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Article

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E u r o E c o n o m i c a

Issue 3(39)/2020 *ISSN: 1582-8859*

The Global Economic Crisis Reflected in the Statistical Forecasts

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Abstract. The research is focused on the idea that good statistical data are able to support a correct economic analysis even under pandemic's impact. The main objective of the research is to point out the statistics' possibilities to adapt to an uncertain global economic environment. On the other hand, the comparative analysis allows to realize the new world economic top and to nominalize the winner and the looser of these new conditions.

Keywords: pandemic; economic crisis; GDP's rank; economic gap

JEL Classification: R10; R11; R12.

1. Introduction

During the last decade, the global economy faced to multiple forms of the crisis: economic, political, military, social and sanitary, as well. From the economic point of view, the economic crisis is often presented in the national economic policies of the most important global actors.

It is well-known that statistics is the science who support the official information and policies in all countries. The high fluctuations of the economic environment forced the statistics to give up the medium and long term forecasts and to use only short term forecasts (1-2 years). This phenomenon manifests itself at the level of the international organizations as Eurostat, IMF, World Bank or CIA.

The present global crisis is more complex than the previous other and puts its impact on the statistical activities. A more optimistically approach of the statistical agencies until 2018 was replaced by o pessimistically one. This change was reflected in the statistical reports across the world agencies.

In this context, the statement of the Italian Prime Minister, Matteo Salvini, becomes very interesting and controversial: "It seems clear and obvious to me, I do not know whether voluntarily or involuntarily, China infected the rest of the world to colonize it economically" (Vioreanu, 2020).

The present research is focused on the idea of pointing out the connexion between the real economic environment's evolution and the statistical reports, in order to give an idea about the dimensions of the present global crisis.

In order to realise this, the research in this paper is connected to the following objectives:

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O1: To point out how the pandemic's impact of the global economy is reflected in the changing of the official statistics.

O2: To reflect how the statistical reports help the understanding of the global power economic balance.

O3: To find the winners and the losers among the global economic actors following this crisis.

2. Related Work

There are not doubts that the present global crisis inspired the researchers in writing a lot of research papers.

An analysis of some of the most representative researchers and their papers is presented in Table 1.

Table 1. Meta-Analysis of the Papers from the Relevant Body of Knowledge on the Behaviour of the Present Global Crisis and Its Economic Impact

Author	Year	Approach	Criticism
Gelman, A. & Loken, E.	2014	The authors started from the idea that p-value represents the confidence degree of a statistical analysis and concluded that this approach is not perfect. As a result, the authors supported alternative approaches. Moreover, the null hypothesis and the alternative hypothesis are considered not enough for a good statistical analysis.	The authors' example regarding the difference in performance between the classic two American parties in the military and healthcare contexts is not valid. On the other hand, the criticism of the traditional statistical instruments of analysis is not followed by proposals of new instruments of analysis.
Breur, T.	2016	The author is interesting in testing statistically whether some test group outperforms one or more control groups. The analysis is extended on the two ways to apply statistics: the describing of what is happened in a particular study, or the drawing conclusions about the implications of those findings in a broader context. The next step is to make the difference between the descriptive statistics and the inferential statistics. These two approaches support business environment's analysis as business as usual or as strategy.	The criticism in this research is obviously. As in the above paper, the author don't give alternatives for a better statistical analysis of the economic environment.
Diong, J., Butler, A.A., Gandevia, S.C. and Héroux, M.E.	2018	The authors are interested in improving the standards in the statistical reporting and the data analysis. As a result, they analysed a great number of research papers regarding the	The main conclusion of this analysis is that more of the statistical researches are not able to quantify correctly the economic environment and do not represent an instrument for the economic decision makers.

