






# “Monetary policy, income inequality, and the need for flexibility: Evidence from Ukraine”

<b>AUTHORS</b>	Yuliia Shapoval   Yevhen Bublyk  Sergiy Korablin 
<b>ARTICLE INFO</b>	Yuliia Shapoval, Yevhen Bublyk and Sergiy Korablin (2024). Monetary policy, income inequality, and the need for flexibility: Evidence from Ukraine. <i>Banks and Bank Systems</i> , 19(4), 150-162. doi: <a href="https://doi.org/10.21511/bbs.19(4).2024.12">10.21511/bbs.19(4).2024.12</a>
<b>DOI</b>	<a href="http://dx.doi.org/10.21511/bbs.19(4).2024.12">http://dx.doi.org/10.21511/bbs.19(4).2024.12</a>
<b>RELEASED ON</b>	Friday, 13 December 2024
<b>RECEIVED ON</b>	Wednesday, 25 September 2024
<b>ACCEPTED ON</b>	Wednesday, 30 October 2024
<b>LICENSE</b>	 This work is licensed under a <a href="https://creativecommons.org/licenses/by/4.0/">Creative Commons Attribution 4.0 International License</a>
<b>JOURNAL</b>	"Banks and Bank Systems"
<b>ISSN PRINT</b>	1816-7403
<b>ISSN ONLINE</b>	1991-7074
<b>PUBLISHER</b>	LLC “Consulting Publishing Company “Business Perspectives”
<b>FOUNDER</b>	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

66



NUMBER OF FIGURES

0



NUMBER OF TABLES

2

© The author(s) 2024. This publication is an open access article.



## BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"  
Hryhorii Skovoroda lane, 10,  
Sumy, 40022, Ukraine  
[www.businessperspectives.org](http://www.businessperspectives.org)

**Received on:** 25<sup>th</sup> of September, 2024  
**Accepted on:** 30<sup>th</sup> of October, 2024  
**Published on:** 13<sup>th</sup> of December, 2024

© Yuliia Shapoval, Yevhen Bubyk,  
Sergiy Korablin, 2024

Yuliia Shapoval, Ph.D. in Economics,  
Senior Scientific Fellow, Department  
of Monetary Relations, Institute for  
Economics and Forecasting, National  
Academy of Sciences of Ukraine,  
Ukraine. (Corresponding author)

Yevhen Bubyk, Doctor of Economics,  
Leading Research Fellow, Head  
of the Department of Monetary  
Relations, Institute for Economics  
and Forecasting, National Academy of  
Sciences of Ukraine, Ukraine.

Sergiy Korablin, Doctor of Economics,  
Corresponding Member of NAS of  
Ukraine, Deputy Director, Institute for  
Economics and Forecasting, National  
Academy of Sciences of Ukraine,  
Ukraine.



This is an Open Access article,  
distributed under the terms of the  
[Creative Commons Attribution 4.0  
International license](https://creativecommons.org/licenses/by/4.0/), which permits  
unrestricted re-use, distribution, and  
reproduction in any medium, provided  
the original work is properly cited.

**Conflict of interest statement:**  
Author(s) reported no conflict of interest

Yuliia Shapoval (Ukraine), Yevhen Bubyk (Ukraine), Sergiy Korablin (Ukraine)

# MONETARY POLICY, INCOME INEQUALITY, AND THE NEED FOR FLEXIBILITY: EVIDENCE FROM UKRAINE

## Abstract

The paper builds on the existing literature on monetary policy frameworks, exploring their role in balancing price stability, economic growth, and social equity. The aim is to analyze the influence of macroeconomic, in particular monetary, factors on income inequality in Ukraine. Using annual data from 1999 to 2021, the study employs multiple regression analysis to assess the impact of inflation, unemployment, monetization, and the key policy rate on income inequality. The results indicate that inflation and unemployment significantly contribute to rising inequality, while increased monetization and higher key policy rates reduce it. The findings underscore the need for a monetary policy framework that not only targets inflation but also addresses employment, as unemployment has a delayed yet substantial effect on inequality. Although the negative correlation between monetization and inequality suggests that efforts to curb inflation could inadvertently increase inequality, it also indicates that enhancing financial inclusion through increased liquidity could produce positive redistributive effects. Given the limitations of inflation targeting, including its tendency to overlook employment objectives, delayed effects on inequality, and potential contradiction with financial inclusion goals, a flexible approach to inflation targeting may be a more effective strategy for reducing income inequality in Ukraine.

**Keywords** inequality, monetary policy, interest rate, monetization, inflation, unemployment

**JEL Classification** E24, E30, E52, E58

## INTRODUCTION

Central banks typically prioritize maintaining price stability in their monetary policies, often refraining from directly addressing income or wealth inequality issues. However, focusing solely on maximizing economic growth does not guarantee widespread employment opportunities for all or an equitable income distribution. This recognition underscores the need for a more adaptable approach to monetary policy framework, enabling central banks to contribute to reducing income inequality without compromising their core mandate. Furthermore, the role of financial sector development in shaping living standards and mitigating inequality frequently receives insufficient attention from policymakers, complicating efforts to address economic disparities. Integrating the financial sector into broader macroeconomic policies aimed at reducing inequality is therefore essential. Expanding access to financial products and supporting sectors that generate employment requires reconsidering how monetary instruments influence societal well-being.

## 1. LITERATURE REVIEW

The theoretical foundation linking macroeconomic factors and inequality draws from several established theories, including the Harris and Todaro model of rural-urban migration, the Rehn-Meidner model for achieving full employment, price stability, growth, and equality, Kuznets' theory of driving changes in inequality, and the theory of effective demand based on Keynes (Galbraith, 2009). As Galbraith (2009) emphasizes, while income distribution at the individual or household level has traditionally been considered as a concern of applied microeconomics, macroeconomics provides a robust theoretical framework for understanding the complex relationships between inequality, unemployment, and economic growth. This underscores the importance of examining inequality through a macroeconomic lens, integrating both employment dynamics and economic growth into the analysis.

