Unemployment Rate in Poland and USA during COVID-19 Pandemic: A Case Study

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Abstract:

Purpose: The paper analyses the literature on research in unemployment, COVID-19 pandemic, and economic security. The paper focuses on the analysis, evaluation, and forecasting of unemployment rates in Poland and the USA regarding the impact of the COVID-19 pandemic and economic security.

Design/Methodology/Approach: The preliminary research was carried out by analyzing the monthly exchange rates of the dollar, ruble, euro, and yen for the period 2004-2020. All preliminary studies in the form of analyses of exchange rate quotations and oil prices are presented in one linear chart to observe the trends governing them in dynamic terms. Then, the analysis and assessment of unemployment rates in Poland and the USA were carried out monthly in 2010-2020. Regularities could be seen in the mass phenomena being observed. The forecasting will be carried out by using a combination of quantitative and qualitative methods.

Findings: The COVID-19 pandemic has caused the world economies to slow down due to border closures, the suspension of international passenger transport, and restrictions on buying and selling in a global approach. The continuing restrictions related to the suspension of air traffic have resulted in a lack of demand for energy resources in diesel fuel. The phenomenon observed has caused world oil prices to fall to their lowest level in many years. The proclamation of the pandemic has also had an impact on strong increases and decreases in exchange rate quotations. This proclamation, in turn, has resulted in an increase in unemployment in many world economies.

Practical Implications: This paper analyzes, evaluates, and forecasts unemployment rates in Poland and the USA for August and September 2020 during the impact of the COVID-19 pandemic in terms of economic security.

Originality: The prices are analyzed before and after the COVID-19 outbreak.

Keywords: Unemployment rates, COVID-19 pandemic, economic security.

JEL codes: C51, E31, E37, E64.

Paper type: Research paper.

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1. Introduction

The study formulates a research problem that focuses on analyzing, assessing, and forecasting unemployment rates in Poland and the USA regarding the impact of the COVID-19 pandemic and economic security.

The research aims to analyze, evaluate, and forecast unemployment rates in Poland and the USA for August and September 2020 during the impact of the COVID-19 pandemic in terms of economic security. The subject of the research will be the quotations of the aforementioned currencies and oil prices and unemployment rates in Poland and the USA.

The article uses a research method in the form of a literature review on exchange rate quotations, oil prices, and unemployment rates in Poland and the USA. The following research techniques were used: line charts, bar charts, grouping.

2. Literature Review

Unemployment comes up when supply exceeds demand for labor. It is considered as a resource measured at a specific point in time. According to researchers, the unemployed are those who want to work, but do not have a job with the wages available on the market. Unemployment became a social problem in the 19th century and the subject of many analyzes preceded by its permanent record (Hobson, 1896). In economic sciences, the phenomenon of unemployment is interpreted by the theories of the labor market and employment, which refer to the essence, conditions and causes of its emergence.

The unemployment rate is characteristic for the labor market. It is interpreted as the percentage of the labor force that is unemployed but registered as a jobseeker (D. Begg, G. Vernasca, S. Fischer, R. Dornbusch, 2014; Macroeconomic, p. 304). In the USA, since the 1970s, the unemployed have been divided into certain groups: Blacks, whites, Asians, Hispanics [https://www.bankier.pl/wiadomosc/Etniczne-bezrobocie-w-USA-Czarni-za-latynosami-bialymi- i-Asian-7318770.html, as of October 27, 2020].

The highest unemployment rate in the years 2000-2014 was represented by black people. Latinos are in the second place. The third position is taken by white people, and the group with the lowest unemployment rates are the Asians. [https://www.bankier.pl/wiadomosc/Etniczne-bezrobocie-w-USA-Czarni-za-latynosami-bialymi-i-Azjatami-7318770.html , as of October 27, 2020].

In the United States, there is another breakdown of unemployment rate by age and gender, where people are aggregated into the following groups: women over 20, men over 20, and people aged 16 to 19.

The highest observed level of unemployment in the US was seen during the Great Depression of 1929-1942. One of the main reasons of this crisis is the gigantic speculation on the New York Stock Exchange. Speculation became dangerous as bogus companies entered the New York Stock Exchange. The whole phenomenon was accompanied by economic growth, then overproduction and a lack of supervision by the Federal Reserve System. The crisis resulted in the collapse of over 2,000 banks together with the deposits of the population. This in turn brought an increase in unemployment and quickly spilled over into other world stock exchanges and economies in other countries. The Great Depression led to many changes in politics, including the creation of totalitarian states (J.K. Galbraith, Money, Origin and Fate, 2003) and questioning the paradigm of effective functioning of the market mechanism (D. Begg, G. Vernasca, S. Fischer, R. Dornbusch, 2014; Macroeconomic, pp. 365-366).