		statistical analysis. The result of this research was that only 2-4% of the papers plotted raw data used to calculate variability, while 90-96% of the papers did not report the exact p-values for the primary analyses and the post-hoc tests.	
Ionescu R.V., Zlati M.L., Antohi V.M. and Stanciu S.	2018	The authors put into discussion the use of the econometric models in the context of decreasing the inequalities in sustainable development.	The paper analysed the measures proposed by the 2030 Agenda using new proposed models by the authors. The model was tested under the risk economic approach.
Boh, S.	2019	The author presents the statistical database of the European Central Bank. These data support the macroprudential analysis. The different categories of indicators are analyzed with a description of the relevant confidentiality issues.	The author considers that the econometric modelling based on the European Central Bank's data is not performant, because it leads to gaps between the computed economic indicators and the expected future enhancements of the database.
Vukajlović, V., Simeunović, I., Beraha, I. and Brzaković, M.	2019	The authors pointed out the importance of the information in the crisis management. The analysis is based on a sample able to quantify the most relevant aspects of the crisis management and covers respondents from Belgrade, using IBM-SPSS software.	The results of the analysis are not optimistic. The statistical analysis is not able to support managers in their crisis management.
Amrhein, V., Trafimow, D. & Greenland, S.	2019	The authors took into account the subjective elements in realizing the statistical analysis during the economic crisis.	They considered that a good expectation can led to positive results in using the statistical instruments, while a bad expectation can lead to opposite results.
Walter J. Radermacher, W.J. & Pullinger, J.	2020	The authors started their research from the idea that the present pandemic statistics is more important than other statistics, now. In this pandemic context, the statistical instruments become are supporting the preparation of the difficult political decisions. The essentially goal of the statistical research has to be the health risks of this epidemic vs the absorption capacities of the national health systems.	The conclusion that the UN Sustainable Development Goals for 2030 will not be achieved, leads to the idea that the pandemic's impact on the global economic environment is too powerfully. As a result, the statistical analyses have to focus on finding pertinent solutions for the political decision makers in order to solve the present global crisis.

The above short analysis of some of the most representative papers in the area leads to the conclusion that the statistical analysis is necessary to the national and regional decision makers even that some specialists have critical opinions about it.

As a result, the present research realises a comparative analysis between the impact of the economic environment before and after pandemic.

The analysis is based on the following working hypotheses:

H1: There is a direct relationship between the economic environment and its reflections in the statistical reports.

H2: The economic environment's instability affect directly the statistical reports.

H3: The gap between the forecasted economic indicators and the real indicators increases when the economic instability increases.

3. Concept and Terms. Solution Approach

The analysis in this paper takes into consideration the economic reflexion of the economic environment in the statistical reports regarding the main global economic actors. The final goal of the analysis is to find the existence of a winner from the present complex global crisis.

The data in the analysis are the official ones and are focused on the following economic indicators: GDP, unemployment rate and the government gross debt as % of GDP.

There are two approaches regarding the economic evolution: a positive one before the pandemic and a pessimistic one after pandemic.

According to the first approach, the GDP is presented in Table 2 (European Commission, 2019). In order to ensure compatibility, the analysis uses the exchange rate from October 2019 according to the Exchange-Rates.org (1 Euro = 1.1153 USD; 1 Euro = 120.986 JPY and 1 Euro = 7.8501 CNY).

Table 2. The Forecasted Economic Indicators before the Pandemic

Indicator	EU		Japan		USA		China	
	2020	2021	2020	2021	2020	2021	2020	2021
GDP (bn Euros)	13851.9	14046.8	4581.2	4590.3	19216.8	19524.3	13145.4	13881.6
Unemployment rate (%)	6.7	6.5	2.2	2.2	3.7	3.7	5.9	3.8
Government gross debt (% of GDP)	85.1	84.1	236.6	236.6	109.4	112.3	59.5	63.2

Source: Author's calculation

The impact of the present complex global crisis on the global economic environment led to great changes in the official statistical reports. According to the latest statistical data (European Commission, 2020), the above analysed economic indicators became (see Table 3).

