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CORONAVIRUS (COVID-19) PANDEMIC – EFFECTS AND CORRELATIONS IN THE EUROPEAN UNION COUNTRIES

Original
Research

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Abstract

The main purpose of this article is to answer the question whether there is a correlation between the healthcare investments of the European Union countries and their reaction when they are faced with a historical challenge such as the Coronavirus (COVID-19) pandemic. The results of this study are surprising and after analyzing the data, it turned out that there isn't a direct correlation between the economic power of a country and its response to this crisis, but the investments in the healthcare system are important and can save multiple lives. It should also be mentioned that the quality of health care depends on the equipment and the degree of endowment of the hospitals.

INTRODUCTION

On January 30, 2020, the World Health Organization named the health crisis created by COVID-19 infection as "public health emergencies of international concern" (concept defined as "an extraordinary event that poses a risk to public health for other states by spreading internationally the disease"). Thus, this prudent approach was used, because at that time the biggest problems related to the spread of this virus existed on the Asian continent, in China, mainly in Wuhan City, Hubei Province. However, in press conferences on this topic, WHO officials cataloged this situation as "with pandemic potential" (Habibzadeh & Stoneman, 2020).

On March 11, 2020, the World Health Organization declared COVID-19 infection a pandemic, after more than 118,000 coronavirus diseases were reported in over 110 countries and territories worldwide and the risk of expansion was found global. In his address, Dr. Tedros Adhanom Ghebreyesus, the Director General of WHO mentioned that "this is not only a public health crisis, but a crisis that will affect every sector (…) and thus every sector and every person must be involved in this fight" (World Health Organization, 2020).

Starting from this idea, given the previous experiences related to the economic impact of other pandemics in history, the author aims to highlight to what extent there is a correlation between the investments of the European Union countries in the health systems and their reaction in this crisis, as well as to highlight some of the interesting aspects to follow regarding the evolution of the economy after this global crisis.

PAST PANDEMIC EXPERIENCES

In order to be able to understand the economic evolutions that can occur as a result of the Coronavirus (COVID-19) pandemic, it is necessary to take a look at the past experiences that humanity has had in such situations.

Thus, in the last century there were four major pandemics (Kilbourne, 2006; Hsieh et. al, 2006; Cherry & Krogstad, 2004): 1918-1919 (Spanish flu), 1968-1970 (Asian flu), 1981 (HIV/AIDS) and 2003 (SARS).

The Spanish flu pandemic of 1918-1919 was the most severe, with around 50 million deaths worldwide (2% of the world's population). This crisis, being correlated with the period of the end of the First World War, implied that a large part of the population was living in the house and thus, the economic activity was strongly disturbed. In this sense, there are estimates that reflect a decrease in GDP and consumption by 6% and 8%, respectively

(Centers for Disease Control and Prevention, 2020).

50 years after the Spanish flu, in 1968-1970, another flu virus has spread throughout the world. Estimates place the number of deaths at about one million people. Although this virus was not as deadly as the 1918 flu outbreak, it was highly contagious (500,000 people became infected within two weeks from the first case reported in Hong Kong). An outcome economic effect was that this pandemic helped the global community understand the vital role of vaccinations in preventing future outbreaks (Encyclopedia Britannica, 2020).

The 1981 HIV / AIDS pandemic primarily affected economic growth by reducing the availability of human capital (Arndt, 2006). Even today, without prevention, nutrition, healthcare and medicines available in developing countries, a large number of people are victims of AIDS. Given the specificity of the disease, people living with HIV / AIDS will not only be unable to work, but will need significant medical care (Jamison et. al, 2006).

The latest pandemic, the SARS (severe acute respiratory syndrome) one in 2003, appeared in China in February and infected about 8,000 people, mostly in Asia. Over a five-month period, it developed in 30 countries and had a mortality rate of about 9%. Taking into account the measures of social isolation and distancing, the GDP of China, Hong Kong and Singapore decreased by more than 2% in the second quarter of 2003 (Huang, 2004).

MATERIALS AND METHODS

The author used the public data on the Worldometers website (2020). This website presents daily situations about the evolution of the cases and deaths caused by COVID-19 pandemic. All the data are until April 20, 2020. Also, the author used the data from Euromonitor for the situation regarding the healthcare expenditure in 2017 in the European Union states.

The author used the comparative method as well as Spearman's correlation coefficient.

Firstly, the author compares the evolution of COVID-19 pandemic in terms of cases and deaths in the European Union countries and then he compares this situation with the data regarding the healthcare expenditure.