In the last 25 years, unemployment in Poland has shown both upward and downward trends. It was caused by closing down of large employing establishments, privatization, opening the market to foreign capital, and the great migration for work [http://jobtime.pl/porada/9/126/Bezrobocie-w-Polsce-w-ostatnich-25-latach. html, as of October 27, 2020].

Since Poland's accession to the European Union, unemployment has significantly decreased and is currently hovering around 6 points [https://stat.gov.pl/obszary-tematyczne/rynek-pracy/bezrobocie-reawodowane/stopa-bezrobocia-reawodanego-w-latach-1990-2020,4,1.html; as of October 27, 2020].

In December 2019, infectious disease was observed in Wuhan, China, called COVID-19 (Coronavirus Disease 2019) (Gadzala, L., 2020; Tia *et al.,* 2020). The disease has shown a rapid spread and mortality among older patients, usually due to upper respiratory inefficiency or pneumonia (Gary and Harloff, 2020). The World Health Organisation identified COVID-19 as a pandemic on March 11, 2020 (Gadzala, 2020; Satomi, *et al.,* 2020). Countries chose various strategies to stop the spread of COVID-19. The COVID-19 pandemic has slowed down many world economies (Luisetto, Fiazza, and Latiyshev, 2020; Grima *et al.,* 2020; Khan *et al.,* 2020).

One of the consequences of the pandemic is also an increase in unemployment in many countries (Kawohl and Nordt, 2020; Grima *et al.,* 2020). In April 2020, the US saw a record high unemployment rate, 14.7 percentage points, due to the loss of around 20.5 million jobs (Tappe, 2020). The large falls in the unemployment rate occurred in April 2020 in three US states, Florida, Connecticut, and Minnesota, bringing the overall unemployment level down to 13.3 percentage points. In the remaining US states, unemployment remained high (usfacts.org, 2020).

During the COVID-19 pandemic in Poland, the unemployment rate in June and July 2020 remained at 6 percentage points. This is a slight increase for the previous

few months (Business insider, 2020). During the current pandemic, individual countries need to ensure economic security. A critical analysis of the literature makes it possible to state that economic security "is a state of reality in which it is possible to develop the economy in harmony and ensure an adequate standard of living for citizens" (Redo, Wójtowicz, and Ciak, 2018). One aspect of maintaining the economic security of the State is to ensure a low level of unemployment. The study carried out research related to the analysis, assessment, and forecasting of unemployment rates in Poland and the USA for August and September 2020 in terms of economic security.

3. Analysis of Primary Data

The research started with a multidimensional comparative analysis of the four currency exchange rate quotations and the crude oil price by comparing, on a linear chart, five groups of time series related to daily exchange rate quotations the yuan, the dollar, the euro, and the rouble from August 17, 2019, to August 17, 2020, and crude oil prices in US dollars per barrel in the same time frame. Each group of dependent variables is assigned its own Y-axis with a scale drawn. This action aimed to observe the trend from a dynamic perspective. The results are shown in Figure 1.

In the legend in Figure 1, a separate Y axis is drawn, and a scale is assigned for each of the five-time series. The Y axes and scales have been allocated as follows: yuan - first Y-axis - left side of the chart; rouble - second Y-axis - left side of the chart; diesel - first right Y-axis; dollar - second right Y-axis; euro - third right Y-axis.

Observation of the information presented in Figure 1 allows us to notice large changes in the exchange rate quotations in March's dynamic terms. Since the global pandemic COVID-19 (March 11, 2020) proclamation, there has been an increase in the exchange rates of the euro, the yuan, and the dollar and a strong fall in the price of the rouble, caused by the fall in oil prices. Due to the applied multidimensional benchmarking, it is possible to observe a continued increase in the quotations of the currencies in question (dollar, euro, yuan) from the 11th of March to the 26th of May 2020. On March 11, 2020, the price for the dollar was PLN 3.82, while in the period from the 11th of March to the 26th of May, it oscillated around the median PLN 4.18 per dollar. In the case of the euro on March 11, 2020, the price was PLN 4.32, while from the 11th of March to the 26th of May, it oscillated around the median of PLN 4.54 per euro. The price of yuan on the 11th of March 2020 was PLN 0.55, and in the period from the 11th of March to the 26th of May, it oscillated around the median of PLN 0.59 per yuan. Since May 27, 2020, there has been a fall in the euro's exchange rates, the dollar, and the yuan. The median for the three exchange rates from the 27th of May to the 17th of August 2020 was: the euro - PLN 4.44 - down from PLN 4.54; the dollar - PLN 3.93 - down from PLN 4.18; and the yuan - PLN 0.56 - down from PLN 0.59.