Table 3. The Forecasted Economic Indicators after the Pandemic

Indicator	EU		Japan		USA		China	
	2020	2021	2020	2021	2020	2021	2020	2021
GDP (bn Euros)	12674.7	13447.9	4465.2	4585.8	18056.4	18941.2	12747.1	13741.4
Unemployment rate (%)	9.0	7.9	4.3	4.5	9.2	7.6	5.9	3.8
Government gross debt (% of GDP)	95.1	92.0	253.7	252.2	130.6	131.0	59.5	63.2

Source: Author's calculation

In this third table, the exchange rates were those from April 2020, from the same source (1 Euro = 1.0902 USD; 1 Euro = 117.22 JPY and 1 Euro = 7.7281 CNY).

4. Analysis of Results and Discussion

The comparative analysis leads to interesting approaches. For the beginning, the general idea is that the Covid-19 had and still has a powerful impact on the economic development.

The decrease of the economic growth rate in all analysed countries leads to a decreasing in total GDP. This decrease is greater in all post-pandemic statistical documents. The same trends have the unemployment rate and the government gross debt even that is very difficult to obtain official data about China.

According to data from Table 1, the economic gaps between the analysed four global economic actors are the following ones (see Figure 1).

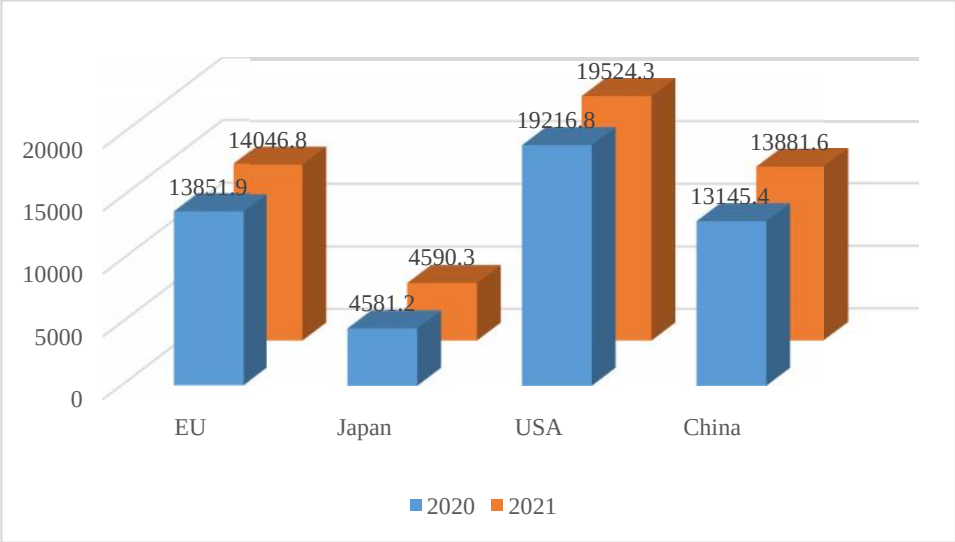

Figure 1. The Value of GDP in the Pre-Pandemic Statistics (bn. Euro)
Source: Author's Contribution

In order to analyse the GDP, the gaps between the two years and the four values is calculated as:

$$\Delta g_{GDP_i} = GDP_{i\,2020} - GDP_{i\,2019} \quad (1)$$

where: Δg_{GDP_i} – the economic gap in time (using GDP's value);

i – the analysed economic entity, i ϵ [1, 4].

According to Figure 1, USA is the greatest economy in 2020. It is followed by EU, China and Japan. The same global top will be in 2021 in accordance to a positive economic trend.

According to this initial optimistic forecast the economic gap between these economic entities was and will be:

Table 4. The Economic Gap in 2020 and 2021 (bn. Euros)

GDP/Year	g_{EU-USA}	$g_{EU-Japan}$	$g_{EU-China}$
2020	-5364.9	9270.7	706.5
2021	-5477.5	9456.5	165.2
GDP/Year		$g_{Japan-USA}$	$g_{Japan-China}$
2020		-14635.6	-8564.2
2021		-14934.0	-9291.3
GDP/Year			$g_{USA-China}$
2020			6071.4
2021			5642.7

Source: Author's calculation

In Table 4, the economic gap between USA and China will decrease in 2021 compared to 2020. It will increase in relation to EU and Japan economies. China will succeed to decrease the economic gap regarding GDP between EU economy and the Chinese economy, as well.