The debate on the optimal monetary policy framework has evolved considerably, with growing recognition of the need to shift from strict inflation targeting (IT) toward a more flexible approach, such as nominal GDP targeting (NGDP), which may be better suited to addressing inequality, unemployment, and economic growth simultaneously. Epstein (2008), for example, recommended employment targeting for South Africa, arguing that monetary policy should be reoriented to include tools for credit allocation and capital management. The limitations of IT became more evident in the aftermath of the GFC, prompting suggestions that central banks should expand their focus to include additional economic indicators, such as exchange rates, asset prices, and commodity prices (Frankel, 2010). Unlike IT, which primarily targets price stability, nominal income targeting aims to stabilize total nominal income, providing a broader response to macroeconomic fluctuations (McKibbin & Panton, 2018). Ortiz et al. (2024) argue that NGDP targeting is more effective in responding to supply shocks, thereby reducing welfare losses compared to IT. By addressing both inflation and real GDP deviations, NGDP targeting provides a more flexible response to supply-side disturbances, ultimately benefiting the broader economy. Garin et al. (2016) also support this view, demonstrating that NGDP tar-

geting results in smaller welfare losses, especially when dealing with supply shocks and wage stickiness in relation to prices. Borio (2021), examining the trade-offs between price stability, employment, and income equality, highlights that low inflation, stable inflation expectations, and a flatter Phillips curve have enabled central banks to pursue more accommodative policies, which help mitigate labor market scarring and reduce income inequality in the short and medium term. However, Borio (2021) also cautions that while accommodative monetary policies benefit disadvantaged individuals by supporting employment and income, they may contribute to the gradual buildup of financial imbalances. This could potentially trigger deeper financial recessions, exacerbating income inequality. Additionally, these policies necessitate maintaining low interest rates over extended periods, which could have adverse short-term effects on wealth inequality.

Meanwhile, IT's main strength lies in its simplicity and clarity. By establishing a clear, measurable target, IT enables central banks to manage economic expectations more effectively (McKibbin, 2015). In contrast, adopting an NGDP targeting requires central banks to consider both inflation and real GDP growth. For instance, if a decline in real GDP outweighs inflationary pressures, the central bank might choose to ease monetary policy rather than tighten it. This approach could yield better positive outcomes for the real economy without undermining policy expectations (McKibbin, 2015). Analyzing the limitations of NGDP targeting, Blot et al. (2021) argue that while NGDP targeting excels in macroeconomic stabilization, it does not adequately prioritize financial stability. Shirai (2018) adds that nominal wage targeting, where central banks set a target for nominal wage growth akin to price-level targeting, faces technical challenges, including the data volatility and measurement issues associated with productivity and GDP. These complexities highlight the difficulty of implementing alternative monetary policies without jeopardizing macroeconomic and financial stability.

The empirical evidence on IT's impact on income distribution remains mixed. Rochon and Rossi (2006) found that countries implementing IT in the 1980s and 1990s experienced a decrease in

wage shares compared to those that did not adopt such policies. Altunbaş and Thornton (2022) identified a rise in income inequality (Gini), in their analysis of 121 economies, including 27 inflation-targeting nations. In a recent study, Garcia and Cross (2024), examining the impact of IT on income inequality in G7 economies from 1974 to 2019, indicate that while stringent monetary policies have increased inequality, adopting IT has mitigated these effects in certain countries, such as Japan and the UK, and even has reversed them in Canada and the US. These results suggest that implementing IT at the national level can shape its influence on inequality during periods of monetary tightening.

The debate over IT's effectiveness is part of a wider discourse on inequality that has gained increased attention in recent years, particularly following Piketty's seminal work (2014). This growing focus on inequality stems not only from concerns about social equity, but also from its practical economic implications. Brueckner and Lederman (2015), in their study of 104 countries from 1970 to 2011, demonstrate that income inequality has a dual impact: while it stimulates economic growth in less affluent nations, it hinders it in advanced economies. Thus, the implications of inequality are complex. Although it can drive growth in certain contexts, increasing inequality is associated with significant economic challenges on a broader scale. For instance, it reduces overall economic demand (Meyer & Sullivan, 2017), slows economic growth (Beno & Karagiannis, 2018), impedes technological progress, and contributes to environmental degradation (Berthe & Elie, 2015; Sun, 2023). Beyond its economic consequences, inequality has far-reaching social implications, affecting public health (Wildman, 2021), increasing crime rates (Anser et al., 2020), exacerbating social problems (Thorbecke & Charumilind, 2002), and ultimately contributing to global division and conflict (Peterson, 2017).

Inequality significantly reduces factor productivity in developing nations (Espoir & Ngepah, 2021). Although there is a lack of consensus among researchers on the primary causes, interconnections, and consequences of inequality (Mdingi & Ho, 2021), some studies suggest that GDP growth has a negative impact on inequality (Wahiba &

Weriemmi, 2014; Rubin & Segal, 2015). Given the complexities of inequality's effects on growth, international organizations such as the EU, ECB, UN, and World Bank have increasingly prioritized research on inequality, poverty, and well-being.

Inflation, often linked to economic crises in theory, is traditionally expected to worsen on inequality. Pre-2000 research strongly supports this assertion, establishing a clear positive correlation between escalating inflation and increasing income inequality (Roser & Cuaresma, 2016; Davtyan, 2017; Colciago et al., 2019; Nantob, 2015). However, other research challenges this conventional view, with studies like those of Siami-Namini and Hudson (2019) suggesting that inflation may not significantly impact inequality, and Menna and Tirelli (2017) even proposing that moderate inflation could reduce inequality. This evolving perspective on inflation and inequality is further supported by Sintos's (2023) analysis, which emphasizes the uncertainty in their relationship. Nonetheless, evidence persists that aggressive inflation control, particularly within the IT framework can amplify inequality (Altunbaş & Thornton, 2022). The phenomenon of cheapflation, the faster price increase of lower-cost goods, particularly between 2020 and 2024 (Cavallo & Kryvtsov, 2024), has disproportionately impacted lower-income households, further complicating the relationship between inflation and inequality.