Figure 1. *Linear chart of primary data on a daily basis from August 17, 2019 to August 17, 2020 on the USD, Rouble, Euro and Yuan (renminbi) exchange rate quotations in PLN and primary data on a daily basis in 2020 on oil prices in USD per barrel*
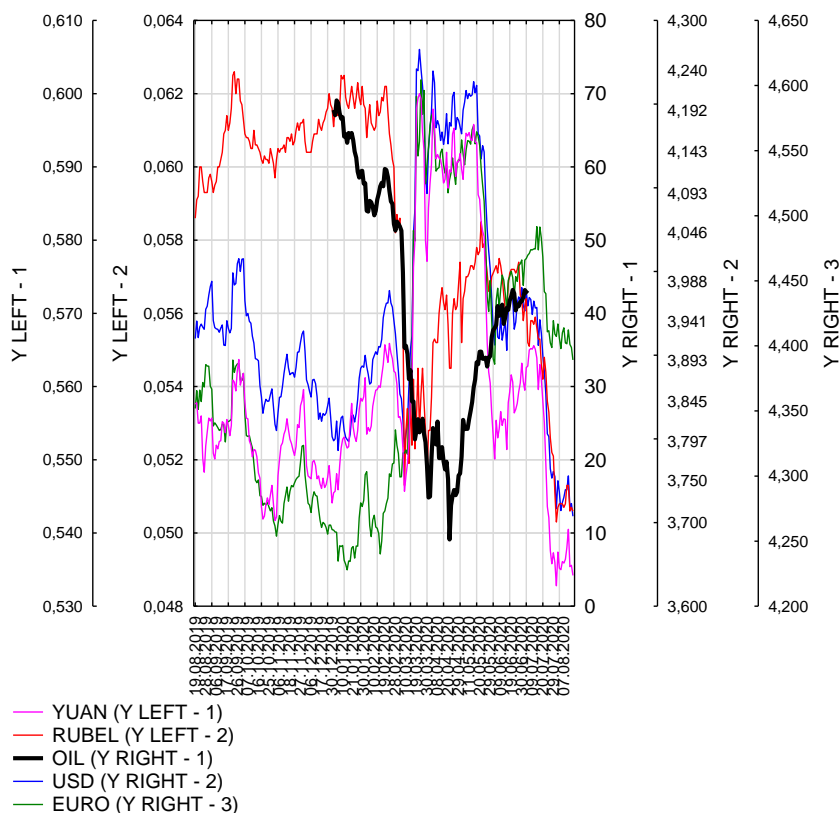
YUAN (Y LEFT - 1)
RUBEL (Y LEFT - 2)
OIL (Y RIGHT - 1)
USD (Y RIGHT - 2)
EURO (Y RIGHT - 3)

The observation shows that the currency which obtained the most favorable quotations during the COVID-19 pandemic was the euro because the median price for the euro before the COVID-19 pandemic (from August 19, 2019, to March 10, 2020) was PLN 4.30 and increased to the level (March 11, 2020, to August 17, 2020) during COVID-19 PLN 4.47. In the case of the dollar, the median of quotations (the period from August 19, 2019, to March 10, 2020) was 3.87 and increased in the period COVID-19 to the median (from the 11th of March to the 17th of August 2020) 3.97 PLN. Simultaneously, the median of the yuan exchange rate (the period from August 19, 2019, to March 10, 2020) was 0.55 and increased in the COVID-19 period to the median (from the 11th of March to the 17th of August 2020) 0.56 PLN.

It should also be mentioned that the price of the rouble after the proclamation of the COVID-19 pandemic reported large drops from the level (time interval August 19, 2019, to March 10, 2020) of the median 0.0609 to (from the 11th of March to the 17th of August 2020) 0.0558.

The fall in the price of the rouble was dictated by the fall in oil prices. Low prices per barrel of oil during the COVID-19 pandemic have been observed since early March 2020. The lowest price per barrel was reported on the 21st of April 2020, at USD 9.12. From the 9th of March 2020 to the 4th of June 2020, the price per barrel was below USD 40 per day. The median (from the 9th of March 2020 to the 4th of June 2020) of prices per barrel was USD 24.42, while the arithmetic means 25.59.

