

INFLATION SURGE OF 2021-2023 AND MONETARY POLICY IN EASTERN EUROPEAN COUNTRIES

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SUMMARY

This article provides an in-depth analysis of the current global economic landscape, with a particular focus on Moldova, Ukraine, Romania, and Poland. The scope of this article is to examine central banks' responses to the challenges posed by 2021-2023 inflation. The research employs a combination of scientific methods, including empirical analysis and quantitative research. It utilizes data from reputable sources like the World Bank, National Banks, and National Bureaus of Statistics to examine various economic indicators. Statistical software R is used for data analysis, including Cross-Correlation Function (CCF) analysis.

In response to rising inflation, Moldova and Ukraine raised interest rates significantly. Moldova later eased rates gradually, while Ukraine maintained a high rate to safeguard its currency. Romania and Poland, with stronger economies, saw milder rate hikes and less inflation increase compared to other Eastern European nations, adopting a cautious and delayed approach and still didn't reduce their base rates.

A critical aspect of the research is the implementation of cross-correlation function (CCF) analysis, which is used to explore the time-lagged correlations between different economic variables, such as the Base policy rate, Commodity price index and IPC. The analyses conducted have revealed two significant patterns: a deficiency in the proactive adjustment of base rates by central banks in response to inflation and the lead-lag relationship between ascending commodity prices and inflation. These findings underscore the cautious approach taken by central banks and their delayed response to the impact of external factors on inflation dynamics.

Keywords: *inflation response, Eastern Europe, monetary policy, inflation surge*

Acest articol oferă o analiză aprofundată a peisajului economic global actual, cu un accent deosebit pe Moldova, Ucraina, România și Polonia. Scopul acestui articol este de a examina răspunsurile băncilor centrale la provocările generate de inflația 2021-2023. Cercetarea folosește o combinație de metode științifice, inclusiv analiză empirică și cercetare cantitativă. Utilizează date din surse reputate precum Banca Mondială, Băncile Naționale și Birourile Naționale de Statistică pentru a examina diferiți indicatori economici. Software-ul statistic R este utilizat pentru analiza datelor, inclusiv analiza funcției de corelare încrucișată (CCF).

Ca răspuns la creșterea inflației, Moldova și Ucraina au crescut semnificativ ratele dobânzilor. Ulterior, Moldova a redus ratele treptat, în timp ce Ucraina a menținut un nivel ridicat pentru a-și proteja moneda. România și Polonia, cu economii mai puternice, au înregistrat creșteri mai ușoare ale ratelor și o creștere mai mică a inflației în comparație cu alte țări din Europa de Est, adoptând o abordare prudentă și întârziată, fără a reduce ratele de bază.

Un aspect critic al cercetării este implementarea analizei funcției de corelație încrucișată (CCF), care este utilizată pentru a explora corelațiile decalate între diferite variabile economice, cum ar fi rata de politică de bază, indicele prețurilor mărfurilor și IPC. Analizele efectuate au evidențiat două modele semnificative: o deficiență în ajustarea pro activă a ratelor de bază de către băncile centrale ca răspuns la inflație și relația "lead-lag" dintre creșterea prețurilor mărfurilor și inflație. Aceste constatări subliniază abordarea precaută adoptată de băncile centrale și răspunsul lor întârziat la impactul factorilor externi asupra dinamicii inflației.

Cuvinte cheie: *răspuns la inflație, Europa de Est, politică monetară, creșterea inflației*

В данной статье представлен углубленный анализ текущего глобального экономического ландшафта с особым акцентом на Молдову, Украину, Румынию и Польшу. Целью данной статьи является изучение реакции центральных банков на проблемы, связанные с инфляцией 2021-2023 годов. В исследовании используется сочетание научных методов, включая эмпирический анализ и количественные исследования. Для изучения различных экономических показателей используются данные из авторитетных источников, таких как Всемирный банк, национальные банки и национальные статистические бюро. Статистическое программное обеспечение R используется для анализа данных, включая анализ функции взаимной корреляции (CCF).

В ответ на рост инфляции Молдова и Украина значительно подняли процентные ставки. Позже Молдова постепенно снизила ставки, в то время как Украина сохранила высокую ставку для защиты своей валюты. Румыния и Польша, обладающие более сильной экономикой, испытали более мягкое повышение ставок и меньший рост инфляции по сравнению с другими странами Восточной Европы, приняв осторожный и отложенный подход и до сих пор не снизили свои базовые ставки.

Важным аспектом исследования является реализация анализа функции взаимной корреляции (CCF), который используется для изучения временных корреляций между различными экономическими переменными, такими как базовая учетная ставка, индекс цен на сырьевые товары и ИПС. Проведенный анализ выявил две важные закономерности: недостаток активной корректировки базовых ставок центральными банками в ответ на инфляцию и зависимость опережения-запаздывания между ростом цен на сырьевые товары и инфляцией. Данные выводы подчеркивают осторожный подход центральных банков и их запоздалую реакцию на влияние внешних факторов на динамику инфляции.

Ключевые слова: инфляционная реакция, Восточная Европа, денежно-кредитная политика, инфляционный всплеск

INTRODUCTION

The ongoing topic of discussion among macroeconomists is the inflationary surge that has affected both developing and developed countries. It has been triggered by a combination of factors, including supply chain disruptions, increased demand as economies recover from the pandemic-induced recession, and rising commodity prices (Kose & Ohnsorge, 2022). Governments around the world had to implement various containment measures to curb the spread of the coronavirus, leading to factory closures, travel restrictions, and reduced consumer spending. These measures disrupted supply chains, causing shortages of critical goods and components, and resulted in increased production costs (Naseer et al., 2022). Additionally, geopolitical tensions and military conflict in Ukraine have contributed to a more cautious investment climate, affecting trade relations, and leading to volatility in financial markets (Guénette, Kenworthy & Wheeler, 2022).

To address the rising inflation, central banks in many countries have implemented strict monetary policies. They have raised policy interest rates, reduced monetary stimulus, and applied other measures to tighten credit conditions. The primary goal was to curb excessive demand, which could exacerbate inflationary pressures, and bring inflation back to their targeted levels (Prokopowicz, 2022). However, central banks faced a delicate balancing act. On the one hand, they need to control inflation to prevent eroding purchasing power and maintain economic stability. On the other hand, overly aggressive tightening measures could hamper

economic growth and potentially trigger a recession, especially considering the fragile recovery from the pandemic-induced downturn (Coombs & Thiemann, 2022).

