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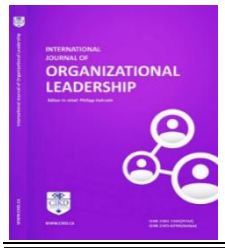

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Empirical Examination of Inflation's Influence on Economic Growth: Trends, Mechanisms, and Predictive Insights

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ABSTRACT

The primary objective of this article is to conduct a comprehensive empirical analysis to investigate the influence of inflationary processes on economic development. The authors of this article employ a statistical approach to furnish a comprehensive empirical analysis of the impact of inflationary processes on economic development. This study examines the Consumer Price Index (CPI) in EU-27 countries from 1999 to 2022, culminating in the construction of a linear model to elucidate the association between the CPI and GDP growth rates within these EU-27 nations. Furthermore, this paper delves into the macroeconomic implications of inflation for the EU-27. In addition to the aforementioned analysis, the authors also develop linear models to probe the relationship between inflation and Gross Domestic Investment (GDI), and GDP growth within Ukraine, covering the period from 1998 to 2022. Finally, the authors conclude this study by elucidating the transmission mechanism that elucidates how inflationary processes impact the economic development of Ukraine. In the context of the European Union, our analysis has revealed a positive correlation between inflation and GDP growth rates during the period spanning from 1999 to 2022. However, it is important to note that inflationary processes were not observed to exert a statistically significant influence on key macroeconomic variables such as gross domestic investment, interest rates, domestic lending to the private sector, and GDP growth rates within the EU during this time frame. Conversely, our investigation into Ukraine's economic dynamics from 1998 to 2022 has unearthed a negative linear relationship between changes in the CPI and GDP growth rates. Within the Ukrainian context, several factors, including the prevailing armed conflict, escalating interest rates, and challenges in domestic lending, have contributed to a discernible decline in domestic investment. Consequently, these factors have collectively exerted a detrimental impact on the country's GDP growth trajectory. It is worth emphasizing that this outcome highlights the importance of various macroeconomic variables that, at times, have adversely affected Ukraine's GDP growth, despite the National Bank of Ukraine's (NBU) inflation-targeting policy. The practical significance of this study resides in its comparative and comprehensive analysis of the repercussions of inflation on the economies of both the EU member states and Ukraine, particularly within the unique context of war.

Owing to the concurrent challenges of the pandemic and the ongoing conflict in Ukraine, there was a substantial deceleration in global economic growth, as indicated by a decrease of -3.072% of GDP in 2020, followed by a recovery to 6.024% of GDP in 2021, and a subsequent moderation to 3.080% of GDP in 2022. During this period, the trajectory of consumer prices exhibited fluctuations, with a modest 1.929% increase in 2022, a more pronounced growth of 3.475% in 2021, and a notable spike of 8.272% in 2020. Interestingly, despite the presence of inflation and slowing GDP growth, the indicator of gross capital formation remained relatively stable, averaging 26.7% from 2020 to 2022. In the context of the Eurozone countries, there was a marginal upturn in gross capital formation in 2022, reaching 24.37% of GDP, compared to 22.32% in 2020 and 23.04% in 2021. This complex interplay between recent inflationary trends and economic development underscores the intricate relationship between these variables, particularly in light of the unprecedented external factors that have shaped the economic landscape (Gorokhova et al., 2024). Consequently, it is advisable to meticulously examine the intricate impact of inflationary processes on the trajectory of economic development.

Literature Review

Within the existing body of literature, there exists a breadth of studies and a divergence of findings concerning the influence of inflation, inflation uncertainty, and their amalgamation on economic growth. Regrettably, the literature lacks uniformity in this regard. Theoretical advancements postulate that the impact of inflation and inflation uncertainty on economic growth is manifested through two principal channels: the price-information channel and the investment spending channel (Batrancea, 2021; Kruhlov et al., 2023; Mazurenko et al., 2023; Ozdemir & Akgul, 2015; Svirko et al., 2022). However, from an empirical standpoint, the influence of either inflation or inflation uncertainty on economic growth remains equivocal, owing to the presence of various other influential variables (Mandeya & Ho, 2022). To illustrate, the role of inflation, along with trade openness, total investment, and output, emerges as statistically significant in elucidating growth patterns in Central and Eastern Europe and the Western Balkans (Dauti & Elezi, 2022).

The theoretical mechanisms delineating the impact of inflation on economic development expound upon the intricate, indirect negative associations that exist between various economic variables (Kryvokhyzha et al., 2023). These associations encompass savings, investment, borrowing, inflation, interest rates, as well as the remuneration of labor (wages) and the financial performance (profits) of firms, all of which collectively contribute to the broader sphere of economic development (Table 1).

Table 1

Mechanisms of Inflation Impact on Economic Development

Theory, approach	The mechanism of impact
The classical economic theory	The indirect and implicit negative consequences of an escalation in the general price level of goods and services are discernible through the following mechanisms: 1) A decrease in savings stemming from elevated interest rates, loan costs, and inflation, which consequently curtails investments in fixed assets and diminishes real asset returns. 2) The competitive dynamics among firms in pursuit of labor resources, leading to upward pressure on wages, thereby diminishing firm profits and, in turn, constraining investment in business ventures. 3) The mechanism facilitating growth in savings, which subsequently bolsters investments in business assets, leading to a decrease in both interest rates and inflation. In this context, alterations in nominal interest rates can either deter or stimulate investment, consequently exerting corresponding effects on economic growth.
The conventional theory	Low or moderate levels of inflation serve to foster economic growth and contribute to the maintenance of wage flexibility. The interconnection between inflation and taxation has repercussions on consumer lending, the capital cost structure, and the pace of investment, consequently leading to a decline in economic development.
Inflation growth theory	The nonlinear influence of inflation on economic growth is elucidated by the concept of the elasticity of demand for money.