RESULTS

In the following, the author will present the situations related to the number of diseases and the number of deaths resulting from the COVID-19 infection, in the European Union countries, on April 20, 2020.

Given the fact that author is talking about reports that present the situation approximately 90 days after the first illness of a European citizen (January 27, 2020 - Germany), the author considers that they are relevant in the analysis performed.

Thus, Figure 1 shows the situation of diseases with this virus in each state of the European Union, data reported per one million inhabitants.

As it can be seen, the countries with the highest number of cases (over 2,000 cases) are the following: Luxembourg (5,684), Spain (4,282), Belgium (3,450), Ireland (3,170), Italy (2,997), France (2,382) and Portugal (2,046).

Analyzing a geographical distribution, it is worth highlighting that the Central-Western countries of the European Union were the most affected, and it can be highlighted among them that all countries with more than 2,000 cases / one million inhabitants have a neighboring EU member state which has a large number of cases (the only exception being Ireland):

- Luxembourg borders Germany, **Belgium** and **France**;
- Spain has a border with **France** and **Portugal**;
- Belgium has borders with Germany, **France**, **Luxembourg** and the Netherlands;
- Ireland has a border with Great Britain (being the safe situation of a country with over 2,000 cases that does not have a direct border with another country with a similar minimum number of cases);
- Italy borders **France**, Austria and Slovenia;
- France has borders with Germany, **Belgium**, **Italy** and **Spain**;
- Portugal has a border with **Spain**.

It is also worth mentioning that **all the countries mentioned above (except Ireland) are members of the Schengen area**, which may lead us to the empirical conclusion that, before imposing certain severe restrictions on the mobility of citizens, they traveled to these areas, thus achieving the community transmission of the virus.

Furthermore, the author finds out that the Central and Eastern European countries were less affected: Bulgaria (239), Croatia (458), Czechia (646), Estonia (1,170), Hungary (217), Latvia (397), Lithuania (496), Poland (257), Romania (465), Slovakia (215) and Slovenia (642). As it can be seen, **all this countries (except Estonia) had a number less than 1,000 illness**.

In the next figure (Figure 2) the author presents the situation of deaths because of this virus in each state of the European Union, data reported per one million inhabitants.

As seen, **there is a correlation between the number of cases and number of deaths**. Thereby, the countries with the highest number of deaths are: Belgium (503), Spain (446), Italy (399), France (311), Netherlands (219), Sweden (156) and Luxembourg (120). Five of these countries are also in the top seven countries regarding the number of

cases (except Netherlands and Sweden). Also, it is important to mention that Ireland and Portugal are in the top seven countries upon the number of cases and there aren't in the top seven countries regarding the number of deaths.

Moreover, it can also be observed that there is a significant difference in deaths between the Western and Central Eastern European Union countries.

The top countries with low level of death are: Slovakia (2), Latvia (3), Bulgaria (6), Malta (7), Cyprus (10), Poland (10), Croatia (11) and Greece (11).

These facts can be explained empirically in several ways, of which the author mentions:

- **Medical** – scientists identified two strains of COVID-19 strains – "L" strain which is more aggressive than "S" strain;
- **Population** – it is known that people over 65 years old are more affected by this virus. So, there are countries with an older population that others;
- **Social** – there are countries where social distancing is a way of life;
- **Therapeutic approach** – being an unknown virus, there isn't a common treatment in all countries;
- **Social distancing measures** – there were countries who took tougher action compared to others (e.g. lockdown).

In the next figure (Figure 3) it is presented the ration between number of cases and deaths in each European Union country.

Medical specialists (Drug Topics, 2020) claim that the ratio between the number of deaths and the number of cases can be influenced by several factors, among with: availability of health care facilities, training of the doctors and the health system, number of the elderly patients with other comorbidities etc.

In the world, on April 20, the average mortality rate was about 7% (Worldometers, 2020). The E.U. countries with more than 7% fatality rate are: Belgium (15%), France (13%), Italy (13%), Netherlands (11%), Sweden (11%), Hungary (10%) and Spain (10%). It is important to specify that six of these seven countries are in the top countries regarding the number of deaths (Hungary is the exception).

The author considers that is important to present the data regarding the healthcare expenditure in European Union countries (Figure 4) in order to understand if constant investments in the healthcare system are relevant when one deals with a global health crisis.

