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MACROECONOMIC DETERMINANTS OF INTERNATIONAL DEVELOPMENT OF POLAND, MOLDOVA AND UKRAINE 2011–2021

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ABSTRACT

Macroeconomic indicators allow for a broad analysis of the reality under study. Even a general and rudimentary study can provide a lot of valuable conclusions to build up a picture of a given economy. Such analysis is particularly important in the perspective of international cooperation. Comparing the economic situation of countries that have the potential to cooperate makes it possible to see the commonalities that can strengthen ties, but also the differences that can harm this coexistence. Particularly in times of transnational crises such as the Covid 19 pandemic and the war in Ukraine, the identification of economic strengths and weaknesses is crucial for further development. Awareness of opportunities and threats will allow strategies to be developed and directions to be taken. Pandemic lockdowns have left strong marks on the economy. Disrupted supply chains, layoffs and other restrictions have strongly changed the global economic situation. Subsequently, the armed conflict meant that sanctions imposed on the aggressors contributed to a further economic downturn also in the other countries not directly involved. Many countries faced dynamic economic changes. This paper will present the macroeconomic situation of Poland, Ukraine and Moldova during periods of change related to the pandemic and the armed conflict, which already began in 2014. Such an analysis will allow noticing analogies in the studied economies and will be a starting point for further analyses. It will be possible to note points of commonality but also those that represent differences.

Key words: Macroeconomy, cooperation, economic crisis.

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1. Introduction

The analysis of the international determinants of economic development makes it possible to note development trends occurring in cooperating economies. These similarities can serve to tighten cooperation and build strong economic relations. The analysis of the phenomena occurring in the economies under study is important in this context. The similarities and differences revealed in this way may indicate directions for the development of cooperation and ways to counteract the existing barriers.

The goal of this article is to analyse the macroeconomic indicators of Poland, Moldova and Ukraine for the years 2011–2021. Data obtained from national and international databases will be analysed in terms of the dynamics of change and the general trend of development. The resulting picture of the analysed economies will enable a comparison to be made and conclusions to be drawn as to the degree of development and opportunities for further cooperation. The analysis will present basic macroeconomic measures such as Gross Domestic Product (GDP), inflation in relation to interest rates of national banks, unemployment and the Human Development Index (HDI). The analysis, which is very basic and simple in its form, will allow conclusions to be drawn about the economic situation in the countries studied. The years of analysis adopted capture the economic changes associated with the Covid 19 pandemic. Economic lockdowns have contributed to major turbulence in supply chains, production or employment. The new economic reality has forced many companies to completely change their business profile. This situation will be reflected in the development of individual macroeconomic indicators. In the last year, it is also important to take into account the situation of the war in Ukraine, which greatly affects the economic conditions in the countries directly affected by it and those involved in the conflict. Poland, Moldova and Ukraine itself are countries that are indirectly or directly involved in this conflict. A basic macroeconomic study can provide a basis for a broader analysis of the economy and draw conclusions about possible areas of international cooperation.

2. Gross Domestic Product

Economic growth is measured by the growth rate of real output or real national income. GDP measures the total value of output and total income in a national economy. Although it is a measure subject to many imperfections for the purposes of this study, it is sufficient to describe the economies under study (Begg, Fischer 2014). To make it more meaningful for the regions studied, GDP per capita in US dollars will be presented.

In order to get a more detailed understanding of the changes in GDP per capita over this period, it might be helpful to calculate the average annual growth rate. This can give us an idea of the average rate at which GDP per capita has increased or decreased from year to year.

Table 1. GDP in Poland, Moldova and Ukraine in years 2011–2021.

Country	Gross Domestic Product per capita in USD					
	2011	**% of change 2016/2011**	**2016**	**% of change 2021/2016**	**2021**	**% of change 2021/2011**
Poland	13776	-10%	12378	45%	17999	31%
Moldova	2941	-2%	2879	82%	5230	78%
Ukraine	3705	-41%	2188	121%	4836	31%

Source: own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.

As can be seen in Table 1, GDP growth occurred in each of the countries studied between 2011 and 2021. The growth dynamics for Poland and Ukraine are very similar. It should be noted how much growth occurred in Moldova during the period under study. In Poland, GDP per capita is by far the highest among the countries studied. It is worth noting the decrease in GDP per capita in each of the studied economies between 2011 and 2016 in Moldova the decrease was the lowest and in Ukraine it was over 40%.

The first figure allows to see how GDP per capita developed in the period under review between 2011 and 2021, where we can see a great deal of similarity, despite the fact that in terms of value, declines and increases occurred in similar periods.