The standard deviation from the arithmetic means over the period under consideration was USD 9.31 per barrel. Between the 5th of June and the 6th of July 2020, the price per barrel of oil was slightly above USD 40. The median for the period in question was USD 41.18, the arithmetic mean was USD 41.35 per barrel, while the standard deviation from the mean was USD 1.28 per barrel of oil.
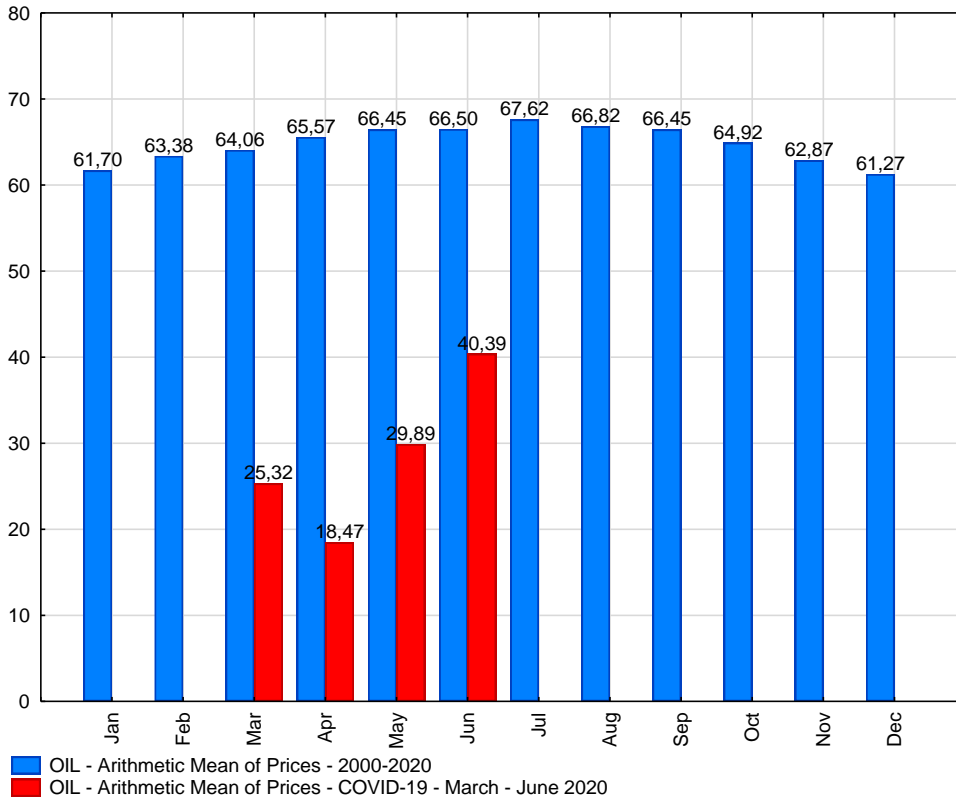
For illustrative purposes, in order to examine the level of diesel prices during the COVID-19 pandemic, a categorized bar chart of primary data on average oil prices per barrel in US dollars over the twelve months (primary data - oil prices daily from May 2000 to May 2020) was drawn up.

The information presented in Figure 2 shows that during the COVID-19 pandemic, the price per barrel of oil in US dollars was significantly lower than the arithmetical averages for the same months between 2000 and 2020. In March, the arithmetic average per barrel of oil in dollars between 2000 and 2020 was 64.06, while in March 2020 (from the 11th to the 31st of March 2020), it fell to 25.32 dollars. Similar trends were observed in the following months. In April 2020, the arithmetic average (2000-2020) was USD 65.57 per barrel of oil and fell to USD 18.47 per barrel. In May, it fell from $66.45 per barrel to $29.89 per barrel. In June, the dollar per barrel of oil fell from 66.50 to 40.39 (June 2020 price).

The low oil prices were caused by closing borders and stopping global transport. This, in turn, has caused an increase in the unemployment rate. For research purposes, Figure 3 analyses the monthly unemployment rates recorded in the USA and Poland from January 2010 to July 2020 and the USA's monthly unemployment rates from April 1929 to June 1942.

Figure 3 shows that between January 2010 and February 2020, there was a declining linear trend in the level of unemployment in the USA, which shows the stability and strength of the economy in question. In April 2020, the US saw a high increase in the unemployment rate to 14.7 percentage points. In the USA, around 20 million people lost their jobs in April 2020 (abs news, 2020). The COVID-19 pandemic is cited as the cause of the rise in unemployment in the USA.