Source: systematized by the author based on the data from Gokal and Hanif (2004), Snowdon and Vane (2005), Boyd and Champ (2006), Gillman and Kejak (2005), Doan Van (2020), Mandeya and Ho (2022)

Empirical investigations have demonstrated a close connection between inflation, the money supply, and their direct influence on economic growth. A persistent augmentation of the money supply has been shown to eventually culminate in inflation (Doan Van, 2020). The impact of inflation on economic growth exhibits variances contingent upon the developmental status and unique characteristics of individual nations. Nevertheless, in a general context, an upsurge in inflation is associated with a concomitant reduction in GDP growth (Akinsola &

Odhiambo, 2017). Consequently, a country's government must pursue a judicious monetary policy that simultaneously fosters economic growth and effectively manages inflation (Doan Van, 2020).

Empirical investigations on the inflation threshold and its ramifications on long-term economic growth consistently validate the presence of a negative nonlinear effect of inflation, particularly when it surpasses a certain threshold (Gillman & Kejak, 2005; Khan & Ssnhadji, 2001). The connection between growth and inflation is further modulated by the interplay with various other macroeconomic variables, such as the level of financial development, trade openness, and government expenditure. For instance, Eggoh and Khan (2014) have observed that increased trade openness, coupled with an excess demand gap, has the potential to mitigate the cyclical fluctuations in both inflation and output growth within a competitive economic environment.

The scientific literature employs a range of methodologies to investigate the relationship between inflation and economic development. These methodologies encompass regression analysis utilizing panel data from diverse countries, threshold models employing non-linear squares for inflation estimation to discern the impact of low, moderate, and high inflation on the economy, Pearson cointegration analysis, fixed and random effect methods, cointegration and causality tests, bounds tests, the WALD test, endogenous Threshold Autoregressive (TAR) models, Vector Autoregressive Fractionally Integrated Moving Average Models (VARFIMA), and the System Generalized Method of Moments (SGMM) (Abbott & De Vita, 2011; Baharumshah et al., 2016; Kremer et al., 2013; Ozdemir & Akgul, 2015; Vinayagathasan, 2013; Zahorodna et al., 2022).

Majumder (2016) investigated the relationship between economic growth and inflation in Bangladesh for the period spanning from 1975 to 2013. The study employed the extended Dickey-Fuller test and identified a statistically significant long-term positive association between the inflation rate and the economic growth of gross domestic product (Majumder, 2016). In a separate study, Kryeziu and Durguti (2019) explored the impact of inflation on GDP growth within the Eurozone countries. Their analysis encompassed panel data for the years 1997 to 2017 and employed a multiple linear regression model utilizing the least squares method. Their findings revealed a positive relationship between these variables. Furthermore, Dinh (2020) assessed the influence of inflation on economic growth in Vietnam. This study involved the construction of a Vector Autoregression (VAR) model, cointegration models, and a unit root test, utilizing time series data spanning from 1996 to 2018. The findings substantiate the influence of inflation on both short-term and long-term economic growth dynamics (Dinh, 2020). In a study conducted by Behera (2014), the impact of inflation on economic growth and its reliance on inflation growth within South Asian countries was assessed. This analysis was founded on time series data spanning from 1980 to 2012. The research revealed a notably strong positive correlation between inflation and economic growth across all the countries examined. However, Malaysia exhibited long-term relationships between these variables, while the remaining countries did not manifest such associations (Barro, 2013).

Adaramola and Dada (2020) analyzed to estimate the repercussions of inflation on the growth of the Nigerian economy. They employed a distributed lag autoregressive model, considering variables such as real Gross Domestic Product (GDP), inflation rate, exchange rate, interest rate, and various other factors. This investigation encompassed data spanning from

1980 to 2018. The findings derived from their study reveal a substantial negative influence of both inflation and the real exchange rate on economic growth.

Method

The authors of this article employ a systematic and rigorous approach, incorporating statistical analysis, to undertake a comprehensive empirical investigation into the ramifications of inflationary processes on economic development. This analysis unfolds in several stages:

1. In the initial stage, the authors scrutinize the Consumer Price Indices across the EU-27 countries during the period 1999-2022. Subsequently, they construct a linear model to elucidate the relationship between the Consumer Price Index and the GDP growth rate of the EU-27 countries.
2. The second stage of the analysis delves deeper into the macroeconomic consequences of inflation, encompassing critical indicators such as gross capital formation within the EU from 1999 to 2022, the evolution of interest rates on loans within the EU, and domestic lending to the private sector.
3. The third stage shifts the focus to a comprehensive evaluation of the NBU monetary policy, with a particular emphasis on its implementation of the inflation targeting regime. This stage unfolds as follows:
   a. An analysis of general inflationary trends and macroeconomic transformations.
   b. The construction of linear models to examine the relationship between the Consumer Price Index (CPI) and gross domestic investment (GDI) in Ukraine, as well as the relationship between the CPI and GDP growth in Ukraine, spanning the years 1998 to 2022.
   c. A critical assessment of the NBU's policy for managing inflation within the broader context of its impact on economic development, both during and following the period of conflict.
   d. Lastly, a description of the transmission mechanism elucidating how inflationary processes influence the economic development of Ukraine.