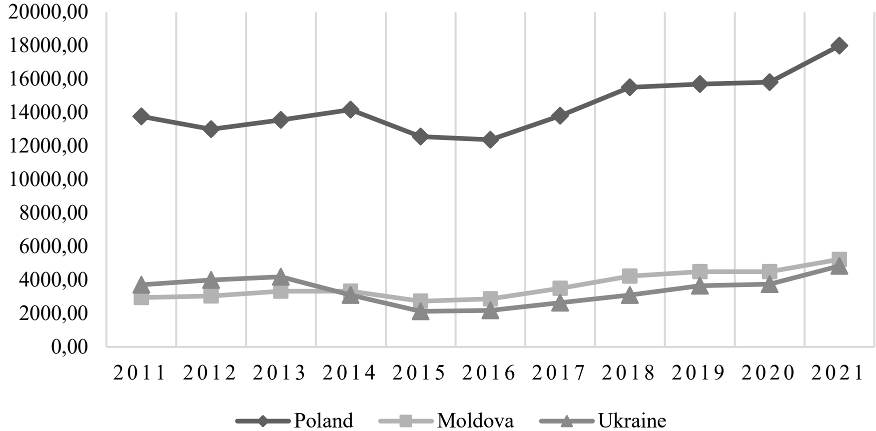

Figure 1. GDP in Poland, Ukraine and Moldova in years 2011–2021

Source: own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.

Based on the data in the table, Ukraine's GDP per capita over the 11 years does not show much variability. It appears that GDP per capita has generally trended upwards over the last decade, with some fluctuations from year to year. The year with the highest GDP per capita was 2021, at \$4,836, while the year with the lowest was 2016, at \$2,188. This can be attributed to the various economic and political factors that affected the country's economy in each of the different years. To calculate the average annual growth rate it is possible to use the following formula:

$$((GDP\ per\ capita\ in\ year\ X\ /\ GDP\ per\ capita\ in\ year\ Y)\ \hat{}\ (1\ /\ number\ of\ years))-1$$

According to these data, to calculate the average annual growth rate in Ukraine between 2011 and 2021the formula can be written as follows:

$$((\$4{,}836\ /\ \$3{,}705)\ \hat{}\ (1\ /\ 11))-1$$

This gives an average annual growth rate of approximately 2.9% over the past decade. The result suggests that, on average, the economy in Ukraine was growing at a relatively steady rate, although there have been some fluctuations from year to year. Overall, GDP per capita increased by 30% during this period.

There are similarities in the development of GDP in the countries studied. Declines and increases occur in the same periods.

3. Inflation

Another feature of the economies under examination is inflation, i.e. the increase in prices over time. Inflation is a continuous rise in prices throughout the economy. This phenomenon occurs continuously and affects not just one branch but prices in all sectors of the economy. However, price stability should not be associated only with low inflation (Ciżkowicz, Rzońca 2009). Recent years have brought decisive changes in inflation. One has to bear in mind the pandemic period and the varying policies of central banks, which can significantly translate into an increase or decrease in the inflation rate. Table 2 shows the evolution of inflation in the economies under study over the period 2011 2021.

Table 2. Inflation in Poland, Moldova and Ukraine in years 2011–2021.

Country	Inflation, consumer prices (annual %)					
	2011	% of change 2016/2011	2016	% of change 2021/2016	2021	% of change 2021/2011
Poland	4.24	-116%	-0.66	-860%	5.06	19%
Moldova	7.69	-17%	6.36	-20%	5.11	-34%
Ukraine	7.96	75%	13.91	-33%	9.36	18%

Source: own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.

The data show that the inflation rate in Ukraine has been highly variable over the past decade, with some years showing relatively high levels of inflation and others showing relatively low levels of inflation. Thus, the highest inflation rate in Ukraine over this time period was 48.70% in 2015, while the lowest inflation rate was -0.24% in 2013.

The rate of inflation in Ukraine has been particularly high in some years due to a variety of factors, such as economic conditions, monetary policy, and supply and demand. For example, in 2015 may have been influenced by economic uncertainty and political instability in the country at the time.