The economic turbulences connected to the pandemic development lead to a huge change in the official economic statistics. Under this new approach, the economic developments are those presented in Figure 2.

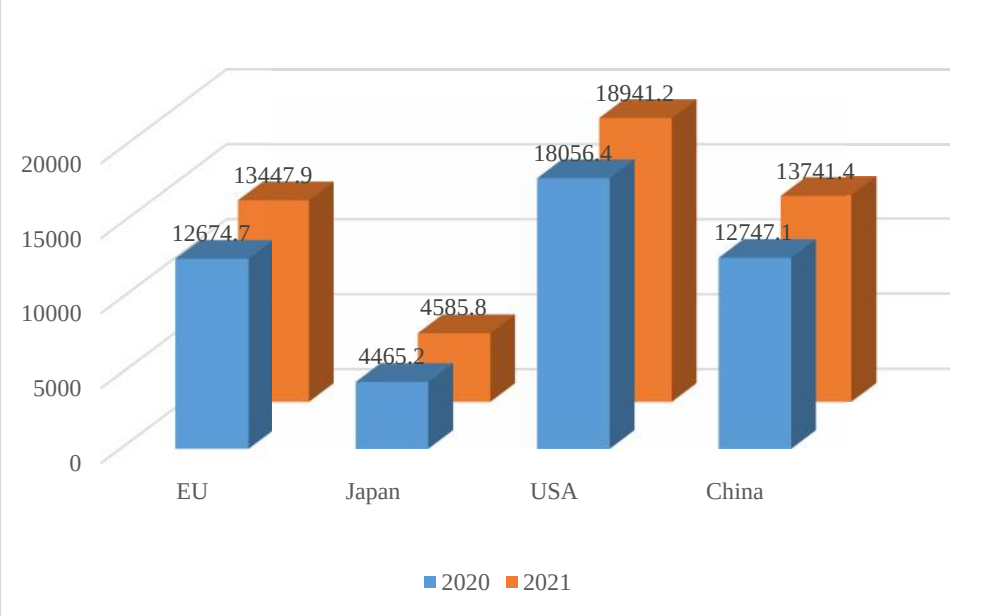

Figure 2. The Value of GDP in the Post-Pandemic Statistics (bn. Euro)
Source: Author's Contribution

According to Figure 2, the first great changes is that the Chinese economy will be able to exceed the EU economy during the analysed period (2020-2021). USA will maintain the 1st rank in the global economy even that the statistical data are worsen.

The real challenge is to compute the economic gaps between these four economies under the new economic conditions. The post-pandemic statistics lead to the indicators presented in Table 5.

Table 5. The Economic Gap in 2020 and 2021 Under the Pandemic Impact (bn. Euros)

GDP/Year	g_{EU-USA}	$g_{EU-Japan}$	$g_{EU-China}$
2020	-5381.7	8209.5	-72.4
2021	-5493.3	8862.1	-293.5
GDP/Year		$g_{Japan-USA}$	$g_{Japan-China}$
2020		-13591.2	-8281.9
2021		-14355.4	-9155.6
GDP/Year			$g_{USA-China}$
2020			5309.3
2021			5199.8

Source: Author's Calculation

At this moment of the analysis, China seems to be the real winner from this pandemic, because it will decrease the economic gap from USA. But the most important question is that 2020-2021 will be enough to return to the global economic growth.

In order to give a pertinent answer to this question, a short time forecast is necessary. This forecast will be realised using IBM-SPSS 25 software and will cover 2022. In order to ensure data's representatively, the forecast is based on a statistical period of 10 years (see Figure 3).