This systematic approach enables a thorough exploration of the multifaceted relationship between inflation and economic development, both within the European Union and in the specific case of Ukraine.

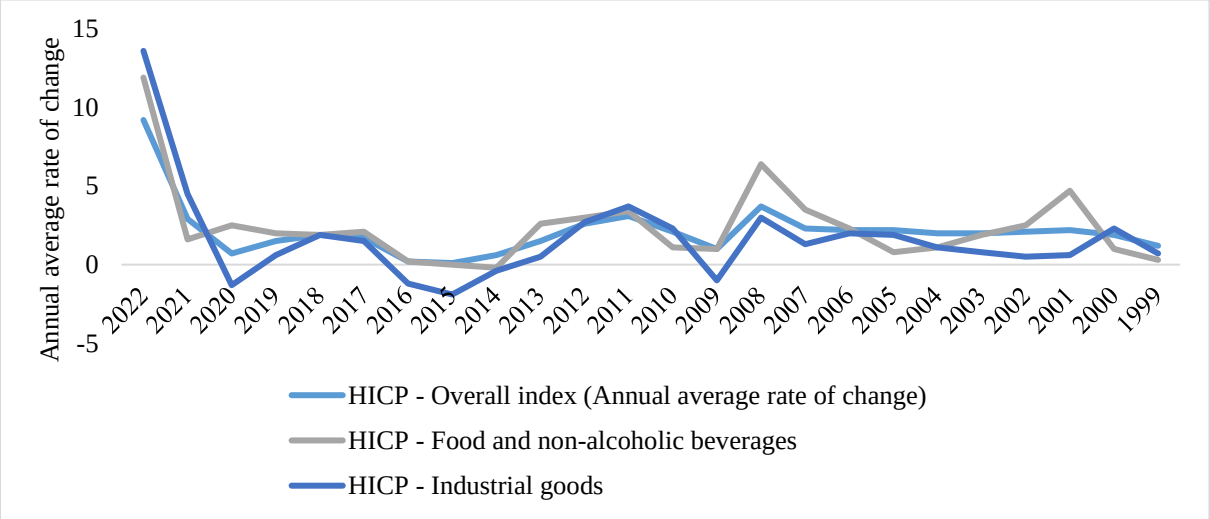
Results and Discussions

The Harmonized Index of Consumer Prices (HICP) within the EU-27 exhibited a notable increase, surging from 0.7% in 2020 to 9.2% in 2022. This escalation can be attributed to the ongoing conflict in Ukraine and the concomitant food security risks arising from heightened non-energy prices (Khrushch et al., 2023). Notably, the HICP for industrial goods and food and non-alcoholic beverages reached 13.6% and 11.9% in 2022, respectively, as opposed to 4.5% and 1.6% in 2021 (Figure 1). Over the period spanning from 1999 to 2022, these inflation rates represent the highest levels of price growth observed for goods and services within the EU since the 2008-2009 financial crisis, when prices experienced a 3.7% rise in 2008. Furthermore, composite measures assessing geopolitical risk exhibit a dual impact on food prices in Europe. In the short term, they tend to reduce food prices in Eastern Europe while elevating them in Western Europe. Additionally, these measures of geopolitical risk have non-uniform effects on food prices, and the long-term trajectory of global energy prices exerts inflationary pressure on food prices (Biloshkurska, 2015; Sohag et al., 2023).

The linear model investigating the association between the HICP and the GDP growth rate of the EU-27 countries reveals that only 25.56% of variations in GDP can be accounted for by fluctuations in prices for goods and services. Notably, the model outcomes attain statistical significance at the 1% level, as evidenced by the calculated $F_{\text{-statistic}}$ of 7.556. Moreover, with a significance threshold set at 5%, it can be asserted that a 1% increase in prices for goods and services corresponds to a 0.874% change in the GDP growth rate. This conclusion is substantiated by the calculated $t_{\text{-statistic}}$ of 2.748, further supporting the significance of this relationship within the model (Figure 2).

Figure 1

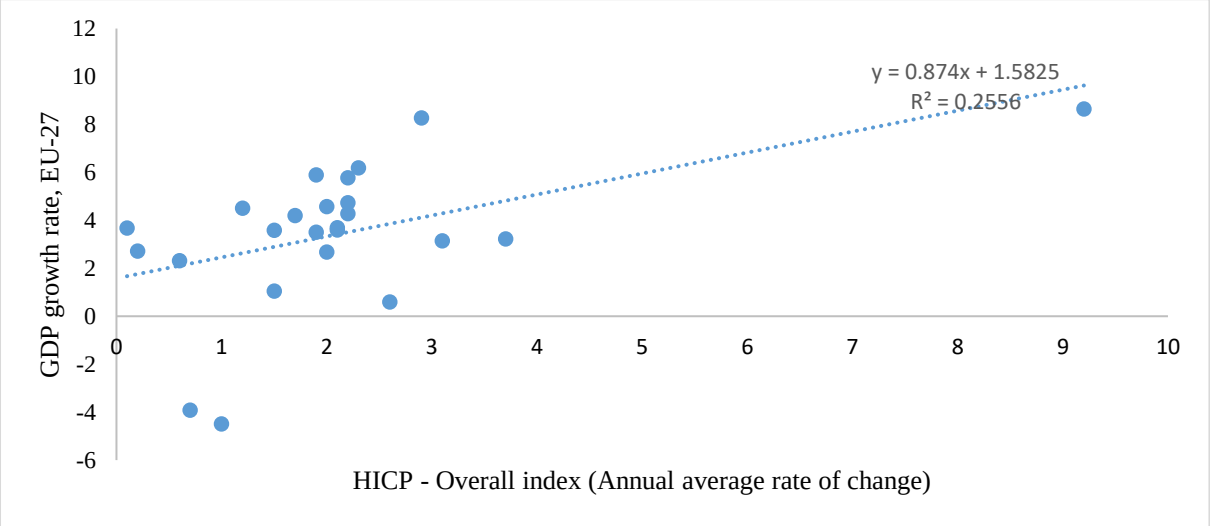
Dynamics of HICP in the EU-27 Countries in 1999–2022, %