The inflationary surge has also brought new challenges to financial stability (Gopinath, 2023). High inflation can erode the value of assets and savings, impacting investors and savers (Bernanke et al., 2001). Additionally, the surge in inflation coincides with historically high levels of government debt in many countries (Schnabel, 2023). Rising interest rates, often employed to counter inflation, can increase borrowing costs for governments, potentially leading to debt sustainability concerns (Bernanke et al., 2001). For developed economies, the risk of a severe recession has become more pronounced (Schnabel, 2023), (Olaoye et al., 2023). High inflation and tight monetary policies could dampen consumer spending and business investments, leading to a slowdown in economic growth. This poses a considerable challenge for policymakers, who must navigate between reducing inflationary pressures and sustaining economic recovery (Hazlitt, 2008). Governments now face difficult trade-offs. They need to strike a balance between controlling inflation, supporting economic growth, and maintaining financial stability (Brunnermeier, 2023). Crafting appropriate fiscal policies becomes crucial in this context. Effective management of government spending, taxation, and debt policies are essential to address these competing priorities (Gaspar & Eyraud, 2017).

LITERATURE REVIEW

Stagnation and inflation in developed economies. Researchers have examined the phenomenon of stagnation and persistently low inflation rates in several developed economies. Studies by Blanchard (2019) explored the costs of public debt in low-interest rate environment, while and Bolhuis et al. (2022) have highlighted CPI inflation estimates on real interest rates and monetary policy over time in the U.S. Schnabel

(2023) analysed the challenge of persistent low inflation for monetary policy and advocated for expansionary fiscal policies to boost aggregate demand and increase inflation.

Inflation dynamics in emerging markets. In contrast to developed economies, some emerging markets have faced challenges of elevated inflation rates. Chang

et. al. (2022) showed that expansionary government spending shocks raise short and medium-term inflation expectations. In addition, surprise gasoline price hikes also raise inflation expectations. According to Ha, Kose & Ohnsorge (2022) Central banks in Emerging Market and Developing Economies face complex challenges as they struggle to establish trust in inflation control, which hampers price stability. Additionally, EMDEs are susceptible to global interest rate changes, posing risks of economic downturns and capital flight. Dladla & Malikané (2022) examine inflation dynamics in South Africa with a focus on understanding the link between economic activity measures and inflation rates. Olaoye et al. investigated the influence of fiscal policy on inflation in sub-Saharan Africa, highlighting that a positive fiscal policy shock, such as an increase in public debt, plays a significant role in driving inflation (Olaoye et al., 2023).

Global supply chain disruptions and inflation. The outbreak of the COVID-19 pandemic and the Russia–Ukraine has exacerbated inflationary pressures worldwide, driven by disruptions in global supply chains, Kocabasoglu-Hillmer & Roden (2023) consider the paradoxical tension arising in upstream supply chains, especially in the context of radical innovation. They explore how firms can use paradox theory to comprehend and effectively manage the delicate balance between stability and change in this scenario. A separate study, utilizing a multi-regional, multi-sector computable general equilibrium model, examined the macroeconomic consequences of the energy interruption. Notably, the economic burdens of energy sanctions fell predominantly on European nations, with the United States facing relatively minor losses (Cui et al., 2023). In their 2023 research, Rahbari, Arshadi Khamseh, & Sadati-Keneti examine resilience strategies for mitigating disruptions in the wheat supply chain. They employ the p-Robust Scenario-based Stochastic Programming approach to optimize this supply chain, considering both feasibility and optimality (Rahbari et al., 2023). Guénette, Kenworthy, & Wheeler (2022) provide an overview of the global economic impact of COVID-19, highlighting a widespread economic downturn caused by lockdown measures enforced by most nations, which have markedly reduced global economic activity, resulting in business closures, unemployment, and disruptions across multiple sectors.

Central bank policies and inflation expectations. The response of central banks to the economic challenges has been a subject of research. Study by Svensson (2020) finds that the general monetary policy strategy of "forecast targeting" is more suitable for fulfilling the Federal Reserve's dual mandate of maximum employment and price stability than following a simple "instrument" rule such as a Taylor-type rule. Prokopowicz suggests that in 2022-2023, central banks raising interest rates as an anti-inflationary measure may have a more significant impact in triggering an economic downturn rather than effectively controlling inflation. This phenomenon

occurs because commercial banks tend to raise lending rates more rapidly than deposit rates in response to central bank rate hikes (Prokopowicz, 2022).

Inflation targeting and its limitations. Inflation targeting frameworks, widely adopted by central banks globally, have also been scrutinized. In Hang Duong (2022) study, a difference-in-difference approach with a fixed model was employed. The results demonstrate that inflation targeting is effective in controlling inflation rates in emerging countries when they encounter external shocks, such as the global financial crisis in 2007, without causing significant trade-offs in output growth. Cecchetti & Kim (2004) results suggest that most countries could benefit from moving to price path targeting, where the central bank makes up for periods of above (below) target inflation with later periods of below (above) target inflation. Coombs & Thiemann (2022) highlight a paradoxical scenario where a strong state re-emerges, supporting financial speculation and worsening inequality, while also trying to tackle financial instability, protect jobs during the pandemic, and address climate change. Brunnermeier (2023) suggests central banks should act promptly, rather than waiting for inflation to manifest. They must consider both household and financial market expectations of future inflation, as these expectations influence both demand and asset prices.

Fiscal policy and its role in combating stagnation and inflation. Besides monetary policy, fiscal measures have come under focus as well. Studies by Bankowski et. al. (2023) reveals that high inflation in the euro area can negatively impact public finances due to an external energy-driven shock, reducing tax revenues, affecting business profitability and growth, and straining public spending. Monetary policy responses lead to higher government debt interest payments, potentially counteracting inflation benefits. Discretionary fiscal measures offer temporary effects with limited support for lower-income households. The increasing fiscal burden, especially in highly indebted countries, presents challenges amid rising interest payments. Gopinath (2023) emphasizes that central banks should lead the fight against inflation, while complementary policies are needed. Fiscal measures should target assistance to the vulnerable without stimulating the economy. Reducing fragmentation risks in global trade can also effectively mitigate supply shocks and boost global output. Evans, Honkapohja, & Mitra (2022) suggest that without a robust policy response, stagnation characterized by low economic activity and rapid deflation will. However, they advise that a fiscal stimulus, involving increased government spending, can effectively pull the economy out of this trap.