The post-GFC period marked a significant shift in monetary policy, with the issuance of trillions of dollars in light of unconventional monetary measures. This shift underscored the growing influence of the financial sector on economic policy. As a result, a range of financial determinants, such as the valuation of owned financial assets, capital income, and public expenditure, as well as purely monetary factors such as alterations in money supply, inflation, and fluctuations in exchange rates, have affected the dynamics of inequality since 2008. Madsen et al. (2018), in their analysis of 21 OECD countries from 1870 to 2011, have found that inequality slows economic growth in economies with low to moderate financial development but has less impact on highly developed financial systems. In general, deeper financial market development has been shown to mitigate inequality (Braun et al., 2019; Kim & Lin, 2023). At the same

time, the depth of the financial sector plays a crucial role in its impact on the economy (Shapoval et al., 2022). However, inequality is a major contributing factor to the emergence of financial crises (Kirschenmann et al., 2016; Paul, 2023; Kiley, 2021; Isojaervi & Jerow, 2024).

In this context, the uneven effects of monetary policy on various households become evident. Given that households own different types of financial assets, work in diverse industries, and have varying levels of labor market attachment, the effects of monetary policy are not uniform across these groups (McKay & Wolf, 2023). Fagerstrom (2022), in an analysis of income and wealth inequality in the U.S., France, and the U.K., as well as 8 countries from 1960 to 2010 and 41 countries from 2000 to 2014, has found that increases in capital share tend to exacerbate income inequality, while the effect on wealth inequality is more nuanced and varies depending on the specific sample of countries under investigation. This highlights the complex interplay between monetary policy and inequality, influenced by the structural characteristics of different economies.

The effects of monetary policy on income and wealth inequality are transmitted through asset prices, returns on assets, and the cost of debt servicing. In general, monetary policy can influence income inequality through (Coibion et al., 2017; Komatsu, 2023; Samarina & Nguyen, 2024):

- a) the financial channel (portfolio or financial segmentation): asset price and return changes influence inequality; unequal access to financial markets causes an uneven distribution of benefits, concentrating resources among certain population groups;
- b) the savings redistribution channel: fluctuations in real interest rates affect the distribution of economic benefits and losses between savers and debtors;
- c) the income composition channel: demonstrates how monetary changes impact various sources of income, including income from labor, business, and financial instruments;
- d) the labor-market channel (earnings heterogeneity channel) shows how shifts in mon-

etary policy influence employment levels and the disparities in primary incomes generated solely from labor; the effects can vary depending on wage flexibility.

Expansionary monetary policy measures influence income inequality through their effects on financial markets and business activities. Cohan (2014) examines how quantitative easing may contribute to income inequality in the United States, indicating that it increases inequality. Similarly, Saiki and Frost (2014) provide evidence from Japan indicating that unconventional monetary policy has contributed to rising income inequality. Mumtaz and Theophilopoulou (2017) found that expansionary monetary policy is associated with greater income inequality in the United Kingdom. O'Farrell and Rawdanowicz (2017), focusing on the Euro Area, the United States, the United Kingdom, and Canada, highlight that lower interest rates can reduce income inequality in some advanced economies by decreasing the costs of servicing debt. However, the extent of this reduction varies significantly across the countries studied, primarily due to differences in the distribution of assets and liabilities. Supporting this perspective, Furceri et al. (2018) examined contractionary monetary policy shocks across 32 advanced and emerging market countries from 1990 to 2013. They found that economic tightening increases income inequality, whereas the effects of policy easing on reducing inequality seem less significant. Herradi and Leroy (2021), analyzing 12 OECD economies over the period 1920–2016, suggest that monetary expansions increase the share of national income held by the top 1%, indicating that expansionary monetary policy may exacerbate income inequality. In contrast, Lenza and Slacalek (2018), analyzing quantitative easing in the Euro Area, highlight a compressing effect on income inequality, though Colciago et al. (2019) do not confirm this link. Dossche et al. (2021) emphasize the indirect effects of monetary easing, such as increased employment among lower-income households, while noting that its direct impact varies depending on factors like household property ownership and the prevalence of mortgages. The case of Finland, a small open economy, illustrates that monetary expansion significantly boosts economic activity through higher output, employment, and wages while having minimal impact on the distribution

of gross income and net wealth (Mäki-Fränki et al., 2022). A recent study by Samarina and Nguyen (2024) reveals that expansionary monetary policy in the peripheral countries of the euro area has contributed to a reduction in income inequality. This positive outcome primarily stems from changes in the labor market, including higher wages and increased employment opportunities. Overall, the influence of monetary policy is largely determined by the distribution of assets and liabilities, as well as the dynamics of the labor market.

Exchange rate fluctuations play a crucial role in shaping not only macroeconomic dynamics but also income inequality. Rossi and Galbraith (2016) demonstrated that in open economies with floating exchange rates, exchange rate movements were the primary drivers of industrial wage inequality between 1971 to 2011. Similarly, Goodness and Harris (2019) have confirmed that heightened exchange rate volatility adversely affects labor's income share. Consistent with these findings, several studies highlight the substantial impact of exchange rates on inequality (Min et al., 2015; Wang et al., 2019; Bahmani-Oskooee & Motavallizadeh-Ardakani, 2018), suggesting that exchange rate management could be a viable policy measure for mitigating inequality (Suratman et al., 2022).

Therefore, whereas prior research on the link between monetary factors and income inequality has primarily focused on the direct effects of IT on income distribution, a gap remains in exploring how alternative monetary frameworks could provide a broader perspective on the interplay between monetary policy, economic growth, and income inequality. The ongoing discussion about the effectiveness of IT compared to other approaches, such as NGDP targeting, underscores a growing recognition of the need for more adaptable monetary policies capable of addressing both growth and inequality issues. Moreover, the effects of a monetary policy differ across various socioeconomic groups, shaped by factors such as asset ownership, labor market dynamics, and financial development. In summary, the literature review sheds light on the complex links between macroeconomic factors and income inequality, advocating for a more nuanced understanding that accounts for diverse socioeconomic effects. Further research is needed to explore alternative

monetary policies and their implications for inequality, particularly in specific national contexts such as Ukraine.

This paper aims to examine the influence of key macroeconomic factors on income inequality in Ukraine, highlighting the limitations of the inflation targeting framework for monetary policy.