Source: Compiled by the authors based on the data from The ECB Data Portal (2023a)

Figure 2

A Linear Model of the Relationship between the Overall HICP and GDP Growth in the EU-27



Source: Calculated by the authors based on the data from The ECB Data Portal (2023a), World Bank (2023a)

During the extended period from 1999 to 2022, the global average inflation rate stood at 3.55%, signifying a relatively subdued price growth trajectory, except for the year 2022, which witnessed a significant surge to 8.27%. Notably, several countries within the European region

demonstrated a pattern of price stability in the years leading up to 2021, with average Consumer Price Indices (CPI) as follows: Germany (1.66%), Spain (2.31%), the European Union (EU) (2.24%), the Netherlands (2.23%), Norway (2.28%), and Poland (3.38%). However, 2022 marked a notable departure from this stability, as Poland experienced a considerable upswing in consumer prices, reaching 14.43%. Romania and Ukraine similarly witnessed substantial inflationary spikes, with respective rates of 13.01% and 20.18% in 2022. It is important to note that Ukraine has exhibited a persistently high level of consumer price growth characterized by dynamic fluctuations (Table 2).

Table 2

Inflation, Consumer Prices (annual %) in the EU-27, Selected EU Countries, Ukraine and the World, 1999–2022

Country	1999	2005	2010	2015	2019	2020	2021	2022	Average +/-, 1999-2022	Standard deviation, +/, 1999-2022
Germany	0.59	1.55	1.10	0.51	1.45	0.14	3.07	6.87	1.66	1.32
Spain	2.31	3.37	1.80	-0.50	0.70	-0.32	3.09	8.39	2.31	1.94
European Union	2.16	2.49	1.53	-0.06	1.63	0.48	2.55	8.83	2.24	1.78
Netherlands	2.16	1.69	1.28	0.60	2.63	1.27	2.68	10.00	2.23	1.87
Norway	2.37	1.53	2.42	2.17	2.17	1.29	3.48	5.76	2.28	1.16
Poland	7.15	2.18	2.58	-0.87	2.23	3.37	5.06	14.43	3.38	3.37
Romania	45.80	9.01	6.09	-0.59	3.83	2.63	5.05	13.80	10.79	13.29
Ukraine	22.68	13.57	9.37	48.70	7.89	2.73	9.36	20.18	13.01	10.58
World	3.04	4.11	3.33	1.43	2.21	1.93	3.48	8.27	3.55	1.81

Source: Calculated by the authors based on the data from World Bank (2023b)

An examination of gross capital formation, denoted as a percentage of GDP or gross domestic investment, provides insights into the expenditure allocated toward augmenting a nation's fixed assets and the net variations in inventory levels (Biloshkurska et al., 2017). Fixed assets encompass diverse categories such as land improvements (including ditches, fences, drainage, etc.), procurement of plants, machinery, and equipment, as well as the construction of infrastructure such as roads, railways, educational institutions, healthcare facilities, offices, private residential buildings, and industrial and commercial structures.

Within the European Union (EU), the level of gross capital formation remained relatively stable at an average of 22.24% of GDP, exhibiting a minor deviation of 1.36% over the period spanning from 1999 to 2022. It is noteworthy that there are discernible disparities in the accumulation levels across different EU member countries. On a global scale, a gradual upward trend in domestic investment was observed, with Spain maintaining a steady rate from 2010 to 2022, Poland consistently at 21% since 2005, and both the Netherlands and Germany consistently at 21%. Romania, on the other hand, exhibited an increasing trend in gross savings within its economy, notably reaching 27% in 2010 and 28% in 2022 (Table 3).

Table 3

Gross Capital Formation (% of GDP) within the EU-27 and Selected Countries in 1999–2022

Country Name	1999	2005	2010	2015	2019	2020	2021	2022	Average 1999-2022 +/-	Standard deviation, 1999-2022 +/-
European Union	22.99	22.52	21.17	20.76	22.97	22.44	23.30	24.80	22.24	1.36
Germany	24.00	19.49	20.07	19.74	22.12	22.09	23.29	24.83	21.28	1.66
Netherlands	23.22	20.45	20.22	22.47	22.10	21.76	21.48	21.43	21.04	1.41
Norway	24.58	22.42	24.99	26.92	29.61	31.35	25.60	20.64	24.99	3.13
Poland	25.42	19.89	20.98	20.98	20.50	18.76	21.49	23.98	21.33	2.04
Romania	15.65	22.93	27.00	25.52	24.29	24.53	25.56	28.15	25.01	3.51
Spain	25.54	29.39	22.30	18.99	20.83	20.40	20.84	21.03	23.35	4.34
Ukraine	17.51	22.51	18.37	15.93	14.89	8.93	14.47	12.61	19.04	4.46
World	24.01	24.22	24.42	25.80	26.53	26.42	27.05	-	24.98	1.17