While the recent worldwide economic stagnation and inflationary trends have undoubtedly captured significant research attention, the current context of an ongoing inflation surge, and the hopeful journey towards stability, necessitates a closer examination of

how National Banks in Eastern Europe have confronted inflationary processes and whether they have achieved success. that analyse the effectiveness of National Banks' utilization of base rate instruments in influencing

inflation rates, particularly with a focus on time-lagged cross-correlation functions. Our study is dedicated to filling this research gap and contributing to the ongoing exploration of inflationary processes.

DATA SOURCES AND USED METHODS

This article aims to conduct a thorough analysis of the current global inflation and economic situation, as well as its specific impact on the Eastern Europe region. The study involves evaluating worldwide macroeconomic conditions, focusing on inflation dynamics, salary levels, and government debts. Additionally, it delves into the mechanics of monetary policy transmission. Furthermore, this paper delves into an in-depth examination of the local macroeconomic conditions in Moldova, Romania, Ukraine, and Poland spanning from 2017 to June 2023. This period began with a relatively stable macroeconomic environment but witnessed a significant deterioration in 2022-2023, characterized by a substantial inflationary shock. An essential part of this research is the examination of the relationship between different economic variables through the cross-correlation function (CCF) analysis.

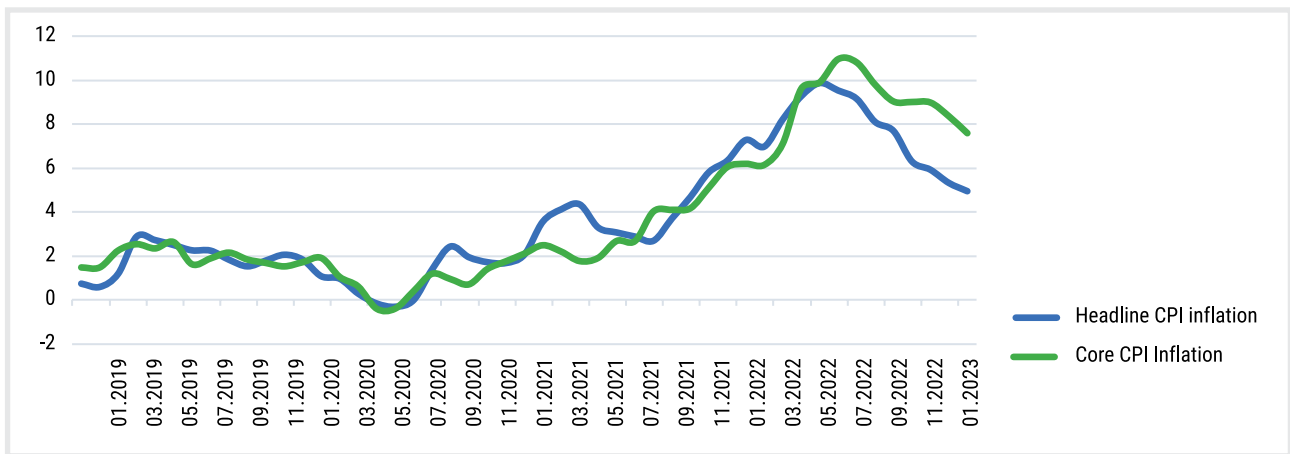
To carry out the CCF analysis, the research employs R software, utilizing specific packages such as "stats" for statistical computations and "ggplot2" for visualization. These tools facilitate the exploration of time-lagged correlations between the variables, allowing for an in-depth understanding of their dynamic interrelationships. To achieve its objectives, the research employs a combination of qualitative and quantitative research methods. The data utilized in this study has been extracted from reputable sources, including the World Bank, National Banks, and National Bureaus of Statistics. This data encompasses a wide range of macroeconomic indicators, providing a comprehensive basis for our analysis. The integration of R software enhances the quantitative aspect of the study, providing robust statistical insights into the economic trends and policies.

THE CURRENT GLOBAL MACROECONOMIC ENVIRONMENT

Anticipated disinflation is expected to occur across major country groups due to declining prices of fuel and non-fuel items, along with the projected contractionary effects of tighter monetary policies on economic activity. However, the overall and core inflation rates remain significantly elevated compared to pre-2021 levels, surpassing the inflation targeting objectives in most countries with inflation targeting frameworks. The persistence of high inflation has become an economic challenge, necessitating careful policy considerations. In January 2023, core inflation, excluding food and energy prices, is projected to show only a gradual decline on a global scale, reducing to 4.8 percent from a maximum of 6.5 percent (Figure 1). This protracted

moderation in core inflation underscores its resilience and difficulty to curtail quickly, compared to headline cpi inflation which dropped from 9.9 percent globally to 4.9 percents. Consequently, attaining the targeted inflation rates is expected to be a prolonged endeavour, with most countries aiming to reach their objectives by 2025, as per IMF data. Policymakers face the complex task of employing prudent measures to effectively control inflation and steer it back within desired ranges. This will require a balanced approach, where accommodating economic recovery and implementing tighter monetary policies converge to tackle inflationary pressures efficiently.