Figure 2. *Categorised bar chart of primary data on average oil prices per barrel in US dollars over the twelve months (primary data - oil prices on a daily basis from May 2000 to May 2020) and arithmetical averages per barrel in US dollars during the COVID-19 pandemic (March to June 2020)*

Such a high level of unemployment (about 26 percentage points) was in the USA in the years 1929-1942 (Figure 3), but it should be stressed that the dynamics of growth, when considering the unemployment rates in one unit of time - months, was much lower in the years 1929-1942 than during the COVID-19 pandemic (an increase of 11.20 percentage points in the USA from February to April 2020).

In the case of Poland's unemployment rate, from February 2014 (February 2014 - 13.90 percentage points) to October 2019 (October 2019 - 5 percentage points), a fall of 8.90 percentage points can be seen. Between February 2019 and June 2020, on the other hand, there was a slight increase of around 1 percentage point.

Figure 3. *Linear chart of the monthly unemployment rate from January 2010 to July 2020 in % points in the USA and Poland (first X axis) and in the USA from April 1929 to June 1942 (second X axis) in % points*
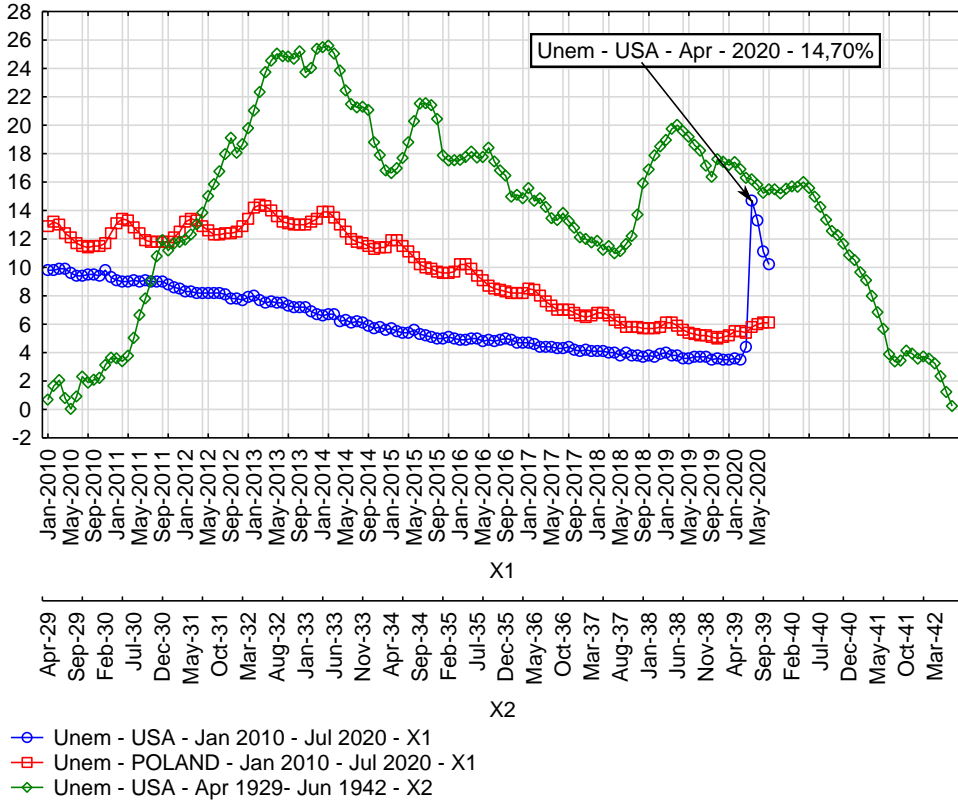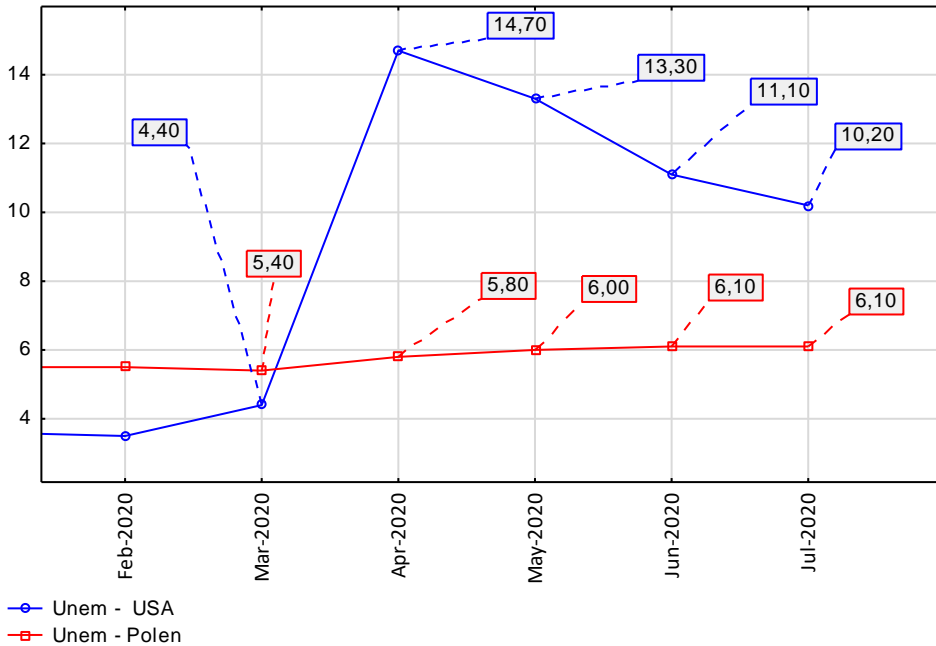