Source: Calculated by the authors based on the data from the World Bank (2023c)

It is noteworthy to observe the escalating trend in interest rates on loans extended to the non-financial sector within the European Union (EU), particularly evident during the years 2022 and 2023. For instance, in Germany, there was a discernible rise in interest rates, increasing from an average of 1.69% over 12 months in 2021 to an average of 1.84% in 2022. As of June 30, 2023, the interest rate on loans in Germany had further surged to 3.06%. A similar trajectory was observed in Spain and the Netherlands, where interest rates on loans experienced an increase from 1.9% in 2022 to 3.3% in 2023 (The ECB Data Portal, 2023b).

With rising interest rates, domestic lending to the private sector decreases, as evidenced by the dynamics of the share of lending in Germany, Norway, and Ukraine in 2022 (83.64%, 113.57%, and 17.7%, respectively) (Table 4).

Table 4

Domestic Credit to the Private Sector (% of GDP) within the EU27, in the World, Ukraine, and Certain EU27 Countries in 2005-2022

Country	2005	2010	2015	2019	2020	2021	2022	Average, 1999-2022 +/-	Standard deviation, 1999-2022 +/-
European Union	93.97	103.89	91.26	86.74	94.93	91.27	-	96.05	6.19
Germany	105.45	88.49	78.12	79.40	84.92	84.55	83.64	86.84	9.15
Netherlands	116.36	113.67	111.60	100.66	102.86	97.84	-	111.23	5.92
Norway	106.58	127.64	137.84	149.39	163.54	141.23	113.57	129.09	17.07
Poland	27.12	49.12	53.64	50.79	49.80	46.38	-	47.44	8.01
Romania	20.06	38.29	29.90	24.62	25.78	26.46	24.72	30.12	5.49
Spain	135.98	172.03	119.21	95.03	108.65	100.76	-	136.54	29.42
Ukraine	-	75.75	56.66	30.03	28.18	23.56	17.7	53.69	23.59
World	125.57	119.93	123.66	131.16	147.41	144.78	-	126.08	8.70

Source: Calculated by the authors based on the data from the World Bank (2023d)

Across the EU as a whole, there were observable patterns of positive and consistent dynamics in the proportion of domestic lending directed toward the private sector, with this share averaging at 96%. This practice of domestic lending to the private sector was most prevalent in developed EU countries, including Norway, the Netherlands, and Spain. In contrast, in Poland, Romania, and Ukraine, the level of domestic lending to the private sector was significantly lower, with average shares of 47%, 30%, and 53%, respectively, spanning the years 2005 to 2022.

In Ukraine, a discernible decline in domestic investment for fixed assets within the economy was observed from 2005 to 2020. However, in 2021, a noteworthy surge in investments was recorded, reaching a peak of 14.46%. Subsequently, during the period of conflict, these investments experienced a decline, decreasing to 12.61% of GDP (World Bank, 2023d). This decline can be attributed to the adverse impact of the war, which destroyed enterprise infrastructure and logistical disruptions, thereby affecting production and exports. Concurrently, interest rates on lending also exhibited an upward trajectory, rising from 14.29% in 2020 to 13.29% in 2021 and further increasing to 18.61% in 2022 (World Bank, 2023e). The real interest rate, accounting for inflation, registered at -11.6% in 2022 (World Bank, 2023f). This increase in lending rates was accompanied by a corresponding surge in consumer inflation, with rates escalating from 2.73% in 2020 to 9.36% in 2021 and reaching 20.18% in 2022 (World Bank, 2023b). Simultaneously, there is a discernible decline in the quality of life, as evidenced by the Gross Domestic Product (GDP) per capita at purchasing power parity in Ukraine. The figures stand at USD 13,102.79 in 2020, USD 14,289.04 in 2021, and USD 12,671.24 in 2022 (World Bank, 2023g). Furthermore, Ukraine's annual GDP growth rate has experienced significant fluctuations, with a contraction of -3.75% in 2020, followed by a growth of 3.45% in 2021 and a substantial decline of -29.1% in 2022. In terms of inflation, as measured by the GDP deflator, the rates have surged, standing at 10.29%, 24.81%, and 34.32% for the respective years 2020, 2021, and 2022 (World Bank, 2023a). Accordingly, the case of Ukraine provides a compelling example of the significant negative impact of inflationary processes on economic development, marked by rapid price increases within the economy from 2020 to 2022, as substantiated by the research (Dragan et al., 2021; Hapieieva et al., 2022).