Figure 1 .
Global Headline CPI inflation vs Core CPI inflation (percentage)

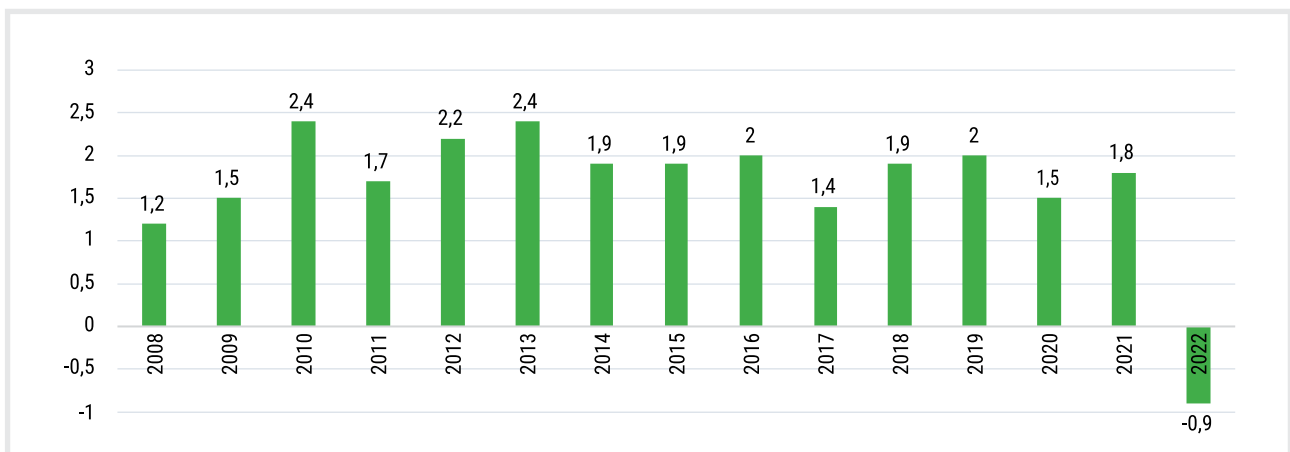


Source: Developed by the author based on The World Bank DataBank

Salaries. The nominal growth of wages continues to significantly lag inflation, leading to a sharp and unprecedented decline in real wages (Figure 2). Despite the risk of a wage-price spiral, the situation may not unfold in the present scenario. Labor markets are experiencing tightness, meaning that there is a shortage of qualified workers for available job positions. This condition usually gives employers less room to resist wage increases, as they need to attract and retain

skilled employees. In recent years, corporate profit margins, which represent the difference between a company's revenue and its costs, have expanded. Larger profit margins imply that businesses have been able to maintain healthy profitability even as labour costs have risen. This ability to absorb growing labour costs on average could act as a buffer against more significant price increases, contributing to the stabilization of real wages.

Figure 2.
Annual average global real monthly wage growth, 2008–22 (percentage)



Source: Developed by the author based on International Labour Organization Global Wage Database

The level of government debt remains high. Because of the pandemic and economic disruptions over the past three years, both private and public debt have reached unprecedented levels in most countries. Despite a decline in 2021-2022 amid economic recovery from COVID-19 and growth, private and government debts continue to remain elevated. The tightening of monetary policies has led to a sharp increase in borrowing costs (Figure 3), raising concerns about the sustainability of debt in some countries. As debt levels accumulate,

governments may face difficulties in servicing their debt obligations and may be forced to allocate a significant portion of their budget towards interest payments. This can limit the funds available for essential public services and investments.

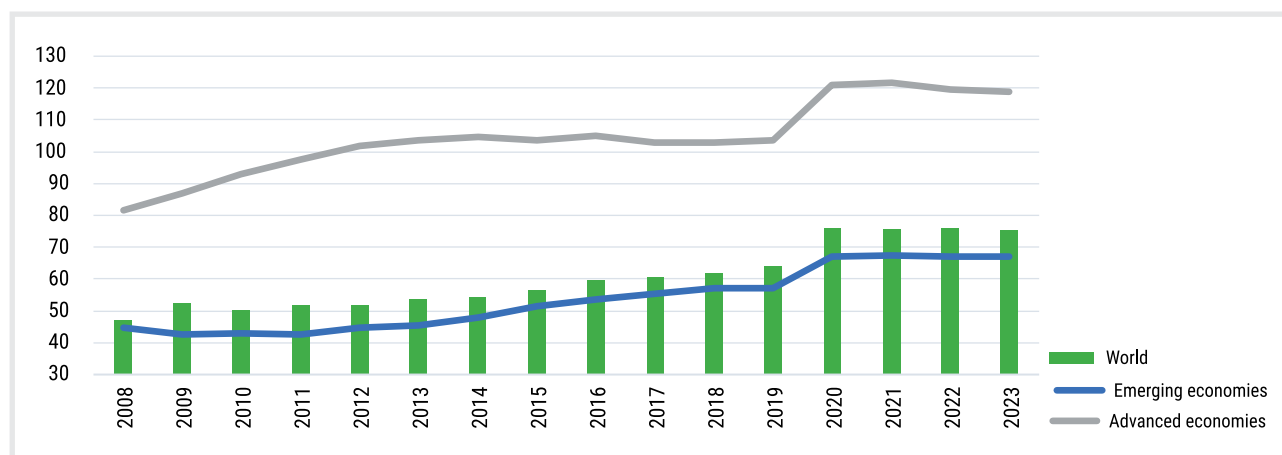
The interaction between rising real interest rates and historically high levels of corporate and household debt poses another source of risk. Debt servicing costs are increasing amid weaker income growth, adding strain to

the financial situation of corporations and households. The persistently high level of debt restricts the capacity of fiscal policymakers to respond effectively to new challenges. Excessive government debt can have adverse effects on economic growth. High debt levels may lead to

higher interest rates, crowding out private investments, and reducing overall economic activity. This can hinder productivity gains and hinder the country's long-term growth potential.

Figure 3.

Government gross debt, 2003–23 (share of GDP, percentage)



Source: Developed by the author based on (International Monetary Fund DataBank)

The sustained high level of government debt not only poses challenges for economic policy but also impacts financial stability and the ability of governments to address emerging economic issues. Managing and reducing debt levels will be a critical task for policymakers to ensure the long-term health and stability of the economy. High government debt levels

can restrict the flexibility of fiscal policymakers to respond to new economic challenges effectively. With limited room for additional borrowing, policymakers may find it challenging to implement countercyclical fiscal policies during economic downturns to stimulate growth and employment.

MONETARY POLICY TRANSMISSION MECHANISM.

The levels of interest rates and the exchange rate determine the monetary conditions under which the national economy operates. The monetary transmission mechanism occurs as changes in monetary conditions and influences the demand for goods and services. The propagation of impulses generated by monetary policy instruments towards inflation happens through complex cause-and-effect chains involving decisions made by economic agents and households in response to monetary policy measures. This leads to the expansion of the effects of monetary policy actions on the economy. The complexity of this mechanism varies both geographically and in time, which can be challenging due to the simultaneous occurrence of numerous shocks, which are unpredictable or unexpected events that cause economic fluctuations. The aim of monetary policy is to stabilize the system by absorbing, to a greater or lesser extent, the exogenous disturbances' effects.

