We will group the 27 European Union countries using an agglomerative hierarchical classification algorithm. In the classification procedure we opted for the city-block distance d(X, Y) between the distributions of group responses X or Y.[12] The resulting classes are graphically represented in the form of dendrograms.

Diversity of MEDEC opinions in EU countries

For ease of graphic representations, we will use standard abbreviations of the names of the countries from European Union (Table 1).

In *Figure 2* is represented graphically the distributions of R1-R6 responses to the MEDEC question for the 27 states belonging to the European Union. Interpreting Figure 1, depending on the selected country, we remark a wide variety of R1-R6 distributions to MEDEC responses (medical versus economic restrictions). So, the views of Europeans for the MEDEC problem are quite different.

Populations in Bulgaria, Czech Republic, Hungary, Poland and Slovenia are strongly oriented for the proposal of anti-Covid government measures that favor an economic recovery (Figure 1*)*. Instead, the advantages of Covid medical restrictions, designed to ensure a benefit to the health of the individual, are perceived by population with priority, especially in the countries: France, Ireland, Luxembourg, Malta, Romania (Figure 1). We note the special role of Malta in this group of the five countries listed (Figure 1).

In the case of the six ordinal response classes R1-R6, the distribution of the MedEc ordinal categorical variable depends on five parameters. Under these circumstances, it is difficult to hierarchically classify the countries of the European Union using exclusively Figure 2. We will continue to use a classification procedure to determine the EU groups of countries resulting from the application of the MedEc criterion.

Classification of EU countries using MedEc criterion

In Figure 3 are classified all the 27 states of the European Union according to the distribution of R1-R6 responses to the MedEc question. The applied classification algorithm is hierarchically agglomerative.[12] Moreover, we will use the distance city-block as a measure of dissimilarity between "objects" (EU countries). Details are given in Everitt et al.[12] In the agglomerative classification algorithm, we will define the dissimilarity between an object O and a group G of other objects as the mean of the dissimilarities between the object O and any object from the G crowd.

Interpreting the classification from Figure 2, we distinguish in a first approximation the division of European Union countries into three S1-S3 disjoint classes. More precisely,

S1 = {IT, PT, NL, BE, AT, CY, GR, DE, ES, SE, DK, FI, IE, LU, FR, RO};

S2 = {BG, CZ, PL, LT, HU, and, EE, SK, HR, LV};

S3 = {MT}.

We note the special position owned by Malta (MT). The S3 class has a single element, namely Malta. The Malta population is strongly focused on promoting anti-Covid medical measures, clearly distinguishable from all other European Union countries. This aspect has already been notified at the interpretation of Figure 1. The disadvantage of the classification in *Figure 3* according to the MedEc criterion is that we can not specify what anti-Covid medical

or economic feature has each of the S1-S3 crowds. We will solve this dilemma in the next section.

Figure 2 also allows a refining of the initial S1-S3 classification. Thus, by dividing the S1 and S2 classes, the following subclasses are obtained:

S1A = {IT, PT, NL, BE};

S1B = {AT, CY, GR, DE, ES, SE};

S1C = {DK, FI IE, LU, FR, RO}.

respectively

S2a = {BG};

S2B = {CZ, PL, LT, HU};

S2C = {EE, SK, HR, LV}.

In this new finer classification we note Bulgaria (BG) as having special views in MedEc problem. However, we are not able to clarify if the opinions of Bulgarians are more appreciative for the anti-Covid government measures oriented towards an economic recovery or there are countless views in favor of ensuring the protection of the individual's health. This last problem will be clarified in the next section.

Table 1 Abbreviations for the names of the EU countries

Abv.	**AT**	**BE**	**BG**	**CY**	**CZ**	**DE**	**DK**
Country	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Germany	Denmark
Abv.	EE	ES	FI	FR	GR	HR	HU
Country	Estonia	Spain	Finland	France	Greece	Croatia	Hungary
Abv.	IE	IT	LT	LU	LV	MT	NL
Country	Ireland	Italy	Lithuania	Luxembourg	Latvia	Malta	Netherlands
Abv.	PL	PT	RO	SE	SI	SK	
Country	Poland	Portugal	Romania	Sweden	Slovenia	Slovakia	

Table 2 MVE index values to the MedEc question for European Union countries

State	**AT**	**BE**	**BG**	**CY**	**CZ**	**DE**	**DK**
MVE	0.539	0.546	0.672	0.519	0.626	0.484	0.464
State	EE	ES	FI	FR	GR	HR	HU
MVE	0.576	0.489	0.463	0.430	0.513	0.607	0.648
State	IE	IT	LT	LU	LV	MT	NL
MVE	0.428	0.515	0.610	0.437	0.600	0.359	0.528
State	PL	PT	RO	SE	SI	SK	
MVE	0.615	0.525	0.426	0.471	0.648	0.581	

At a first analysis Figure 2 highlighted the existence of three main classes: S1, S2 and S3. In a subsequent study we will have to study separately each S1-S3 group with the intention of establishing common (social, economic, medical) characteristics of the class component countries. In this way, we will be able to specify through an algorithm membership of any EU country to one of the S1-S3 classes.