Source: *The in-house elaboration based on data obtained from the website: https://fred.stlouisfed.org/series/WTISPLC [the state as of August 17, 2020].*

4. Forecasting

For research purposes, to forecast future unemployment rates in Poland and the USA, the data on the USA and Poland's unemployment rate from February to July 2020 are presented in a categorized linear chart (Figure 4). Figure 4 shows that in April 2020, the US had a record high unemployment rate of 14.70%. From May to July 2020, there is a downward trend in the US's unemployment rate to 10.20% (July 2020). However, in Poland, the unemployment rate from March 2020 to July 2020 shows a slight increase of around 0.7 percentage points (from 5.40% in March 2020 to 6.10% in June 2020). To forecast the time series of unemployment rates in Poland and the USA for August and September 2020, it was decided to use fixed-base dynamics indicators. The unemployment rate reported in March 2020 was chosen as the fixed rate. Fixed-base dynamics indicators for unemployment rates in the USA and Poland are outlined in Figure 5.

Figure 4 Categorised linear chart of unemployment rate on a monthly basis from February to July 2020 in % points

Figure 5. *Categorised linear chart of fixed-base dynamics indicators of unemployment rate on a monthly basis (base April 2020) for the USA and Poland*
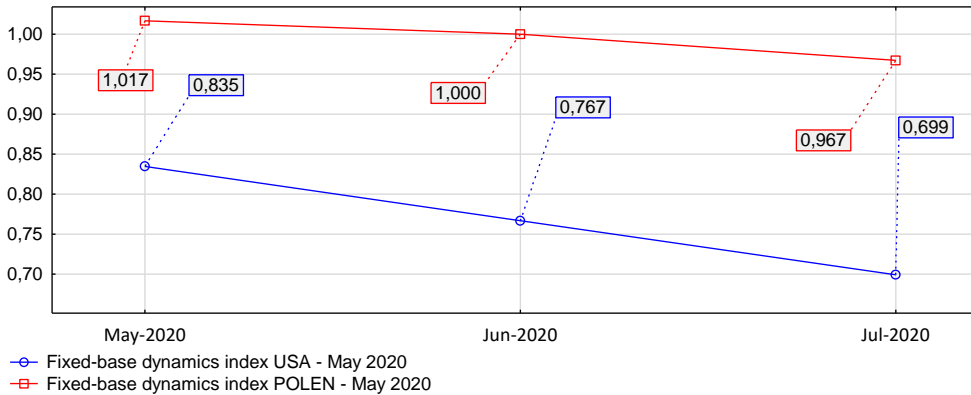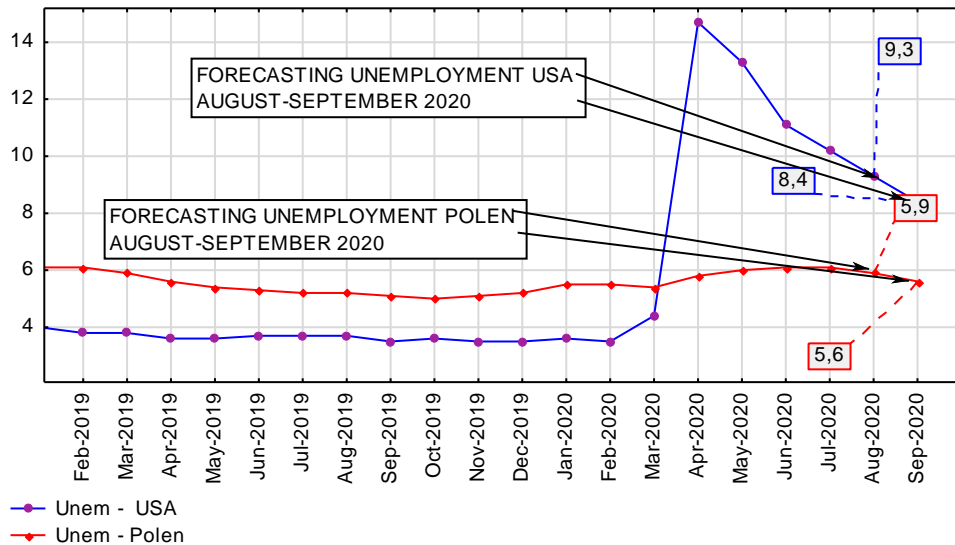
The information presented in Figure 5 let us conclude that the greatest falls in the unemployment rate between March and June 2020 were reported in the USA. The