The speed of transmission. Estimates of the transmission delay of monetary policy to prices can vary from instantaneous reactions (driven by exchange rate

adjustments and changes in inflation expectations) to periods of 1.5–2.5 years (due to gradual price adjustments by companies or informational issues). Trust in the central bank and effective communication significantly influence the channels of expectations and exchange rates. When inflation expectations are firmly anchored, and the central bank's independence is high, monetary policy becomes more effective in restoring price stability with lower output costs (Bems et al., 2020). However, if expectations are more backward-looking, as is the case in many developing countries, a stronger response from monetary policy is required to reorient expectations (Dizioli & Alvarez, 2023). In such situations, the transmission of exchange rates to consumer prices will be more pronounced (Carrière-Swallow, Gruss, & Magud, 2021). Moreover, a higher degree of financial development results in a slower transmission of monetary policy. In economies with less developed financial systems, where financial institutions have limited means to shield themselves from unexpected monetary policy actions, they need to react promptly to monetary policy shocks, leading to a faster transmission. On the contrary, in financially developed countries, financial institutions possess more

sophisticated instruments to hedge against surprises in monetary policy, causing delays in the transmission of monetary policy shocks. As emerging countries' financial systems evolve and financial innovations emerge, banks

can better safeguard themselves against sudden changes in monetary policy, leading to a potential slowdown in the transmission of monetary policy (Havranek & Rusnák, 2013).

MACROECONOMIC SITUATION IN EASTERN EUROPE

The monetary policy objectives of the governments of Moldova, Ukraine, Poland, and Romania are outlined in their respective central banks' strategies. Each country has a central bank responsible for formulating and

promoting monetary and exchange rate policies. The primary objective across these nations is to ensure and maintain price stability. However, the specific inflation targets vary:

- Moldova and Ukraine aim to keep inflation at 5.0 percent annually, with a possible deviation of ± 1.5 percentage points.
- Poland and Romania, on the other hand, have a lower inflation target of 2.5 percent annually, with a possible deviation of ± 1 percentage point.

These levels are considered optimal for the country's medium-term economic growth and development.

To achieve these inflation targets, central banks use various monetary policy tools:

- Maintain low nominal interest rates to stimulate long-term investments and enhance economic competitiveness.
- Discourage speculative activities and enhance financial stability.
- Promote sustained economic growth, job creation, and increased productivity to improve citizens' quality of life.
- Safeguard individuals with fixed incomes and vulnerable social groups affected by high inflation rates, protecting their investment income and social payments (e.g., pensions, allowances).

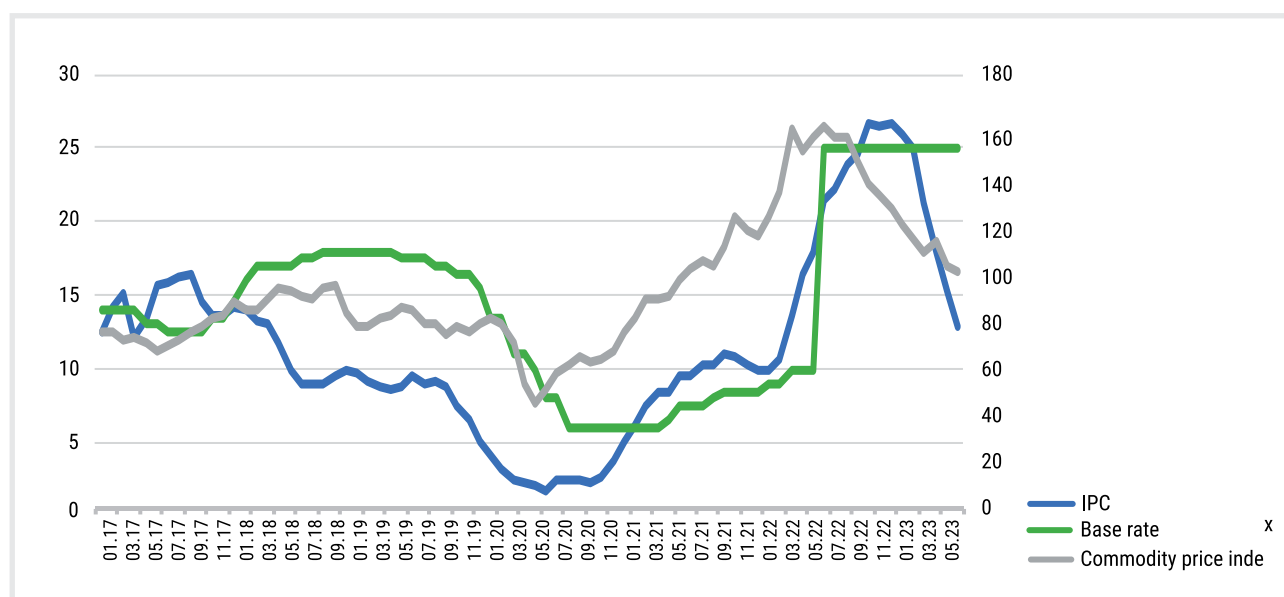
CURRENT INFLATIONARY SITUATION IN MOLDOVA, POLAND, UKRAINE, AND ROMANIA

The economies in the region experienced a period of stagnation and even contraction in 2022. This significant downturn was the result of various factors, including an increase in the cost of living, the negative impacts of the war, and low agricultural production due to unfavourable weather conditions, which further exacerbated economic challenges. Additionally, disruptions in export and logistical chains, along with a more restrictive monetary policy than anticipated, exerted additional pressure on economic activity.