## 2. METHODS

The paper explores the relationships between macroeconomic indicators and income inequality within the monetary policy framework using a multiple linear regression model based on the least squares. Although this approach may lack advanced forecasting capabilities, it remains valuable for empirical analysis, particularly when selecting predictors from various policy domains. Furthermore, this method accommodates both discrete and continuous variables while imposing relatively modest initial data requirements, making it suitable for transitioning economies with limited historical data. Therefore, the linear regression model serves as an effective tool for generating empirical insights into the factors influencing income inequality in developing economies, helping to minimize subjectivity in policy assessments.

The study utilizes annual data from 1999 to 2021 (adjusted for certain variables to 2001–2021 to account for lags) to analyze the impact of the fluctuations in inflation, unemployment, monetization, and key policy rates on income inequality (Table 1). Key macroeconomic and monetary variables were selected based on their potential influence on inequality and sensitivity to monetary policy. A multiple linear regression model was applied using Gretl software. The functional form of the model is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon, \quad (1)$$

where  $Y$  is the dependent variable (income inequality),  $X_1 \dots X_n$  are independent variables (consumer price index, key policy rate, unemployment, monetization), and  $\beta_0 \dots \beta_n$  are coefficients for each independent variable of their impact on  $Y$ . Income inequality was calculated using the quintile ratio of funds based on total income.

Upon initial examination, the selected data period may seem outdated; however, the model remains relevant, especially in light of the ongoing war. The National Bank of Ukraine has consistently reaffirmed its commitment to reinstating the pre-war monetary policy framework as soon as conditions allow, rather than waiting for the war to fully conclude. Consequently, the effects identified in this model are likely to persist, ensuring the applicability of its findings to future policy adjustments.

In addition to the aforementioned variables, factors such as the exchange rate, the interest rate of deposits in the national currency, the monetary base, the share of deposits in foreign currencies, the ratio of M0 to M3 (as a form of shadowing the economy) were also analyzed. However, none of these variables produced a consistent or unequivocal outcomes. The impact of the GDP was thoroughly evaluated during various stages of model development, revealing a significant yet inverse relationship. This result likely stems from Ukraine's predominantly flat tax system and a extensive shadow economy, which concentrates GDP gains within the top income quintiles. Additionally, economic downturns may have further amplified this effect. Given the challenges in interpretation, the GDP variable was ultimately excluded from the model, although its persistent significance warrants acknowledgment. Furthermore, lagging independent variables were also incorporated into the model to assess their potential long-term effects on income inequality.

The model's adequacy was evaluated using specification (RESET test), autocorrelation (Breusch-Godfrey LM test and Durbin-Watson test), and heteroskedasticity (White's test) tests. The absence of standardized time series data posed chal-

lenges to the model's development. Early drafts of the model included various forms of GDP and exchange rate data as independent variables. However, the unique characteristics of these data for Ukraine posed challenges for proper analysis. The high volatility of the exchange rate and GDP data introduced significant distortions into the model. Throughout much of the analyzed period, the changes in exchange rates were extreme, characterized by prolonged phases of fixed rates during times of economic growth and sharp declines during crises, alongside a persistent devaluation trend. Similarly, GDP experienced notable fluctuations during this time. The limited-time series made it difficult to exclude specific observations of these variables without impacting the model's overall robustness. Hence, these variables were omitted, with further details provided in the results chapter.

### 3. RESULTS

The choice of an indicator to measure income inequality is contingent upon the analysis's context. In particular, the Gini, commonly used for its ability to capture overall income inequality and facilitate cross-country comparisons, is particularly relevant. However, it is less sensitive to changes at the extremes of the distribution. Significant shifts among the poorest or richest segments may go unnoticed by the Gini. From 1999 to 2021, Ukraine's Gini remained relatively stable, ranging from 0.23 to 0.25. On the one hand, this indicates a level of inequality comparable to that of prominent European economies; on the other hand, Ukraine's living standards are notably lower than those in countries with similar Gini levels. This discrepancy arises partly due to the informal economy, which generates hidden in-

**Table 1.** Variables' characteristics

Characteristic	Symbol	Source of data	Expected impact
Income inequality – ratio of monetary and total incomes of 20% of the most well-off population and 20% of the low-income population (quintile ratio of funds, by total income), index	Ineq	State Statistics Service of Ukraine	+/-
Consumer price, y-t-y index	CPI	State Statistics Service of Ukraine	+
Key policy rate, average year, %	KR	National bank of Ukraine	+/-
Monetization ratio (M3/real GDP), average year, %	M	National bank of Ukraine	+/-
Unemployment, total (% of total labor force), %	Unem	World Development Indicators	+

comes and leads to underreporting of official wages, effectively constraining the Gini index's accuracy in Ukraine.

Additionally, as of 2024, Ukraine has been reclassified as an upper-middle-income country according to the World Bank's income classification based on GNI per capita for the previous calendar year. This improved classification is attributed to a resurgence in economic growth in 2023. Following a substantial 28.8% decline in 2022, the real GDP experienced a notable upturn of 5.3% (World Bank, 2024). Nevertheless, this upward shift in income classification does not necessarily signal sustainable economic development. The increase in the numerator of the World Bank's formula resulted from the issuance of Ukrainian domestic government bonds and international financial assistance, which supported budget expenditures, including public sector salaries and social transfers. Meanwhile, the denominator – population – decreased by more than 15% due to migration, territorial losses, and war-related casualties since the onset of the Russian invasion. As of January 1, 2022, Ukraine's population was 42 mln, but by July 2024 it had decreased to 35.8 mln (Cabinet of Ministers of Ukraine, 2024). Thus, while Ukraine's income group classification has formally improved, it conceals the profound socioeconomic challenges Ukraine continues to face.

This study utilized the quintile ratio of funds (by total income) to assess income inequality more accurately. This indicator measures the ratio of total incomes (both monetary and total) between the first and last income quintiles (State Statistics Service of Ukraine, 2024). By focusing on the extremes of the income distribution, the quintile coefficient highlights disparities between the richest and poorest groups, facilitating a clear understanding of the differences in their living conditions. However, because changes in middle-class incomes do not affect this measure, a declining middle-class income share will remain undetected if the income levels of the extreme quintiles remain stable. Despite this limitation, this paper prioritizes analyzing extreme income groups, where the gap between the richest and poorest is of primary concern.