The concrete analysis of the component countries in classes S1 and S2 gives us qualitative structural information about the European Union. The relations between the European countries defined by the MedEc criterion are to be reinterpreted, taking into account other economic and social issues, such as: the level of democratization, the degree of inequality and poverty, the influence of mass-media, the size of the family, the role of the family, the quality of life, the level of generalized corruption, citizens' accessibility to public health services and education, the degree of development of the economy.

Turning to Figure 2 we can build groups of several European countries that have similar opinions on issues MedEc. For example, in the case of Romania we have the group {Romania Romania, France} or the larger group {Romania, France, Denmark, Finland, Ireland, Luxembourg}. But otherwise, the group {Romania, France, Ireland, Luxembourg} includes countries like Romania, which already reported in Figure 1 interpretation.

Measuring the intensity of MedEc in the EU countries

We will use the MVE indicator previously stated to establish a population's tendency to accept the need for anti-Covid economic recovery measures. We mention that the value of the MVE coefficient increases with the orientation of the population from medical restrictions to economic measures, $0 \leq MVE \leq 1$. In *Table 2* is specified the MVE index values in the MedEc issues taking into account all countries from the European Union.[13–15]

Figure 5 was hierarchized the X countries in the European Union by ordering decreasing MVE(X) values in MedEc. In this way we can compare EU countries with close values of the MVE trend. In Figure 5, among all the EU countries Bulgaria is highlighted opting for the economic recovery in the Covid pandemic. The tendency for promoting anti-Covid actions to reduce economic damage is strongly manifested in Slovenia, Hungary, Czech Republic, Poland, Lithuania, Croatia or Latvia. At the opposite pole is Malta whose population prefers medical restrictions oriented to rescue human lives, compared to anti-Covid economic measures. Priority orientation for anti-Covid medical restrictions is also embraced by other states such as Romania, Ireland, France or Luxembourg. Populations of some countries such as Cyprus, Germany, Spain, Greece, Italy remain undecided in choosing between the medical benefits of anti-Covid restrictions or opposite measures of economic relaxation.

Conclusion

We studied the opinions of the populations from the European Union countries in the case of restrictive government anti-Covid measures of a medical and economic nature. These opposite options differ substantially in the European Union (Figure 1).

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For a thorough analysis of MedEc issues, two approaches were proposed:

i. An agglomerative hierarchical classification of the EU countries in relation to the city-block dissimilarity of MedEc distributions in European countries. The EU countries were grouped by the MedEc criterion.

ii. Introduction of a MVE trend indicator specific to ordinal MedEc categorical ordinal variables. On the basis of the MVE values, we established an hierarchy of the EU countries

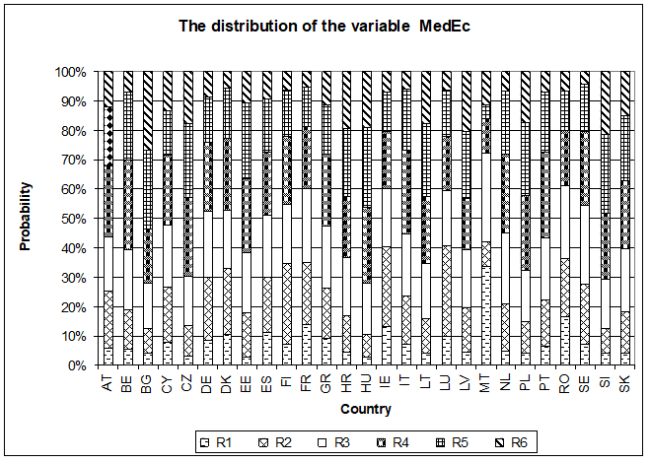

Figure 1 Distributions of R1-R6 responses to the MedEc question for the populations of the European Union.