The tightening of monetary policy was driven by the accumulation of inflationary pressures, which became evident through consistent upward revisions in inflation forecasts. In January 2021, the central banks of Moldova and Ukraine raised their base rates from 2.65 percent and 6 percent, respectively, to 21.5 percent and 25 percent by the summer of 2022 (Figure 4&5). Moldova's National Bank cautiously maintained this level until November 2022, despite subsequent

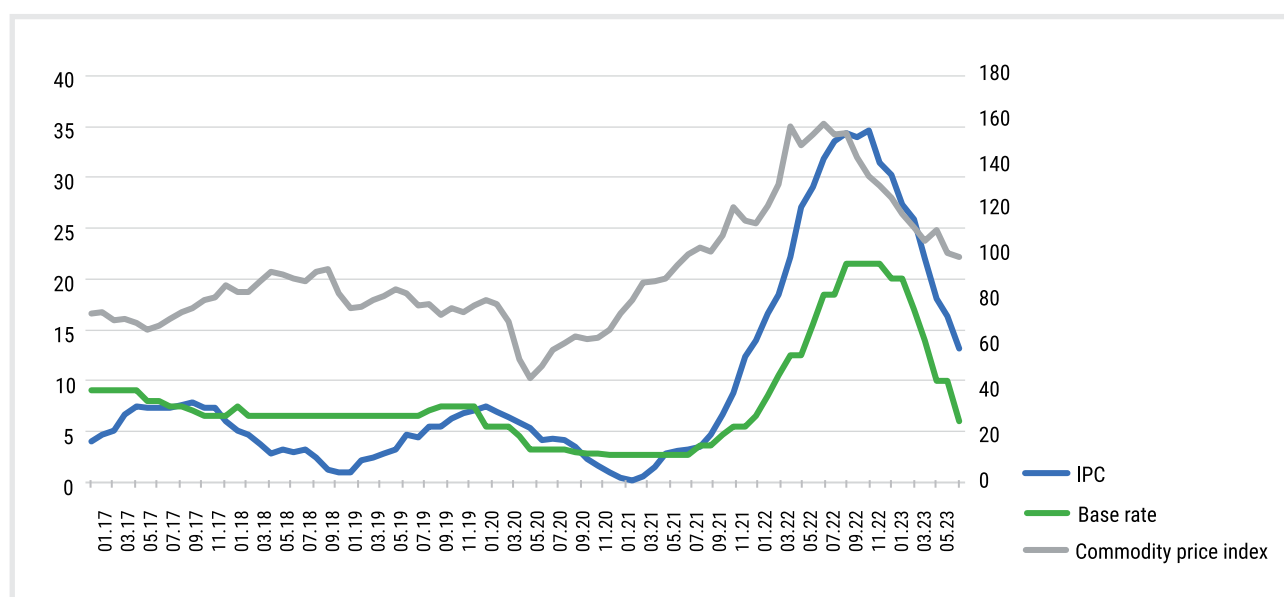
forecasts indicating a slowdown in inflationary pressures. After reaching its peak and experiencing a noticeable deceleration in inflation, the National Bank of Moldova initiated an easing cycle. They reduced the base rate by 1.5 percentage points in December, followed by decreases of 3 percentage points in February and March, and a further reduction of 4 percentage points in May. In June of the current year, they reduced the base rate by 6 percentage points. This gradual easing of monetary policy aligns with the inflation outlook. On the other hand, the Ukrainian National Bank has kept its base rate at 25 percent. This decision is aimed at maintaining the attractiveness of hryvnia-denominated instruments, ensuring the stability of the foreign exchange market, and reducing inflation. The NBU is prepared to commence a monetary easing cycle if the growth in real yields on hryvnia instruments and the reduction of risks to exchange rate sustainability continue to progress more rapidly than expected.

Figure 4.
IPC and policy rate in Ukraine vs Commodity Price Index



Source: Developed by the author based on World Bank Commodities Price Data, National Bank of Ukraine

Figure 5.
IPC and policy rate in Moldova vs Commodity Price Index



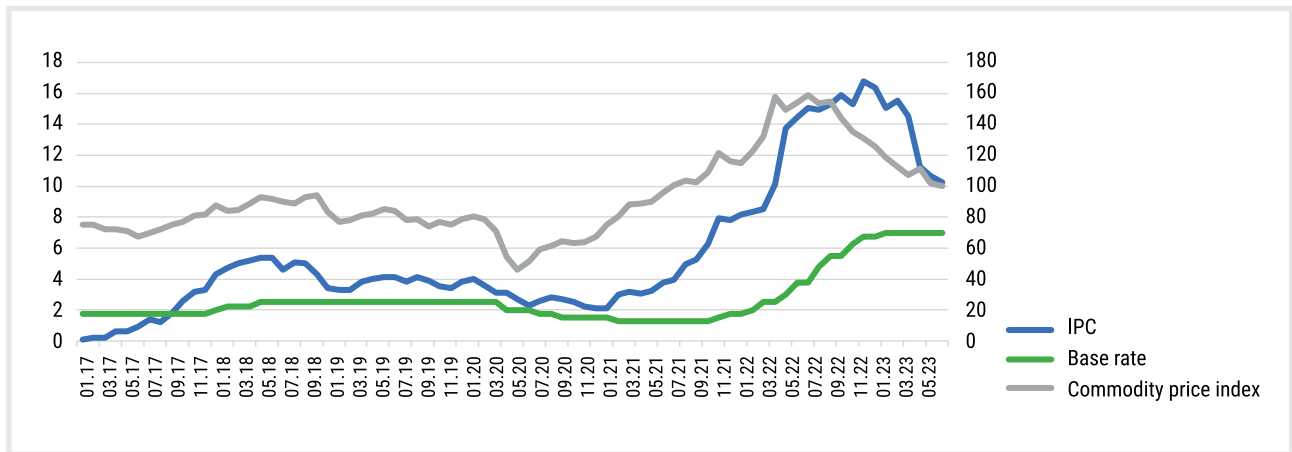
Source: Developed by the author based on World Bank Commodities Price Data, National Bank of Moldova

In June 2023, the inflation rate, as measured by the Consumer Price Index, decreased to 13.5 percent in Moldova and 12.8 percent in Ukraine annually. This decline marked a significant improvement from its peak levels of 34.6 percent in Moldova in October 2022 and 26.6 percent in Ukraine during the same period. These figures indicate that despite Ukraine being a country in conflict, the Moldovan economy is considerably more vulnerable to external price shocks.

In our analysis, we also examined Romania and Poland, both of which are European Union member states

boasting more advanced economies. This economic robustness typically insulates them to some extent from external inflationary pressures. Nevertheless, it's important to highlight that despite their relatively strong economic positions, both countries witnessed a substantial upswing in their base interest rates and the Consumer Price Index (CPI) as shown in Figures 6&7. In September 2021, the central banks of Romania and Poland took significant steps by raising their base interest rates from 1.25 percent and 0.5 percent, respectively, to 6.75 percent in August 2022 and 7 percent in January 2023 (as illustrated in Figures 6 and 7).