The European Union countries which invested more in healthcare in 2017 are the following: Sweden (5,206 €), Denmark (5,134 €), Luxembourg (5,083 €), Germany (4,459 €), Ireland (4,395 €), Netherlands (4,346 €) and Austria (4,371 €) and the countries with low investments in the

healthcare system are Romania (494 €), Bulgaria (591 €), Croatia (805 €), Latvia (829 €), Hungary (872 €), Lithuania (963 €) and Slovakia (1,052 €). Analyzing the data from the figure 3 and the figure 4, in the case of the correlation between the death ratio from COVID-19 and the health expenditure with the Spearman correlation coefficient, a value of 0.244 resulted, which confirms **a strong inverse correlation between the two variables**.

CONCLUSIONS

The number of cases and the number of deaths caused by Coronavirus (COVID-19) pandemic have multiple consequences, which cannot be limited only to economic aspects. However, it is important to mention that the analyses presented in this paper highlighted the fact that the historical investments in the health system did not produce the expected effects (limitation of the number of deaths) at the level of the European Union states. Moreover, healthcare investments have the role of building high-performance sanitary systems to meet such challenges.

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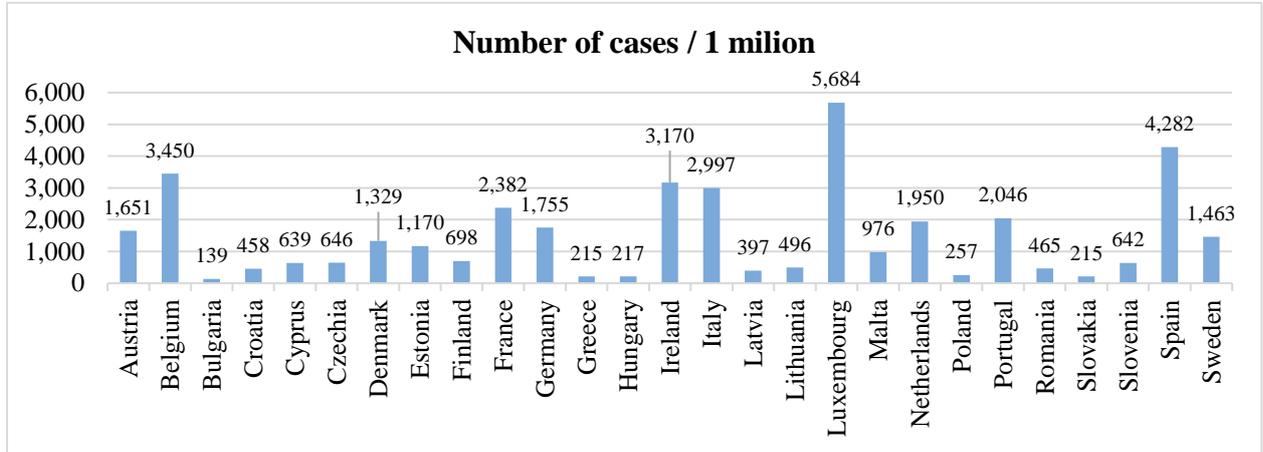
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Figure 1
Number of cases of COVID-19 diseases in the European Union
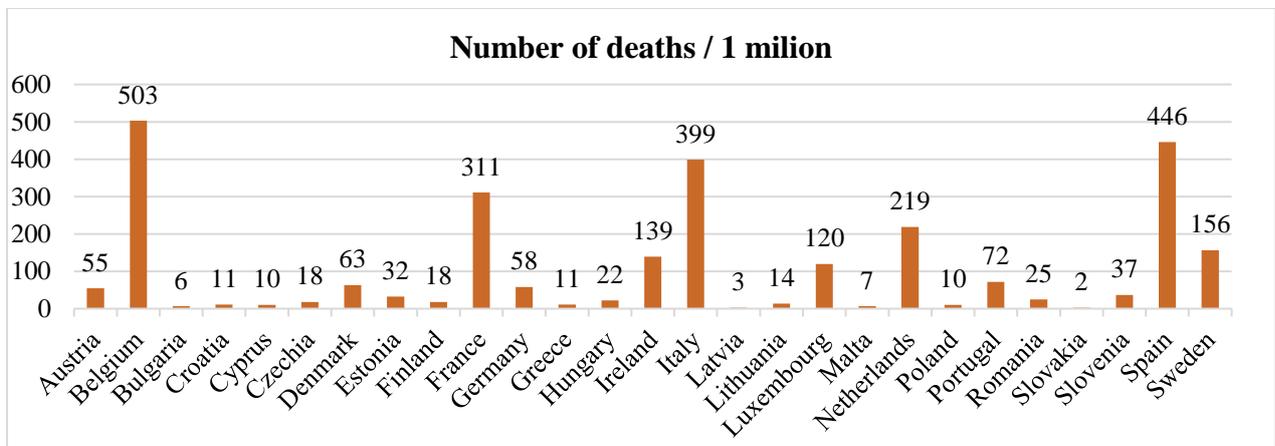*Source: Worldometers (2020)*