According to the quintile ratio of funds (by total income, times), income inequality in Ukraine significantly decreased from 2000 to 2014, dropping from

4.5 to 3.1. The annexation of Crimea and the outbreak of the war in Eastern Ukraine were two economic shocks that contributed to a slight increase in inequality in 2014–2015. Although inequality has not returned to the higher levels observed in the early 2000s (2000 – 4.5; 2001 – 4.2), the progress in reducing inequality has stagnated since 2014 (2015 – 3.2; 2021 – 3.45), with recurring economic crises negatively impacting basic living standards.

In contrast, the average subsistence minimum per person per month has increased, rising from USD 50 in 2000 to USD 71 in September 2024. This growth, however, has been uneven with a notable decline between 2014 and 2016 due to the national currency devaluation. Similarly, minimum monthly wage dynamics have shown substantial growth, rising from 17 USD in 2000 to 194 USD in September 2024 (State Statistics Service of Ukraine, 2024). The sharpest wage increases occurred after 2017, likely reflecting policy adjustments aimed at combatting inflation. In general, while both indicators have increased, the minimum salary has grown at a much faster rate compared to the subsistence minimum. While this trend has reduced wage inequality among lower-income groups, it has not meaningfully reduced overall income inequality, as reflected by the slowly improving but still elevated quintile ratio.

Returning to the constructed multiple linear regression model, the obtained results validated the significance of the model (Table 2), as indicated by an  $R^2$  value, showing that over 60% of the variation in income inequality can be explained by the independent variables. The overall significance of the model is reinforced by a high F-statistic, suggesting that the model fits the data well.

Regression analysis indicates that the mean of inequality stands at a positive value of 3.80 with a standard deviation of 0.38. The coefficient of determination and the model as a whole is significant ( $P\text{-value}(F) = 1.74 \cdot 10^{-21}$ ).

The regression equation could be presented as follows:

$$\begin{aligned} Ineq = & 0.0454 \cdot CPI - 0.0732 \cdot KR \\ & - 0.0293 \cdot M_1 + 0.0960 \cdot Unem_1. \end{aligned} \quad (2)$$

Standard errors for  $CPI$  are 0.00621,  $KR$  – 0.0121,  $M$  – 0.00701,  $Unemp$  – 0.0452.



**Table 2.** Regression outputs

Variables	Regression parameters	$\beta$	t-stat	p-value
<b>Dependent variable – Inequality</b>				
CPI	–	0.0454109	7.314	< 0.0001
KR	–	–0.0731895	–6.035	< 0.0001
M (-1)	–	–0.0293495	–4.188	0.0006
Unem (-1)	–	0.0960381	2.123	0.0479
Obs.	2000–2021 (T = 22)	–	–	–
Center. R <sup>2</sup>	0.604537	–	–	–
S.E.	0.260923	–	–	–
F = stat	1172.523	–	–	–
Mean dependent var	3.798518	–	–	–
S.D. dependent var	0.384137	–	–	–

Inflation significantly impacts income inequality at the 99% confidence level. The positive coefficient ( $\beta = 0.0454$ ) indicates that rising CPI is linked to higher inequality. While the effect is moderate, it is statistically strong, with a t-statistic of 7.31 and a p-value below 0.0001, underscoring CPI's importance in explaining income inequality.

The central bank's key rate has a significant negative effect on income inequality at the 99% confidence level. The negative coefficient ( $\beta = -0.0732$ ) indicates that a higher policy rate is associated with reduced inequality, likely reflecting inflation control efforts. The effect is moderate but statistically significant, with a t-statistic of  $-6.035$  and a p-value of  $< 0.0001$ , showing a meaningful impact. With a p-value under 0.01, the key policy rate is a significant factor among the chosen and contributes to explaining income inequality.

The regression results show a negative coefficient for monetization with a one-year lag ( $\beta = -0.0293495$ ), indicating that higher monetization reduces income inequality. The effect is significant at the 99% confidence level, as shown by the t-statistic ( $-4.188$ ) and p-value (0.0006).

Unemployment has a significant positive impact on income inequality at the 95% confidence level, with a one-year lag. In this sample, such a lag becomes statistically significant. The positive coefficient ( $\beta = 0.0960$ ) suggests that higher unemployment leads to increased inequality, likely due to reduced income for most of the population. The effect is notable, with a p-value of 0.0479, indicating that unemployment is an important factor influencing income inequality.

The model's adequacy is confirmed by several diagnostic tests, indicating no major issues with specification, autocorrelation, or heteroskedasticity. The RESET test for specification (squares only) showed the model is correctly specified. The test yielded an F-statistic  $F(2, 16) = 9.19942$  with a corresponding p-value of  $P(F(2, 16) > 9.19942) = 0.00219083$ . The Breusch-Godfrey LM test for autocorrelation up to order 1 found no autocorrelation. The test statistic is  $LMF = 0.118275$  with p-value =  $P(F(1, 17) > 0.118275) = 0.73513$ . White's test for heteroskedasticity also supported the null hypothesis, confirming no heteroskedasticity. The test statistic is  $LM = 11.124$  with p-value =  $P(\text{Chi-square}(14) > 11.124) = 0.676271$ .

Overall, higher inflation exacerbates income inequality, as evidenced by its strong statistical significance and positive coefficient. Unemployment also contributes to rising inequality due to income losses among the unemployed. However, while unemployment is statistically significant ( $p = 0.0479$ ), its impact is less pronounced compared to inflation: the t-statistic for unemployment is 2.123, whereas for inflation, it is much higher at 7.314. This suggests that inflation has a stronger impact on inequality compared to unemployment, even though both are significant. Conversely, a higher key policy rate appears to reduce inequality, likely by curbing inflation. Additionally, a higher monetization ratio with a one-year lag is associated with lower inequality, suggesting that improved liquidity in the economy supports more equitable income distribution.