Figure 6.
 IPC and policy rate in Romania vs Commodity Price Index



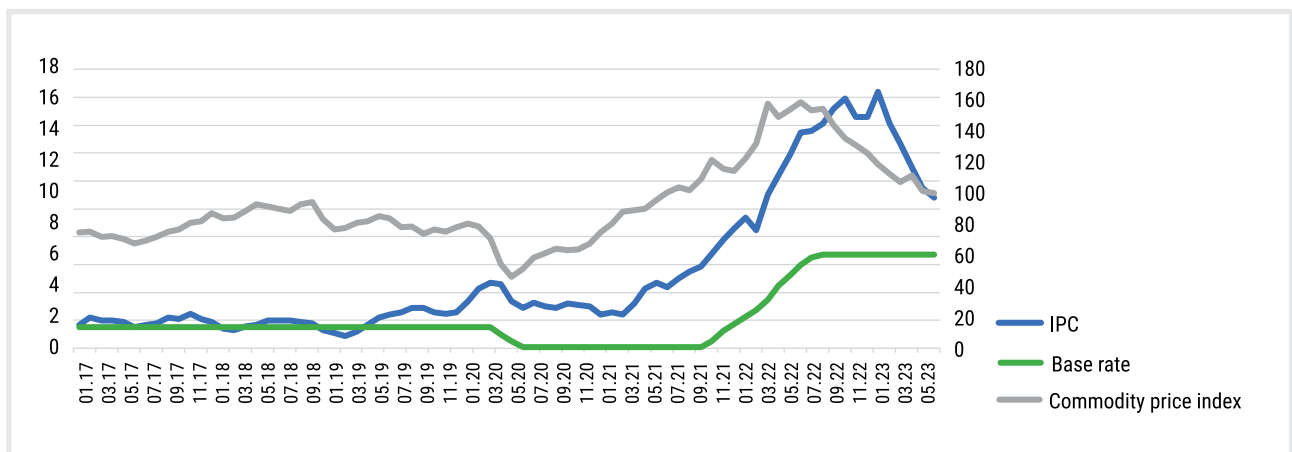
Source: Developed by the author based on World Bank Commodities Price Data, National Bank of Romania

Remarkably, these countries' national banks have continued to maintain these elevated rates, despite subsequent forecasts suggesting a potential deceleration in inflationary pressures. This divergence in monetary policy between Moldova and Ukraine on one hand, and Poland and Romania on the other, is quite evident. The latter two countries initiated their rate hikes later and continue to maintain these higher rates because the inflation rate exceeds the base rate, although it remains below the levels set by the Moldovan and Ukrainian national banks. This divergence underscores the relative

economic strength of Poland and Romania compared to Moldova and Ukraine, as they have adopted a more cautious approach in managing their monetary policies.

The sharp drop in inflation can be attributed to the decline in global commodity prices and the gradual recovery of consumption. Given that food and energy prices are significantly influenced by global commodity prices, it is logical to conclude that tightening monetary policy may have limited impact on this component of inflation.

Figure 7.
 IPC and policy rate in Poland vs Commodity Price Index



Source: Developed by the author based on World Bank Commodities Price Data, National Bank of Romania

In 2023, a moderate economic recovery is expected, driven by increased domestic demand and improved prospects for trade growth, rapid inflation reduction, and monetary policy support for credit availability. The rise in wages and pensions in the public sector is expected to bolster consumption, while agricultural output is projected to increase in 2023. Additionally, a more lenient overall policy stance and lower-than-expected global energy prices are also likely to support

demand. These factors are expected to bring inflation in the region within the target range by early 2024.

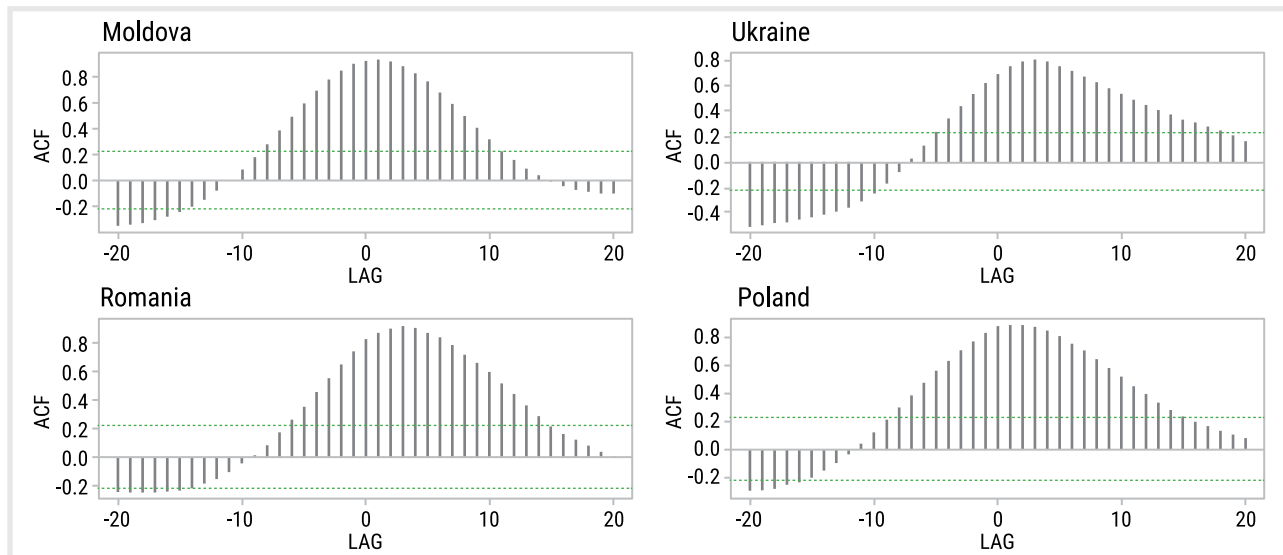
We will further perform a Cross-Correlation Function (CCF) analysis (Figures 8&9), which will allow us to explore how one series may lead or lag another across different time intervals. In this study, we will examine the time lags between changes in the Base Rate and IPC, as well as the Commodity Price Index and IPC for 78

months, January 2017 and June 2023. By doing so, we can gain insights into how fluctuations in the Base Rate and Commodity Price Index might precede or follow

variations in IPC, offering valuable information for economic analysis and forecasting.