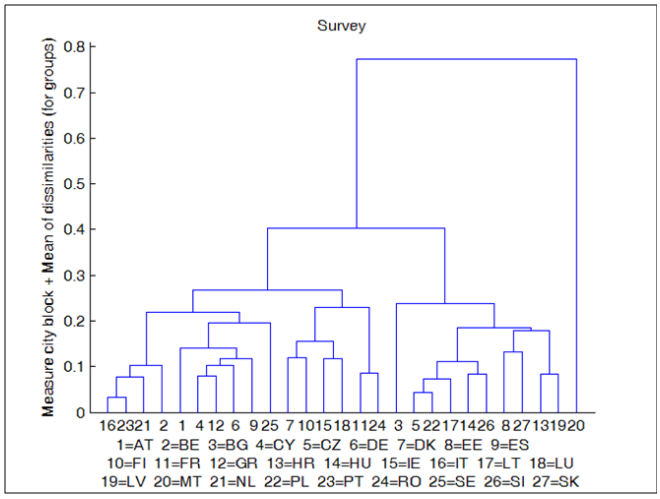

Figure 2 Classification of EU countries according to the MedEc criterion.

We specify that the two statistical models are completing each other by bringing a surplus of information on "medical or economic" anti-Covid restrictions. Thus, groups of S2A, S2b, S2C, S1A□S1b, S1C, S 3 obtained by hierarchical classification (Figure 2) are found in the same order also in the hierarchy of Figure 3 (by decreasing MVE values).

The results mentioned in this paper are based on data obtained in October 2020. This study must to be updated, while comparing with subsequent developments in MedEc. We suggest the use of the present methodological approach applied for MedEc problem in the European Union and for other aspects from different communities (for example USA).

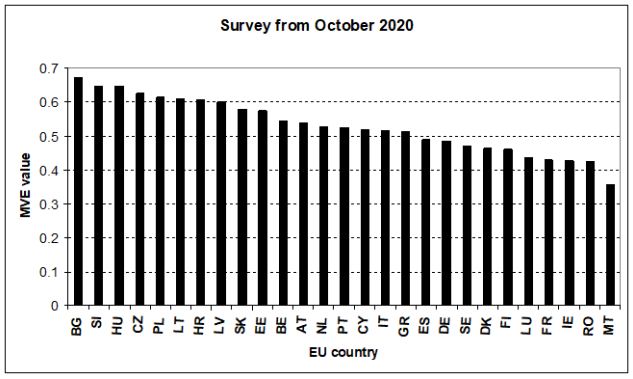

Figure 3 Descending ordering of MVE (X) to the MedEc question for X countries in the European Union.

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None.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Bambra Clare, Lynch Julia, Smith Katherine E. *The unequal pandemic - Covid 19 and health inequalities*. Bristol University Press, Bristol, 2021.
2. Baldwin Richard, Weder di Mauro Beatrice, editos. *Economics in the time of Covid-19*. Centre for Economic Policy Research (CEPR), CEPR Press, 2020.
3. Lupton Deborah, Willis Karen, editors. *The Covid-19 crisis – Social perspectives*. Routledge, New York, 2021.
4. Bourne Ryan A. *Economics in one virus – An introduction to economic reasoning through Covid-19*. CATO Institute, 2021.
5. Wu Desheng Dash, Olson David L. *Pandemic risk management in operations and finance modeling the impact of Covid-19*. Springer Nature Switzerland, New York, 2020.
6. Joshi Meera. A study on mathematical and computational models in the context of Covid-19. In: Panigrahi Chhabi Rani, Pati Bibudhendu, Rath Mamata, et al. *Computational modeling and data analysis in Covid-19 research*, Taylor & Francis Group, CRC Press, 2021, chapter 10, 188–208.
7. Basu Rumki, editor. *Democracy and public policy in the post-Covid-19 world - Choices and outcomes*. Routledge, New York, 2021.
8. Monti Andrea, Wacks Raymond. *Covid-19 and public policy in the digital age*. Routledge, New York, 2021.
9. Stefănescu Maria Livia, Stefănescu Stefan. An indicator for measuring the evolution aspects for ordinal data. Paper presented at *The 3rd International Conference ESPERA-2015*, Bucharest, Romania, December 3-4, 2015, 10 pages.
10. Agresti Alan. *Analysis of ordinal categorical data*. 2nd edn, New York: Wiley, USA. 2010.
11. Eurobarometru 2021, European Parliament Covid-19 Survey - Round 3. Gesis.
12. Everitt Brian S., Landau Sabine, Leese Morven, et al. *Cluster analysis*. 2nd edn, London: John Wiley and Sons, 2011.
13. Michalos Alex C, editor. *Encyclopedia of quality of life and well-being research.* Springer, New York, 2014.

14. Maria Livia Stefănescu, Perception in Romania at the end of 2020 of the medical and economic restrictions imposed by the government in the case of the Covid-19 pandemic phenomenon, *Proceeding Conference INCE – Chişinău, edition XV*, 15-16 October 2021. 7p.

15. Datenarchiv, Köln. ZA7738 Datenfile Version 1.0.0.

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