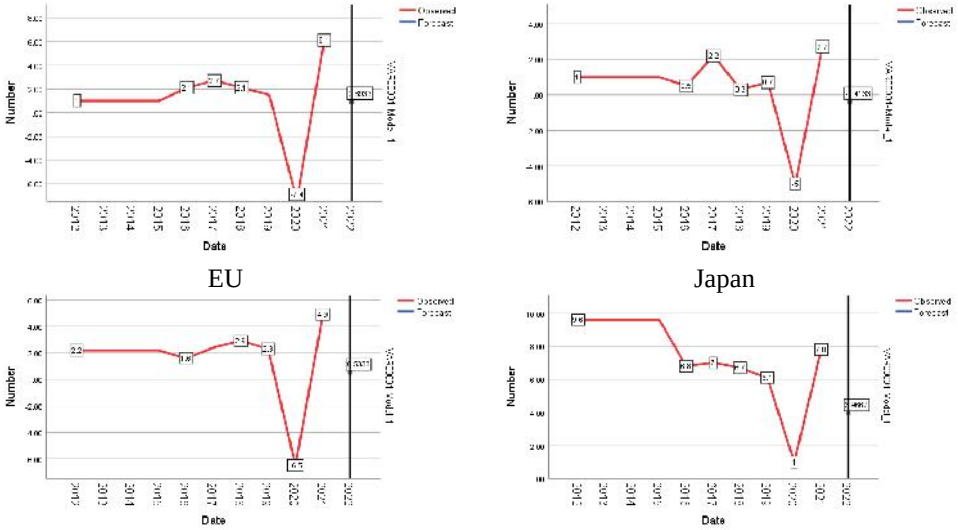

Figure 3. GDP's Forecast in the Post-Pandemic Statistics (bn. Euro)

Source: Author's Contribution

According to data from Figure 3, the high economic growth rates are not possible in 2022. All economic entities analysed in this paper will face to a decrease in their GDP growth rates.

The economic gaps between the above four global actors in 2022 are presented in Table 6.

Table 6. The Economic Gap under the Pandemic Impact in 2022 (bn. Euros)

GDP/Year	$g_{EU\text{-}USA}$	$g_{EU\text{-}Japan}$	$g_{EU\text{-}China}$
2022	-5467.0	9001.4	-708.4
GDP/Year		$g_{Japan\text{-}USA}$	$g_{Japan\text{-}China}$
2022		-14468.4	-9709.8
GDP/Year			$g_{USA\text{-}China}$
2022			4758.6

Source: Author's Calculation

5. Conclusions

The analysis in this paper is supported by the changes in the official statistics as a result of the pandemic's impact on the global economy. The main indicator took into consideration was GDP, but it was analysed under a composite approach which covers unemployment rate and government gross debt, as well.

The analysis leads to the idea that there is a powerful connection between the Covid-19 pandemic and the global economic environment which is reflected in the official statistics. As a result, the first objective of the analysis (O1) was realised.

Using the official new statistics the ranking of the most important global economic actors can be rebuilt, according to the second objective of the research (O2).

Moreover, the present pandemic was able to change the ranks of these actors in the global economic top (O3 is achieved).

On the other hand, the analysis in the paper was realised according to the research three hypothesis.

The changes in the economic environment due to the pandemic were reflected in changes in the official statistics. As a result, the Eurostat data from autumn 2019 differ a lot from those from April 2020. The first hypothesis (H1) was verified.

The pandemic has a great impact on the economic environment. The decrease of the GDP for example depends directly by the increase of the pandemic's effects. This process is exactly reflected in the statistical reports. This means that the second hypothesis (H2) was verified, as well.

The economic huge decrease in 2020 is followed by an increase in 2021, but it will not enough to balance the economic results. Unfortunately, the forecasted data for 2022 talk about a very sensitive economic environment. As a result, the gaps between the global economic actors will significantly change. The third hypothesis (H3) is checked, too.

According to the forecasted data for 2022, China will decrease its economic gap to US economy and will obtain better results than EU economy, as well.

In fact, the China's GDP in 2022 will be 4758.6 bn. Euros less than the US' GDP, compared to 5199.8 bn. Euros in 2021. The same Chinese economy will obtain a greater GDP than the EU's economy (+708.4 bn. Euros) in 2022.

We can conclude that the real economic winner of this pandemic will be China, which will be able to come closer to USA as economic performances. And this will happen together with a greater increasing of the US' government gross debt during 2020-2022.

The limitations of the study are related to the impossibility to quantify all effects of the present pandemic.

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