Through the decade of 2011 and 2021, Moldova has pictured lower and, at some point, really high rates of inflation. As it is present on Figure 2 from 2011 to 2021 there was a general decrease in the inflation rate, with small gaps in the year of 2015 and 2021, when the inflation rate rose a bit. But, due to the political, social, economic crises that are going on in the world now, at the beginning of 2022 the rates if inflation began to rise really fast in Moldova. For example, in January of last year, according to Table 4, the rate of inflation in Moldova was 16.56%, in February it became 18.52%, continuing with this increasing trend, it went to 31.41% in November 2022. Note how similar inflation readings were recorded in Poland and Moldova in 2021. The average annual inflation was then almost identical. This makes further inflation trends in these countries all the more interesting. In the last days of 2022, inflation in Moldova was almost twice as high as in Poland with the interest rate three times higher.

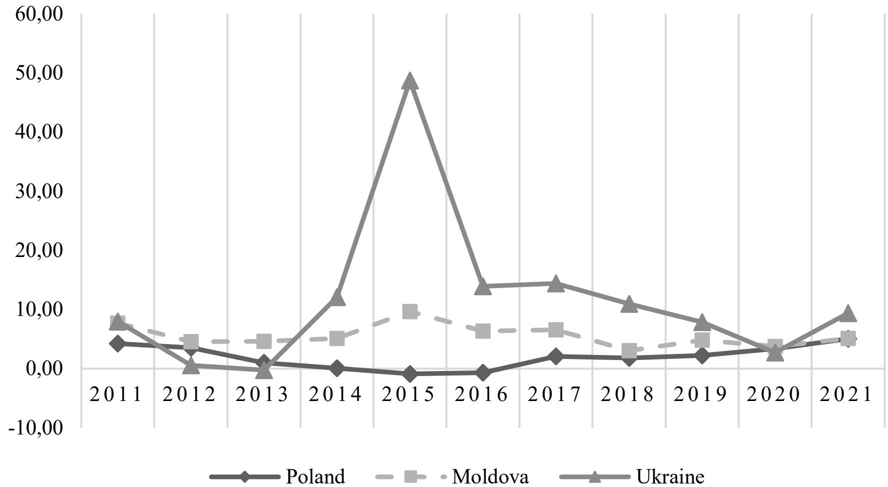

Figure 2. Inflation in Poland, Ukraine and Moldova in years 2011–2021

Source: own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.

The topic of inflation can be particularly interesting in the context of central bank policy. Central banks have the ability to control and change the level of interest rates. This significantly affects the money supply in the economy and can be a tool to combat high inflation. Such a process can be observed in Poland and Moldova, where interest rates have changed significantly. For instance, in 2015 the interest rates in Moldova were at a very high level, reaching 19.5%. This happened due to the political uncertainty that was present at that time in Moldova, having the pro-socialist party win in the Parliamentary Elections. After some time, exactly in 2020, when the pandemic was at its peak, the interest rates got down to 2.65%. But, starting with 2021, the rate began to increase again, reaching in 2022 the full 20%, caused by the armed conflict and not only.

Table 3. Interest rates in Poland and Moldova in years 2020–2022

Moldova		**Poland**	
Date of change	**Interest rate (%)**	**Date of change**	**Interest rate (%)**
04.03.2020	4.5	18.03.2020	1
20.03.2020	3.25	09.04.2020	0.5
06.08.2020	3	29.05.2020	0.1
09.09.2020	2.75	05.01.2022	2.25
06.11.2020	2.65	09.02.2022	2.75
30.07.2021	3.65	09.03.2022	3.5
06.09.2021	4.65	07.04.2022	4.5
05.10.2021	5.5	06.05.2022	5.25
03.12.2021	6.5	09.06.2022	6
13.01.2022	8.5	08.07.2022	6.5
15.02.2022	10.5	08.09.2022	6.75
16.03.2022	12.5		
05.05.2022	15.5		
03.06.2022	18.5		
04.08.2022	21.5		
05.12.2022	20		

Source: own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.

The table presents the changes in interest rates in Poland and Moldova between 2020 and 2022. This period seems particularly significant as it falls in the post-pandemic years. Inflation in Poland and Moldova in both countries remained at very similar levels. It was almost identical in 2021. This corresponds interestingly with the inflation performance in 2022. It was increasing in Poland and Moldova at the time.

Table 4. Inflation in Poland and Moldova in year 2022.

Month	**Moldovan Inflation rate in 2022 (%)**	**Polish Inflation rate in 2022 (%)**
01.01.2022	16.56	9.2
01.02.2022	18.52	8.5
01.03.2022	22.16	10.9
01.04.2022	27.07	12.4
01.05.2022	29.05	13.9
01.06.2022	31.83	15.5
01.07.2022	33.55	15.6
01.08.2022	34.29	16.1
01.09.2022	33.97	17.2
01.10.2022	34.62	17.9
01.11.2022	31.41	17.4
01.12.2022		16.6
Average inflation rate in 2022	**28.46**	**14.27**

Source: own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.