## 4. DISCUSSION

This paper contributes to the ongoing debate on the most effective monetary policy frameworks. The results align with previous research, reinforcing the

view that central banks should consider diverse policy approaches to better address macroeconomic challenges. For instance, Epstein (2008) underscores the significance of prioritizing employment alongside inflation control, while Frankel (2010) advocates for incorporating a broader set of economic indicators, such as exchange rates and asset prices, into monetary policy decision-making. Similarly, Garin et al. (2016) and Ortiz et al. (2024) argue in favor of NGDP targeting, highlighting its potential to manage both inflation and real GDP, particularly during supply shocks. Borio (2021) also supports the merits of more accommodative monetary policies, such as NGDP targeting, citing its effectiveness in balancing price stability with employment and income equality.

The findings indicate that higher inflation exacerbates income inequality, as rising prices disproportionately erode the purchasing power of lower-income households. There is also a positive relationship between unemployment and income inequality, though its effect is less pronounced than that of inflation. The lagged effect of unemployment highlights the delayed influence of rising joblessness on income distribution, with higher unemployment rates further widening the income gap. Consequently, a singular focus on IT may neglect the need for policies that promote job creation, thereby aggravating income disparities as increased unemployment often leads to reduced incomes for many.

In contrast, the analysis shows that higher levels of economic monetization can reduce income inequality. Strict measures to control inflation that limit liquidity may inadvertently increase inequality, emphasizing the importance of an adequate money supply for fostering equitable income distribution. Increased monetization enhances access to credit and financial services, enabling broader economic participation and promoting financial inclusion for unbanked populations. Thus, strict IT may hinder monetary authorities from effectively implementing measures that reduce inequality.

Furthermore, the central bank's key policy rate significantly negatively affects income inequality. This finding suggests that raising the key policy rate, typically used to control inflation, can also help mitigate inequality. This challenges the assumption that controlling inflation through higher interest rates contradicts the objective of reducing inequality. Instead,

the findings show that both goals – maintaining low inflation and reducing inequality – can be achieved simultaneously through appropriately designed monetary policies.

The direct influence of inflation on income inequality and its inverse relationship with the central bank's key policy rate emphasizes IT's crucial role, particularly in its rigid version, where these two factors are essential for achieving monetary policy goals. A core rationale for IT is its focus on mitigating the impact of the "inflation tax", which disproportionately affects the most economically vulnerable segments of the population. This concept is particularly relevant to the study's outcomes, as a higher central bank rate is associated with a lower inflation rate, thereby contributing to decreased income inequality. Thus, effective inflation management through IT could be a vital tool for reducing economic disparities. However, the presence of additional statistically significant parameters in the regression analysis (Table 2) suggests the necessity of adopting a flexible IT approach rather than a rigid one. A flexible IT framework enables the establishment of multiple monetary targets, enabling inflation stabilization while supporting broader economic stability. This approach aligns with the objective of finding a rational equilibrium between maintaining price stability and ensuring optimal resource utilization. For instance, the Swedish central bank's well-balanced policy exemplifies this concept by achieving inflation targets while ensuring efficient resource use (Svensson, 2009). The US Federal Reserve and the Bank of England have also incorporated "forward guidance" in response to the GFC, linking the expansion of the monetary base to targeted reductions in the unemployment rate. These strategies highlight the potential of flexible IT to create an economic environment conducive to reducing income inequality.

Notably, the results reveal that the income inequality indicator responds significantly to changes in unemployment, similar to shifts in inflation or the key policy rate. This emphasizes the importance of considering labor market conditions into monetary policy frameworks. If efforts to lower inflation inadvertently increase unemployment or suppress monetization, the risks associated with a rigid IT framework could worsen income inequality. Conversely, the flexibility inherent in a flexible IT framework mitigates these risks by enabling policymakers to address the inter-

play between inflation and unemployment directly. Therefore, the regression analysis in this study advocates for a flexible IT approach, as it allows for the simultaneous consideration of both inflation targets and desired unemployment rates in monetary policy. This dual focus not only harmonizes the dynamics of prices, employment, and production but also effectively manages their overall impact on reducing income inequality.

One limitation of this paper is the exclusion of GDP as a variable in the model. It is reasonable to expect that GDP growth would reduce inequality, as prior research suggests that GDP growth is a driver rather than a consequence of inequality (Rubin & Segal,

2015; Wahiba & Weriemmi, 2014). Another limitation is the reliance on official wage distribution data, which does not account for informal wages, particularly in the top quintile. This reliance may lead to an incomplete assessment of inequality, as wage distribution alone does not reflect access to non-wage benefits. Despite these data limitations, the model provides valuable insights into factors influencing inequality, offering as a foundation for policy development aimed at reducing disparities. Future research should utilize more frequent data (quarterly or monthly) and incorporate GDP and exchange rate variables to enhance accuracy. Additionally, improving the statistical representation of national income distribution is essential for a deeper analysis.

---

## CONCLUSION

The analysis underscores the key macroeconomic, particularly monetary, factors that influence income inequality in Ukraine by emphasizing the necessity for an integrated policy framework that not only prioritizes price stability but also considers the interplay between inflation, employment, and income distribution. The findings indicate that inflation and unemployment contribute to rising inequality, while higher monetization levels and key policy rates are associated with reducing inequality.

Both inflation control and liquidity management play critical roles in mitigating inequality. While the containment of inflation is pivotal in averting escalating inequality, equal attention must be directed toward addressing unemployment, given its delayed yet substantial impact on income distribution. Since the analysis demonstrates that greater monetization reduces inequality, it supports the idea that enhancing liquidity in the economy, particularly through mechanisms that facilitate access to and utilization of financial services, may effectively mitigate inequality by promoting economic engagement across all income groups.

The finding that higher key policy rates reduce inequality challenges the notion that inflation control and inequality reduction are at odds. Implementing a flexible IT framework that balances price stability, financial inclusion, and employment targets could be a more effective approach to addressing long-term inequality in Ukraine.

## FUNDING FOR THE STUDY

The paper was funded as part of the “Financial tools for reducing economic inequality in Ukraine” research project (No. 0124U002254), conducted at the State Organization “Institute for Economics and Forecasting of the National Academy of Sciences of Ukraine.