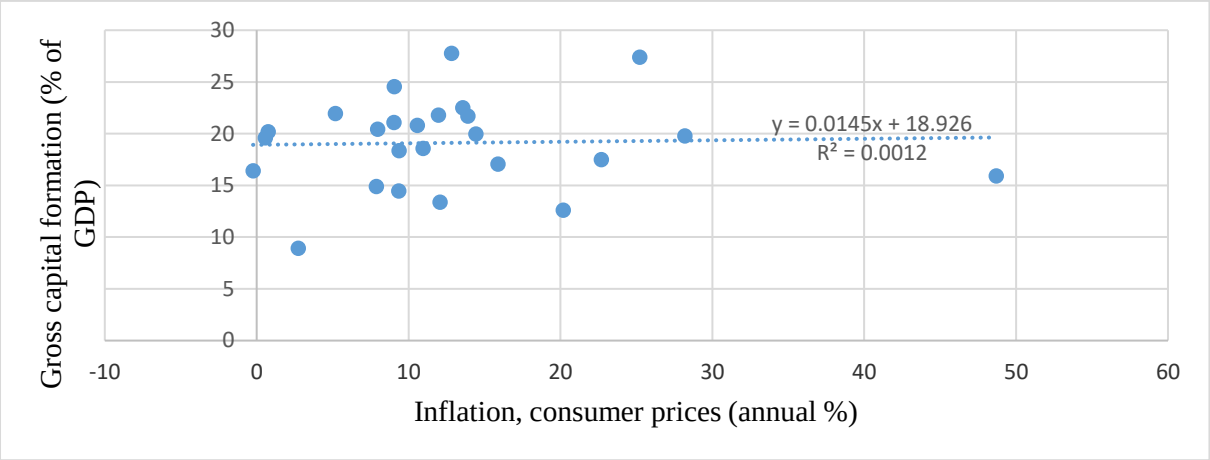
The regression model examining the association between the Consumer Price Index (CPI) and the Gross Domestic Investment (GDI) in Ukraine, as depicted in Figure 3, reveals that this relationship lacks statistical significance. The coefficient of determination is merely 0.0012, and the significance coefficient, as denoted by the $F_{\text{-statistic}}$, is .02. Furthermore, the model parameters exhibit a lack of statistical significance. The absence of a discernible relationship can be attributed to the transmission mechanism of inflationary processes into the real sector. In the short term, inflation predominantly influences the expectations of both households and businesses concerning future prices, as well as interbank interest rates. These short-term factors, in turn, exert an impact on the dynamics of deposit and lending rates within Ukraine. Several other pivotal factors, including the structure of the banking system, confidence in it, demand for loans and deposits, and global market prices, also contribute to this complex relationship. In the medium and long term, inflation eventually exerts its influence on economic development. Importantly, this relationship is characterized by its non-linearity and the indirect nature of its impact.

In contrast, the regression model examining the relationship between the Consumer Price Index (CPI) and the Gross Domestic Product (GDP) growth in Ukraine elucidates the alteration in economic growth dynamics contingent on changes in the prices of goods and services. This model accounts for approximately 11.06% of the variance in GDP growth. Significantly, at a

10% significance level, it can be asserted that inflationary processes do exert an influence on economic growth in Ukraine (Figure 4). Specifically, if inflation increases by 1% in Ukraine, it is anticipated that GDP growth will decrease by approximately -1.69%.

Figure 3

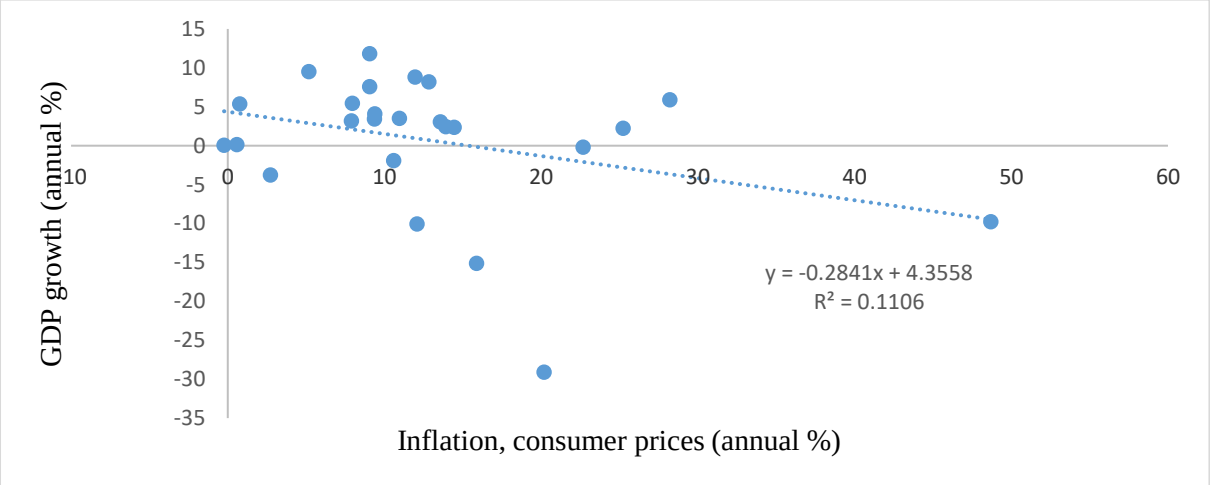
Linear Model of Dependence: CPI and Gross Domestic Investment (GDI) in Ukraine (1998–2022)



Source: Compiled by the authors based on data from World Bank (2023b; 2023c)

Figure 4

Linear Model of Dependence: CPI and Gross Domestic Product Growth Rate in Ukraine (1998–2022)



Source: Compiled by the authors based on data from World Bank (2023a; 2023b)

Furthermore, it is essential to examine the National Bank of Ukraine's (NBU) strategy for managing inflationary processes and assess its implications for economic development, both within the context of wartime and the post-war period.