There is a certain slowness in the decision-making of the National Bank of Poland. Given that the inflation target in Poland is 2.5 per cent, decisions to fight inflation should have been taken much earlier. It is understandable to take measures to bolster the economy after a period of covidien blockades. However, offering money at such a low price thereafter may have taken the market out of equilibrium, which was already significantly disturbed after the economic lockdowns. Such a large amount of cheap money in circulation contributed to increased consumption and consequently price increases. In addition, unclear communication from the NBP may have misled consumers who, trusting the announcements of officials, willingly went into debt at variable interest rates, which could prove tragic after the increases. However, trying to catch up with inflation with the interest rate seems even more difficult for the economy to bear. The interest rate in Moldova in 2022 was raised to 20% with almost 30% inflation. These decisions seem very restrictive and such a harsh financial policy could prove very difficult for consumers. Much of Poland's inflation is imported from abroad, but its domestic outbreaks and problems, which have been growing for years, cannot be ignored.

4. Unemployment

Unemployment is a phenomenon in which people without a job actively seek work and are willing to take up employment. Unemployment is measured by the unemployment rate, which expresses the percentage of the unemployed in the economically active group. Analysis of unemployment is important because high unemployment can indicate a mismatch between labour demand and supply (Wojciechowski 2008). The table shows the unemployment rate in Poland, Moldova and Ukraine for the period 2011–2021.

Table 5. Unemployment in Poland, Moldova and Ukraine in years 2011–2021.

Country	Unemployment, total (% of total labor force) (national estimate)					
	2011	% of change 2016/2011	2016	% of change 2021/2016	2021	% of change 2021/2011
Poland	9.63	-36%	6.16	-45%	3.36	-65%
Moldova	2.68	-41%	1.59	-50%	0.79	-71%
Ukraine	7.85	19%	9.35	5%	9.83	25%

Source: own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.

According to data from the World Bank, the unemployment rate in Ukraine was highest in 2014, at 9.27%. The rate then decreased slightly to 9.14% in 2015 before remaining relatively stable around 9% from 2016 to 2021. This suggests that the unemployment rate in Ukraine did not vary significantly over the past decade. The largest percentage decrease in the unemployment rate over this time period was -0.70% in 2018. But on the other hand, the largest percentage increase was 2.10% in 2014. This means that the unemployment rate in Ukraine increased by approximately 2.10% from the previous year. These results may be influenced by economic conditions in the country, availability of jobs in the country skills and education of the labor force, etc.

Furthermore, there are a few reasons why the unemployment rate in Ukraine may have been higher in 2014. Some possible factors include:

- Economic conditions: Ukraine's economy faced a number of challenges, including a decrease in demand for its exports, high levels of government debt, and a decline in domestic consumption.
- Political instability: In 2014, Ukraine faced significant political instability, including the ouster of its president and the annexation of Crimea by Russia.

- Sectoral shifts: The unemployment rate in Ukraine may have also been affected by shifts in the country's industrial structure. In addition, one example can be the decline of certain industries, such as heavy manufacturing.

Against the background of such a difficult economic situation in Ukraine, it is important to note the decrease in unemployment in Poland. It was very significant between 2013 and 2019. Over the entire period under review, unemployment in Poland fell by 65%. Moldova stands out positively against the background of the countries studied, with a 71% drop in unemployment.

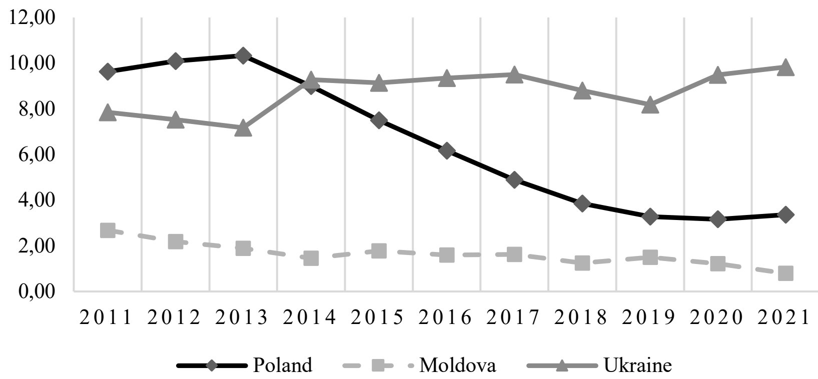

Figure 3. Unemployment in Poland, Ukraine and Moldova in years 2011–2021

Source: *own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.*

5. HDI

Analysis of macroeconomic indicators provides information on the general state of the economy, but many do not take into account the standard of living and quality of life of citizens. It is important to note that the HDI is a composite measure and does not capture all aspects of human development. There may still be significant disparities in human development within Ukraine, even though the country has a high overall HDI ranking.