## AUTHOR CONTRIBUTIONS

Conceptualization: Yuliia Shapoval, Sergiy Korablin.

Data curation: Yevhen Bublyk.

Formal analysis: Yuliia Shapoval.

Investigation: Yuliia Shapoval, Yevhen Bublyk.

Methodology: Yevhen Bublyk.

Project administration: Yuliia Shapoval.

Software: Yevhen Bublyk.

Supervision: Sergiy Korablin.

Validation: Sergiy Korablin.

Writing – original draft: Yuliia Shapoval, Yevhen Bublyk, Sergiy Korablin.

Writing – reviewing & editing: Yuliia Shapoval.

## REFERENCES

- Altunbaş, Y., & Thornton, J. (2022). Does inflation targeting increase income inequality? *Journal of Post Keynesian Economics*, 45(4), 558-580. <https://doi.org/10.1080/01603477.2022.2101475>
- Anser, M. K., Yousaf, Z., Nassani, A. A., Alotaibi, S. M., Kabbani, A., & Zaman, K. (2020). Dynamic linkages between poverty, inequality, crime, and social expenditures in a panel of 16 countries: Two-step GMM estimates. *Journal of Economic Structures*, 9, 1-25. <https://doi.org/10.1186/s40008-020-00220-6>
- Bahmani-Oskooee, M., & Motavallizadeh-Ardakani, A. (2018). Exchange rate changes and income distribution in 41 countries: Asymmetry analysis. *The Quarterly Review of Economics and Finance*, 68, 266-282. <https://doi.org/10.1016/j.qref.2017.11.009>
- Berthe, A., & Elie, L. (2015). Mechanisms explaining the impact of economic inequality on environmental deterioration. *Ecological Economics*, 116, 191-200. <https://doi.org/10.1016/j.ecolecon.2015.04.026>
- Blot, C., Creel, J., & Ragot, X. (2021). *Flexible inflation targeting vs nominal GDP targeting in the euro area* (Research Report) (pp. 45-64). European Parliament. Retrieved from <https://sciencespo.hal.science/hal-03429880>
- Borio, C. (2021). The distributional footprint of monetary policy. *BIS Annual Economic Report 2021* (pp. 39-64). Retrieved from <https://www.bis.org/publ/arpdf/ar2021e2.pdf>
- Braun, M., Parro, F., & Valenzuela, P. (2019). Does finance alter the relation between inequality and growth? *Economic Inquiry*, 57(1), 410-428. <https://doi.org/10.1111/ecin.12581>
- Brueckner, M., & Lederman, D. (2015). *Effects of income inequality on aggregate output* (Policy Research Working Paper No. 7317). World Bank. Retrieved from <http://hdl.handle.net/10986/22203>
- Cabinet of ministers of Ukraine. (2024). *Strategy for the demographic development of Ukraine for the period up to 2040*. Order No. 922 from September 30, 2024. Retrieved from <https://zakon.rada.gov.ua/laws/show/922-2024-%D1%80#Text>
- Cavallo, A., & Kryvtsov, O. (2024). Price discounts and cheapflation during the post-pandemic inflation surge. *Journal of Monetary Economics*, 148, 103644. <https://doi.org/10.1016/j.jmoneco.2024.103644>
- Cohan, W. (2014). *How quantitative easing contributed to the nation's inequality problem*. Dealbook, New York Times. Retrieved from <https://archive.nytimes.com/dealbook.nytimes.com/2014/10/22/how-quantitative-easing-contributed-to-the-nations-inequality-problem/>
- Coibion, O., Gorodnichenko, Y., Kueng, L., & Silvia, J. (2017). Innocent Bystanders? Monetary policy and inequality. *Journal of Monetary Economics*, 88, 70-89. <https://doi.org/10.1016/j.jmoneco.2017.05.005>
- Colciago, A., Samarina, A., & de Haan, J. (2019). Central bank policies and income and wealth inequality: A survey. *Journal of Economic Surveys*, 33(4), 1199-1231. <https://doi.org/10.1111/joes.12314>
- Davtyan, K. (2017). The distributive effect of monetary policy: The top one percent makes the difference. *Economic Modelling*, 65, 106-118. <https://doi.org/10.1016/j.econmod.2017.05.011>
- Dossche, M., Slacalek, J., & Wolswijk, G. (2021). Monetary policy and inequality. *ECB Economic Bulletin*, 2/2021. Retrieved from [https://www.ecb.europa.eu/press/economic-bulletin/articles/2021/html/ecb.ebart202102\\_01~1773181511.en.html](https://www.ecb.europa.eu/press/economic-bulletin/articles/2021/html/ecb.ebart202102_01~1773181511.en.html)
- El Herradi, M., & Leroy, A. (2021). Monetary policy and the top 1%: Evidence from a century of modern economic history. *International Journal of Central Banking*, 18(5), 237-277. Retrieved from <https://amu.hal.science/hal-03513433v1>
- Epstein, G. (2008). An employment targeting framework for central bank policy in South Africa. *International Review of Applied Economics*, 22(2), 243-258. <https://doi.org/10.1080/02692170701880775>
- Espoir, D. K., & Ngepah, N. (2021). Income distribution and total factor productivity: A cross-country panel cointegration analysis. *International Economics and Economic Policy*, 18(4), 661-698. <https://doi.org/10.1007/s10368-021-00494-6>
- Fagerstrom, M. (2022). Interest rates and inequality: Does the choice of inequality measure matter? SSRN, 4239796. <http://dx.doi.org/10.2139/ssrn.4239796>
- Frankel, J. (2010). Chapter 25 – Monetary policy in emerging markets. *Handbook of Monetary Economics*, 3, 1439-1520. <https://doi.org/10.1016/B978-0-444-53454-5.00013-X>