fall in June 2020 compared to March 2020 was 0.699. In Poland, on the other hand, in the same period of time, the fall was only 0.967.

Based on the outlined fixed-base dynamics indicators, a forecast of unemployment rates for the USA and Poland for August and September 2020 was calculated. The results are shown in Figure 6.

Figure 6. Categorised linear chart of the forecast made by using fixed-base dynamics indicators (fixed April 2020) for the USA and Poland in percentage points

Source: *The in-house elaboration based on data obtained from the website: https://fred.stlouisfed.org/series/WTISPLC [the state as of August 17, 2020].*

The observation of the information presented in Figure 6 allows us to conclude that the downward trend in unemployment rates will continue in August and September in the USA and Poland. The forecast for the US's unemployment rate is 9.30% for August 2020 and 8.4% for September.

Table 1. *Analysis of the American decision-making process by means of the cultural forecasting method shaping economic security against the COVID-19 2019/2020 epidemic*

	WR/NR	SM/KO	RW/ST	DT/KT	SL/KM	WN/NN	WS/NS
The society at large: USA	0	0	0	1	0	1	1
Description of the specific	The perception of	Self-improvement of the	Aiming to weaken	Inability to predict the consequenc	The launch of economic	There is no concern	Inability to fully

impact of the individual code values on the direction of policy decisions shaping economic security in the face of the COVID-19 pandemic	international reality through the prism of the superpower countries, and therefore also of spheres of interest and economic influence.	country's own economic goals.	other economic powers, especially China.	es of the country's own actions.	tools is limited in scope and therefore it is impossible to control the implications of their use.	to initiate risky situations if they can bring specific benefits.	exploit the country's own potential (or that of the country's allies).
Description of the impact of the averaged code value on the development direction of the COVID-19 pandemic	The economic crisis caused by COVID-19 was seen as an opportunity to weaken the Chinese economy. The implications that have hit all the economies of the world, including the US, came as a big surprise to the United States, due to the impossibility of anticipating the full spectrum of effects of various international situations. At the same time, the temporary weakening or freezing of the economy has already happened many times in US history and has been used for later, stable growth. In the absence of a complementary view and understanding of the economic phenomenon caused by the COVID-19 epidemic, it can be assumed that Washington has a similar view of the current situation, seeking to use its implications to weaken the Chinese and partly Russian economies. This means that Washington will not be interested in a rapid return to the previous economic situation, but it will act through familiar economic mechanisms in such a way that the effect of the epidemic lasts long enough to hit the main international rivals.						

Source: In-house elaboration based on the cultural forecasting method presented in Górnikiewicz. 2018 Cultural forecasting of national and international security threats. Military University of Technology (WAT).

The authors have compiled quantitative and qualitative data, which made it possible not only to present the current state of the economy of the countries under investigation but also to develop a forecast of the directions of the decision-making process in the area of economic stability and economic security of the societies under investigation: Polish and American. The comparison of economic data with data showing probable decision-making process showed that decision-making centers could be willing to use the current epidemiological situation to implement.