For instance, there are some key challenges facing Ukraine in terms of human development include:

- Income inequality: There are significant disparities in income and wealth.
- Health care: Ukraine has a relatively low life expectancy compared to other countries with similar levels of development.
- Education: Ukraine has relatively high levels of education, but there are still disparities in access to education, particularly in rural areas.

Table 6. HDI in Poland, Moldova and Ukraine in years 2011–2021.

Country	HDI					
	2011	**position in world rank**	**2016**	**position in world rank**	**2021**	**position in world rank**
Poland	0.847	35	0.872	33	0.876	34
Moldova	0.736	84	0.756	87	0.767	80
Ukraine	0.769	69	0.779	73	0.773	77

Source: *own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.*

It can be seen that the HDI in each of the countries concerned increased during the period under review. This indicates an improving situation in these regions. However, when one considers the position in the international ranking, the increase in the index does not translate into advancement. Poland dropped one position in the ranking, despite the fact that the HDI level is higher than in 2011. The situation is similar for Ukraine. However, as an area of military action, this should be borne in mind when making conclusions. Moldova, despite a drop of three positions in 2016 compared to 2011, made a big jump in the ranking in 2021.

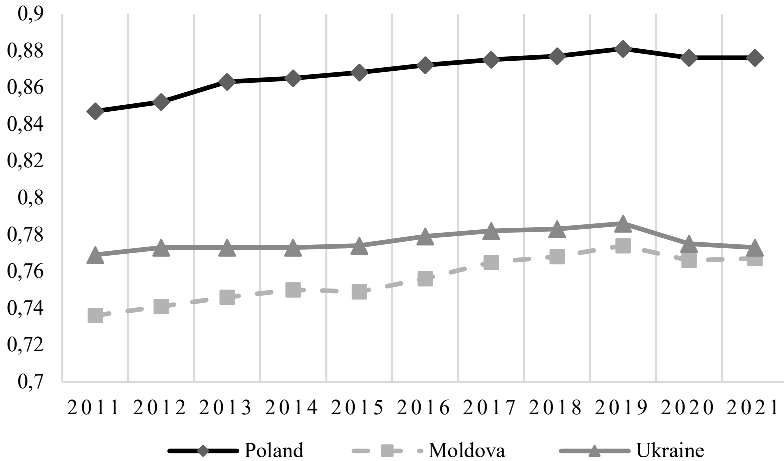

Figure 4. HDI in Poland, Ukraine and Moldova in years 2011–2021

Source: *own research based on data from Moldovan, Polish and Ukrainian National Statistics Offices and Worldbank data.*

When subjecting the entire study area to analysis, similar trends can be seen after 2019. At that time, there was a decline in each of these countries.

6. Summation

Even such a basic data analysis reveals differences and similarities between the economies of Poland, Ukraine and Moldova. Each of these countries at some point had to cope with high inflation, which in the case of Ukraine reached almost 50%. However, it is important to be aware that such a high reading of this indicator may have been caused by the first phase of Russian aggression in the country. Furthermore, it is important not to underestimate the impact of the Covid 19 pandemic on the state of the economy. The significant transformations that took place at that time are still being felt in the economy today and will probably affect many processes in the years to come as well. Comparing economies provides an opportunity to spot emerging changes that may be a sign of impending recession or other types of crises. Moldova and Poland, as border regions with Ukraine where armed conflict is currently taking place, are countries in need of special attention. Poland is very important as a transit region for military equipment. Moldova, too, may be strongly affected by armament activities just across the border. However, it is important to be aware that it is Ukraine's economy that will suffer the most and its recovery will be a very difficult and time-consuming process. Before the start of the full-scale conflict, it could be observed that Ukraine's economy began to approach that of Poland and Moldova. Of course, in terms of GDP, Poland was significantly ahead of the other two countries, but Ukraine began to approach the level of GDP in Moldova. Between the indicators examined, only unemployment in Ukraine significantly deviated negatively from the other countries. Even in terms of HDI, these countries, despite presenting different levels of this indicator during the period under study, reacted similarly. The situation of the global conflict will probably not remain without an impact on the economies of the countries studied. The disparities seen in Ukraine's economy may widen further and it will be a major challenge to rebuild the country's economy.

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