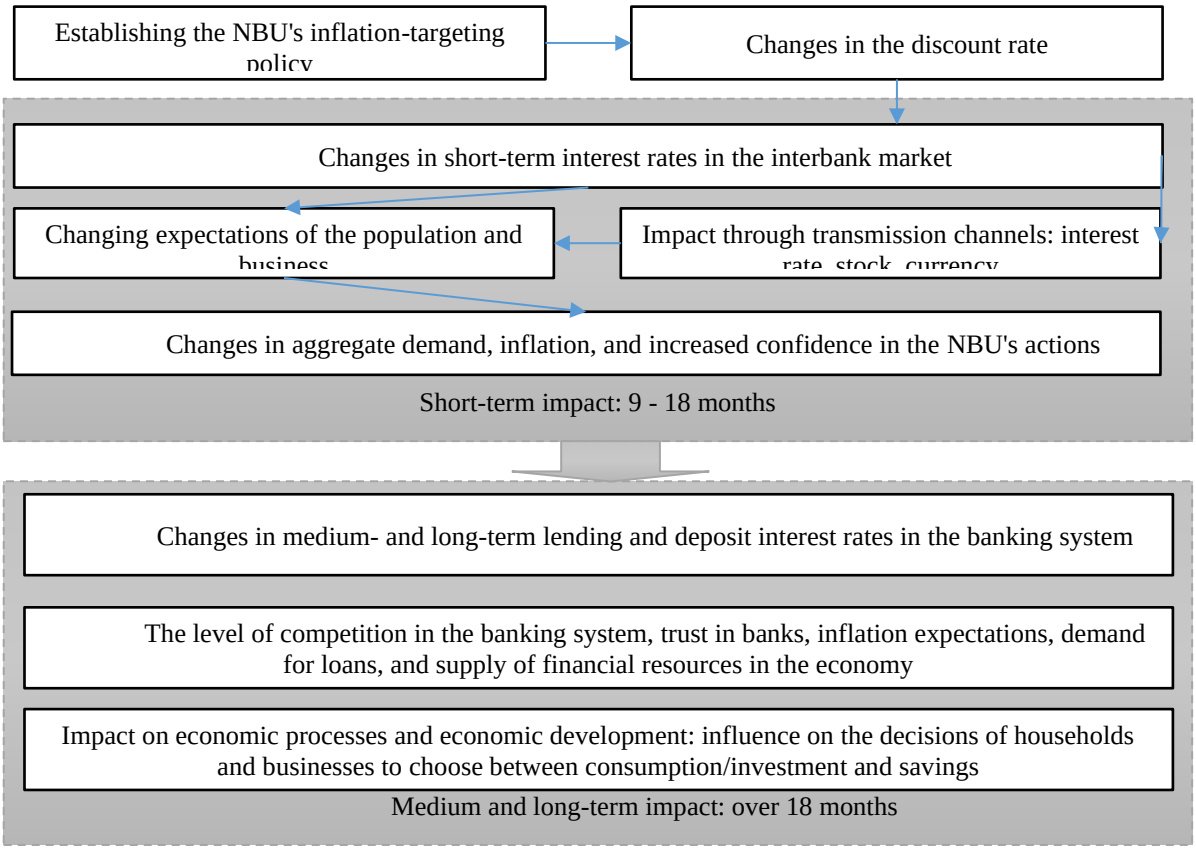
The NBU transitioned from a de facto fixed exchange rate policy to an inflation-targeting regime, as outlined in the developed Monetary Policy Strategy for the period 2016-2020. Under this framework, the NBU commits to publicly disclosing quantitative inflation targets, which represent the central bank's objectives for the medium term. The primary instrument utilized by the central bank to manage inflation is the key policy rate. This rate plays a pivotal role in the NBU's efforts to control inflationary pressures within the Ukrainian economy.

Empirical research indicates that the adoption of inflation-targeting policies has a substantial impact on mitigating inflation uncertainty within European countries (Bielialov et al., 2023; Kussainov et al., 2023; Levchenko et al., 2022; Yankovyi et al., 2023). Notably, this effect has been empirically verified in countries such as Poland and the Czech Republic. Moreover, these policies tend to exert a generally favorable influence on economic growth across European nations (Nene et al., 2022). In a study conducted by Arsić et al. (2022), it was found that inflation-targeting policies implemented in European countries have effectively curbed inflation rates, reduced inflation volatility, and minimized GDP fluctuations. However, it is important to note that these policies alone do not guarantee economic growth (Arsić et al., 2022). Overall, central banks within the European Union (EU) have adopted inflation targeting (IT) as a monetary policy strategy since the early 1990s. This approach has been substantiated by practical evidence, demonstrating its capacity to stimulate economic activity and employment. Particularly noteworthy is the fact that a significant portion of former socialist countries in Europe have also embraced IT over the past twenty-five years (Arsić et al., 2022).

The National Bank of Ukraine (NBU) has elucidated the process by which the key policy rate impacts inflation, characterizing it as a transmission mechanism of monetary policy. This mechanism unfolds in a series of stages. Initially, the NBU exercises influence over short-term interest rates within the interbank market through adjustments to the key policy rate, as depicted in Figure 5.

Figure 5

Transmission Mechanism of the Impact of Inflationary Processes on Economic Development: The Case of Ukraine



Source: Compiled by the authors based on data from the National Bank of Ukraine (2023a; 2023b; 2023c)

These interest rates exert their influence on aggregate demand and inflation through a multitude of transmission channels, encompassing interest rates themselves, stock prices, and foreign exchange rates. Of particular significance is their role in shaping expectations regarding inflationary processes among both households and businesses. Consequently, the regulator assumes the role of managing expectations about inflation, thereby enhancing the efficacy of its policies. This is achieved by instilling confidence in the National Bank of Ukraine's (NBU) decisions and actions, especially when the NBU adheres to a coherent and transparent Inflation Targeting (IT) policy. It is noteworthy that within the context of Ukraine, adjustments to the NBU's key policy rate yield the most substantial impact on inflation within a timeframe ranging from 9 to 18 months (National Bank of Ukraine, 2023a).