5. Summary and Conclusions

The COVID-19 pandemic has slowed down the economies of many countries and threatens their economic security. Its impact has been manifested by the jumps in exchange rate quotations, the fall in oil prices, and the rise in unemployment. The application of multidimensional benchmarking made it observable since the announcement of the global pandemic COVID-19 (March 11, 2020). An increase in the exchange rates of the euro, the yuan, and the dollar and a strong fall in the

rouble price caused by the fall in oil prices. The exchange rate increases for the dollar, euro, and yuan continued until May 26, 2020. Since May 27, 2020, there have been visible falls in the exchange rates of these currencies. The median for the three exchange rates from the 27th of May to the 17th of August 2020 was: the euro - PLN 4.44 - down from PLN 4.54 (median from the 11th to the 26th of March 2020); the dollar - PLN 3.93 - down from PLN 4.18 (median from the 11th to the 26th of March 2020) and the yuan - PLN 0.56 - down from PLN 0.59 (median from the 11th to the 26th of March 2020).

It is important to observe that the currency which obtained the most favorable quotations during the COVID-19 pandemic was the euro because the median price for the euro before the COVID-19 pandemic (from August 19, 2019, to March 10, 2020) was PLN 4.30 and increased to the level (March 11, 2020, to August 17, 2020) during COVID-19 PLN 4.47.

It should also be mentioned that the price of the rouble after the proclamation of the COVID-19 pandemic reported large drops from the level (time interval August 19, 2019, to March 10, 2020) of the median 0.0609 to (from the 11th of March to the 17th of August 2020) 0.0558. The fall in the price of the rouble was dictated by the fall in oil prices. Low prices per barrel of oil during the COVID-19 pandemic have been observed since early March 2020.

The lowest reported price per barrel is USD 9.12 on April 21, 2020. From the 9th of March 2020 to the 4th of June 2020, the price per barrel was below USD 40 a day. Such a low oil price is a serious threat to Russia, whose budget income is more than fifty percent based on oil sales. A serious and adverse effect of COVID-19 is the increase in the US unemployment rate to 14.7 percentage points in April 2020. It should be stressed that there has not been such rapid growth in US history since 1929 (the time of the first records of unemployment rates). Poland has also reported an increase in interest rates to 6.1 percentage points.

The study calculates fixed-base dynamics indicators, which were used to forecast the USA and Poland's unemployment rates for August and September 2020. The rationale for applying dynamic indicators constantly and adopting a downward trend to the constructed forecasting model is information about actions taken by the Polish and US governments to reduce the unemployment rate in dynamic terms. The forecasts showed a downward trend in unemployment rates. In the US, the unemployment rate forecast for August 2020 is 9.3%, and for September 2020, it is 8.4%. In Poland, the forecast for August 2020 is 5.9%, and for September 2020, it is 5.6%.

Stabilizing world economies after the changes caused by the prevailing pandemic will not be a short-term process. The strength of COVID-19 is demonstrated by the dynamic increase in the unemployment rate in the world's strongest economy, the USA, which has lost around 20 million jobs in a short period of time. Another

aspect of the importance of the strength of the pandemic is the long-term fall in oil prices and the strong fluctuations in exchange rates in different time frames.

Given the cultural forecasting of the decision-making process of selected societies, it can be assumed that American decision-making centers may see the slowdown in the economy caused by the global epidemic as a kind of economic lever that can be used to ensure stable growth, so Washington will probably not seek to return to the economic level before the COVID-19 pandemic outbreak. Instead, the emphasis will probably be on slow and stable growth that will make it possible to exceed the level of prosperity achieved so far.

The slowdown in economic development 2019/2020 may also serve to unburden the rapidly growing financial bubble of previous years. The freezing of the financial sector's economy and capital consolidation (mainly banks) would prepare the strong ground for future slow growth. The slowly falling unemployment rate illustrates the slowly recovering economic condition of the United States.

In comparison with the dynamics of growth and decline in unemployment in economically weaker Poland, it can be assumed that Washington's slow actions may be purposeful, and what is more, they are in line with the American decision-making process reproduced in research. In conclusion, concerning the results of the studies carried out, it can also be assumed that, in response to Washington's forecast policy towards Moscow and Beijing, China will respond to this particular activity hitting the foundations of the Chinese economy.

In fact, all that remains for Russia is to escalate military tensions to force the United States to negotiate and make a concerted effort to increase oil prices, which would be inconsistent with a predicted Washington's policy. At the same time, the parallel activities carried out by Beijing (economic impact) and Moscow (military and hybrid impact) may lead to the outbreak of a real conflict which, in the next few years, will lead to the crystallization of divisions among many societies into one of the three spheres of influence controlled by these superpowers.

India, Japan, Iran, Turkey, Brazil, Israel, Saudi Arabia, the Emirates, and even Australia must not be forgotten in this context either. All of these countries, depending on their potential, will seek to ensure that their own strategic interests are pursued by conducting completely independent policies or, to some extent, in line with one of the competing superpowers' policies.

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