Figure 2
Number of deaths of COVID-19 diseases in the European Union
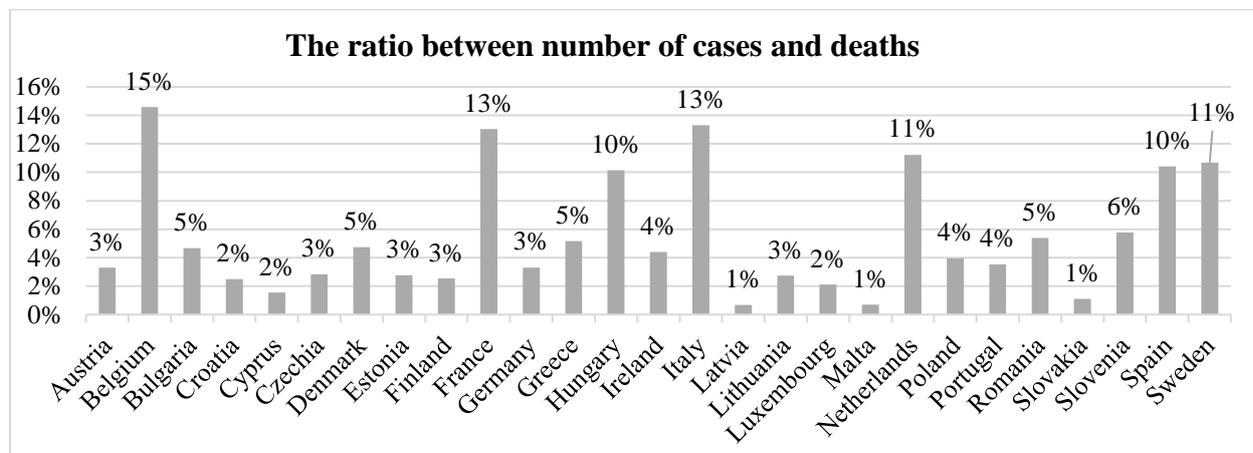*Source: Worldometers (2020)*

The ratio between number of cases and deaths

Figure 3
The ratio between number of cases and deaths in the European Union
Source: Worldometers (2020)

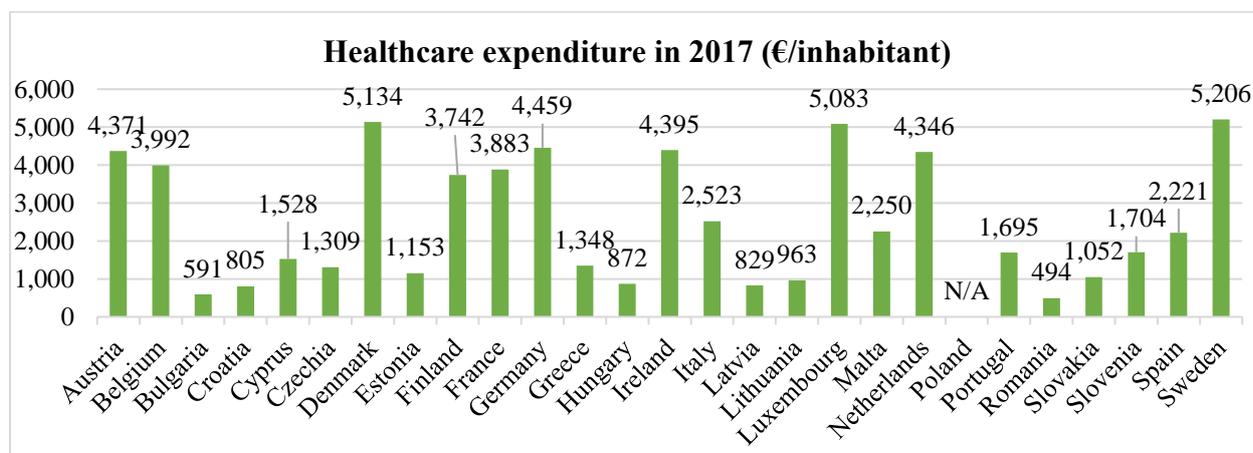**Healthcare expenditure in 2017 (€/inhabitant)**

Figure 4
The healthcare expenditure in the European Union countries
Source: Euromonitor (2020)