Figure 8.

Time-lagged Cross-Correlation between Base Rate and IPC in Moldova, Ukraine, Romania and Poland during January 2017 and June 2023



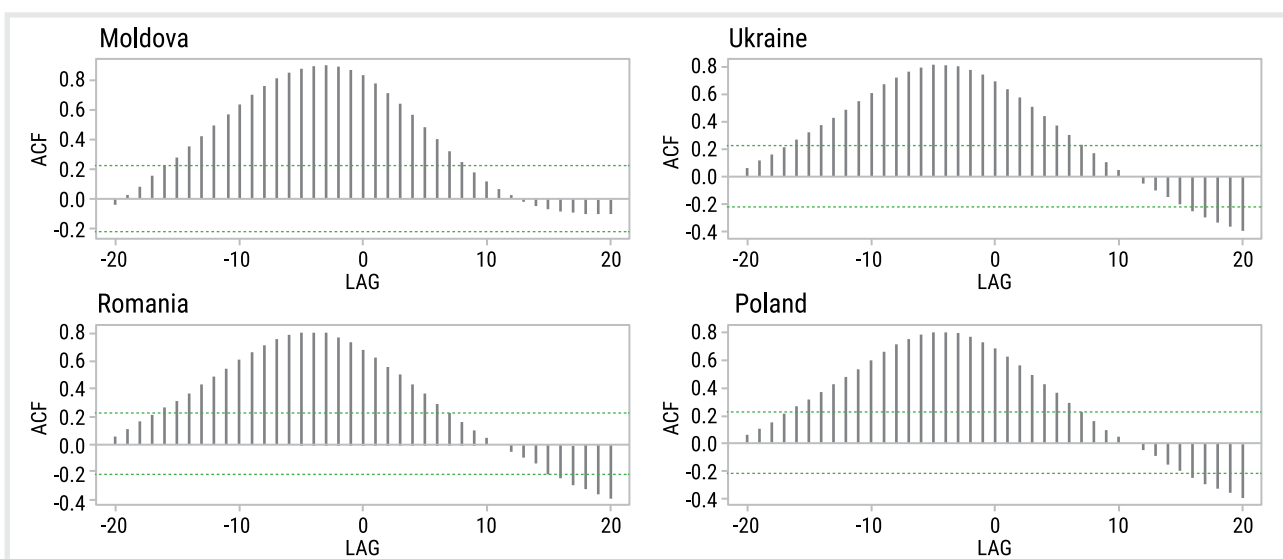
Source: Calculated by the author using "R" based on National Banks' datasets

From the examination of the cross-correlation function (CCF) data between the Base policy rate and IPC (Inflation Price Index), it appears that a notable positive correlation exists within the lags of -3/0 to 5/9 for the analysed countries. This relationship seems to run counter to conventional economic wisdom, which often posits that an increase in interest rates typically dampens inflation. However, the observed correlation

is indicative of a situation where the central bank has increased the base rate in reaction to external inflation shock. This interpretation supports the idea that the central bank might have strategically altered the base rate to counterbalance inflationary pressures, specifically by elevating the base rate in response to IPC increases, thus explaining the positive correlation.

Figure 9.

Time-lagged Cross-Correlation between Commodity Price Index and IPC in Moldova, Ukraine, Romania and Poland during January 2017 and June 2023



Source: Calculated by the author using "R" based on National Banks' datasets

The provided data reveals a pronounced positive correlation within the indices range from -6 to 2/4, which suggests that a rise in commodity prices could be followed by a notable increase in the IPC

approximately 6 to 2/4 periods later. This observed trend might signify meaningful economic responses to variations in commodity prices, reflecting inflationary influences.

CONCLUSIONS

The East European region faced economic stagnation and contraction in 2022 due to several factors, including rising living costs, the negative impact of the war, unfavourable weather conditions affecting agriculture, disruptions in export and logistical chains, and more restrictive than expected monetary policies. To counter inflationary pressures, Moldova and Ukraine significantly raised their base interest rates from January 2021 to the summer of 2022. Moldova later initiated an easing cycle in response to a deceleration in inflation, whereas Ukraine maintained its high base rate to safeguard its currency and combat inflation, reflecting the different strategies of the two nations. Notably, Moldova's economy appeared to be more vulnerable to external price shocks, despite Ukraine's ongoing conflict. On the other hand Romania and Poland initiated their rate hikes later than Moldova and Ukraine but have maintained higher rates because their inflation rates exceeded their base rates. This divergence highlights the relative economic strength of Romania and Poland compared to their counterparts.

The drop in inflation in early 2023 was attributed to declining global commodity prices and the gradual recovery of consumption. Core inflation remained more resilient, suggesting that tightening monetary policy might have limited impact on food and energy-related inflation.

In early 2023, amid global economic challenges driven by inflationary pressures and geopolitical factors, initial signs of a gradual recovery emerged from the

pandemic and the Russia-Ukraine conflict. Supply chain disruptions eased, and energy and food sector challenges diminished. However, the outlook remains uncertain, with potential risks stemming from further escalation of the Russia-Ukraine war.

The analysis of Time-lagged Cross-Correlation between Commodity Price Index/IPC and Base rate/IPC during January 2017 and June 2023 has revealed two significant patterns. Firstly, a positive correlation between the Base policy rate and IPC within lags of -3/0 to 5/9 indicates that the central banks have raised the base rate in response to inflation. Secondly, a strong positive relationship between the Commodity Prices Index and IPC within the range of -6 to 2/4 suggests that increases in commodity prices lead to rises in the IPC.

Both findings indicate that central banks operated under the assumption that inflation was effectively managed and that inflation expectations would stay steady. They embraced a data-driven approach policy that intentionally postponed tightening measures. Central banks, in their pursuit of preventing premature constraints on economic output, chose not to increase interest rates in anticipation of rising future inflation. Instead, they waited for inflation to materialize thus their response to supply shock was delayed. In future, to address these issues, central banks must prioritize stabilizing inflation expectations and act swiftly when warning signs appear. It's crucial to consider market expectations of future inflation which significantly impact demand and prices.

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