Medium- and long-term interest rates, which determine the cost at which the banking system attracts temporarily idle funds and allocates them to sectors of the economy where they are in demand, assume a greater degree of importance in shaping economic processes within the country (Omelchyk et al., 2022). These interest rates, specifically those associated with bank deposits and loans, are subject to influence from multiple factors, including the level of short-term rates within the interbank market and the structural attributes of the economy and financial system. These structural characteristics encompass elements such as the degree of competition within the banking sector, the level of public confidence in financial institutions, inflation expectations, the demand for loans, and the availability of financial resources in the broader economy, among others. It is worth noting that fluctuations in bank interest rates carry significant implications for the decision-making processes of both households and businesses. In particular, these interest rate dynamics influence the choices made regarding consumption versus investment on the one hand and savings on the other (National Bank of Ukraine, 2023b; 2023c).

In summary, the National Bank of Ukraine's (NBU) adoption of an inflation-targeting policy effectively shapes inflation expectations, fostering confidence among both businesses and households in the regulator's capacity to steer inflation toward the targeted levels within the medium term. In such a conducive environment, inflation ceases to be a hindrance to economic development, and these inflation expectations play a pivotal role in determining the long-term trajectory of inflation (Table 5).

Table 5

Macroeconomic Forecast of Changes in the Real Sector of Ukraine's Economy for 2023–2025

Indicators	2019	2020	2021	2022	Forecast 2023–2025		
				fact/assessment	2023	2024	2025
Real sector, % y/y, unless otherwise stated							
Nominal GDP, UAH bn	**3,977**	**4,222**	**5,451**	**5,191**	**6,510**	**7,700**	**8,910**
Real GDP	**3.2**	**-3.8**	**3.4**	**-29.1**	**2.0**	**4.3**	**6.4**
GDP deflator	8.2	10.3	25.1	34.3	22.9	13.4	8.7
CPI (average for the period)	7.9	2.7	9.4	20.2	17.1	12.8	7.6
CPI (end of period)	**4.1**	**5.0**	**10.0**	**26.6**	**14.8**	**9.6**	6.0
Core inflation	3.9	4.5	7.9	22.6	12.5	7.2	**2.8**
Non-core inflation	4.8	5.9	13.5	30.6	17.7	12.2	9.6
Raw food prices	3.9	4.1	11.8	41.6	18.7	5.0	3.1
Administratively regulated prices	8.6	9.9	13.6	15.3	15.1	23.6	18.8
CPI (end of period)				35.0	**9.0**	5.0	6.0
Nominal wage* (average for the period)	18.4	10.4	20.9	6.0	21.9	19.2	**12.7**
Real wage* (average for the period)	9.8	7.4	10.5	-11.4	3.7	5.7	4.9
Unemployment rate, % (ILO, average for the period)	8.2	9.5	9.8	21.1	18.3	16.5	14.7

Source: National Bank of Ukraine (2023d)

These expectations wield significant influence, impacting various aspects of economic decision-making:

- Businesses: Businesses consider inflation expectations when making decisions related to loans, investments, and pricing strategies for inputs and products.
- Households: Households factor in inflation expectations when making choices regarding the allocation of disposable income between savings and current consumption, as well as determining the optimal form of these savings.

The following table provides the Macroeconomic Forecast detailing anticipated changes within the real sector of Ukraine's economy spanning the years 2023 through 2025. As per the forecast, Ukraine's real Gross Domestic Product (GDP) is projected to exhibit growth of 2% in 2023, followed by an expansion of 4.3% in 2024, and further acceleration to 6.4% in 2025. This growth trajectory coincides with a consistent decline in the GDP deflator, reflecting a deceleration in price growth, which is expected to reach 6%. This aligns with the inflation target established by the regulatory authorities.

The assessment of the influence of inflationary processes on economic development in the context of forthcoming growth trends within Ukraine's economy takes into account a constellation of influential factors. These factors encompass the full accessibility of Black Sea ports, official financing, net migration, gas transit volumes, global prices for key commodities such as steel, iron ore, wheat, corn, oil, and gas, as well as the dynamics of grain harvest and wage levels.

Conclusion

Within the European Union (EU), an analysis revealed a positive correlation between inflation and GDP growth rates spanning the period from 1999 to 2022. It was observed that inflationary processes within the EU did not exert a significant influence on various macroeconomic variables, including gross domestic investment, interest rates, domestic lending to the private sector, and overall GDP growth rates. In contrast, Ukraine exhibited a distinctive pattern, indicating a negative linear relationship between changes in the Consumer Price Index (CPI) and GDP growth rates during the period of 1998 to 2022. This trend in Ukraine was characterized by a decline in domestic investment, particularly in the context of the war, coupled with a rise in interest rates and a reduction in domestic lending. Consequently, despite the National Bank of Ukraine's (NBU) adherence to an inflation-targeting policy, this study underscores the substantial impact of macroeconomic factors that have a detrimental effect on the nation's GDP growth. Remarkably, the European Union's emphasis on ensuring financial stability within its member states has played a pivotal role in mitigating the adverse repercussions of inflation on economic development.

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