21. Furceri, D., Loungani, P., & Zdzienicka, A. (2018). The effects of monetary policy shocks on inequality. *Journal of International Money and Finance*, 85, 168-186. <https://doi.org/10.1016/j.jimonfin.2017.11.004>
22. Galbraith, J. K. (2009). Inequality, unemployment and growth: New measures for old controversies. *The Journal of Economic Inequality*, 7, 189-206. <https://doi.org/10.1007/s10888-008-9083-2>
23. Garin, J., Lester, R., & Sims, E. (2016). On the desirability of nominal GDP targeting. *Journal of Economic Dynamics and Control*, 69, 21-44. <https://doi.org/10.1016/j.jedc.2016.05.004>
24. Isojaervi, A., & Jerow, S. (2024). Inequality and financial sector vulnerabilities. *FEDS Notes*. Washington: Board of Governors of the Federal Reserve System. <https://doi.org/10.17016/2380-7172.3482>
25. Kiley, M. T. (2021). What macroeconomic conditions lead financial crises? *Journal of International Money and Finance*, 111, 102316. <https://doi.org/10.1016/j.jimonfin.2020.102316>
26. Kim, D. H., & Lin, S. C. (2023). Income inequality, inflation, and financial development. *Journal of Empirical Finance*, 72, 468-487. <https://doi.org/10.1016/j.jempfin.2023.04.008>
27. Kirschenmann, K., Malinen, T., & Nyberg, H. (2016). The risk of financial crises: Is there a role for income inequality? *Journal of International Money and Finance*, 68, 161-180. <https://doi.org/10.1016/j.jimonfin.2016.07.010>
28. Komatsu, M. (2023). The effect of monetary policy on consumption inequality: An analysis of transmission channels through TANK models. *Journal of Money, Credit and Banking*, 55(5), 1245-1270. <https://doi.org/10.1111/jmcb.12986>
29. Lenza, M., & Slacalek, J. (2018). How does monetary policy affect income and wealth inequality? Evidence from quantitative easing in the euro area. *Journal of Applied Econometrics*, 39(5), 746-765. <https://doi.org/10.1002/jae.3053>
30. Madsen, J. B., Islam, M. R., & Doucouliagos, H. (2018). Inequality, financial development and economic growth in the OECD, 1870–2011. *European Economic Review*, 101, 605-624. <https://doi.org/10.1016/j.euroecorev.2017.11.004>
31. Mäki-Fränti, P., Silvo, A., Gulan, A., & Kilponen, J. (2022). *Monetary policy and inequality in a small open economy* (Research Discussion Paper No. 3). Bank of Finland. Retrieved from <https://ssrn.com/abstract=4014139>
32. McKay, A., & Wolf, C. K. (2023). Monetary policy and inequality. *Journal of Economic Perspectives*, 37(1), 121-144. <https://doi.org/10.1257/jep.37.1.121>
33. McKibbin, W. J. (2015). *Central banks must target growth not inflation*. Brookings. Retrieved from <https://www.brookings.edu/articles/central-banks-must-target-growth-not-inflation>
34. McKibbin, W. J., & Panton, A. J. (2018). *25 Years of Inflation Targeting in Australia: Are There Better Alternatives for the next 25 Years?* Reserve Bank of Australia. Retrieved from <https://www.rba.gov.au/publications/confs/2018/pdf/rba-conference-volume-2018-mckibbin-panton.pdf>
35. Mdingi, K., & Ho, S. Y. (2021). Literature review on income inequality and economic growth. *MethodsX*, 8, 101402. <https://doi.org/10.1016/j.mex.2021.101402>
36. Menna, L., & Tirelli, P. (2017). Optimal inflation to reduce inequality. *Review of Economic Dynamics*, 24, 79-94. <https://doi.org/10.1016/j.red.2017.01.004>
37. Meyer, B. D., & Sullivan, J. X. (2017). *Consumption and income inequality in the U.S. since the 1960s* (NBER Working Paper No. 23655). National Bureau of Economic Research. <https://doi.org/10.3386/w23655>
38. Min, H.-G., Shin, S.-O., & McDonald, J. (2015). Income inequality and the real exchange rate: Linkages and evidence. *Annals of Economics & Finance*, 16(1), 115-141. Retrieved from <http://aeconf.com/Articles/May2015/aef160106.pdf>
39. Mumtaz, H., & Theophilopoulou, A. (2017). The impact of monetary policy on inequality in the UK: An empirical analysis. *European Economic Review*, 98, 410-423. <https://doi.org/10.1016/j.euroecorev.2017.07.008>
40. Nantob, N. (2015). Income inequality and inflation in developing countries: An empirical investigation. *Economics Bulletin*, 35(4), 2888-2902. Retrieved from <https://www.accessecon.com/Pubs/EB/2015/Volume35/EB-15-V35-I4-P288.pdf>
41. National Bank of Ukraine (NBU). (2024). *Monetary operations with banks: Interest rates*. Retrieved from <https://bank.gov.ua/en/markets/interest-rates>
42. O'Farrell, R., & Rawdanowicz, L. (2017). Monetary policy and inequality: Financial channels. *International Finance*, 20(2), 174-188. <https://doi.org/10.1111/inf.12108>
43. Ortiz, M., Inca, A., & Solf, F. (2024). *Welfare implications of nominal GDP targeting in a small open economy* (Munich Personal RePEc Archive, No. 119999). Retrieved from [https://mpra.ub.uni-muenchen.de/119999/1/MPRA\\_paper\\_119999.pdf](https://mpra.ub.uni-muenchen.de/119999/1/MPRA_paper_119999.pdf)
44. Paul, P. (2023). Historical patterns of inequality and productivity around financial crises. *Journal of Money, Credit and Banking*, 55(7), 1641-1665. <https://doi.org/10.1111/jmcb.13020>
45. Peterson, E. W. F. (2017). Is economic inequality really a problem? A review of the arguments. *Social Sciences*, 6(4), 147. <https://doi.org/10.3390/socsci6040147>
46. Piketty, T. (2014). *Capital for the twenty-first century*. New York: Belknap Press.
47. Rochon, L. P., & Rossi, S. (2006). Inflation targeting, economic performance, and income distribution: A monetary macroeconomics analysis. *Journal of Post Keynesian Economics*, 28(4), 615-638. <https://doi.org/10.2753/PKE0160-3477280405>

48. Roser, M., & Cuaresma, J. C. (2016). Why is income inequality increasing in the developed world? *Review of Income and Wealth*, 62(1), 1-27. <https://doi.org/10.1111/roiw.12153>
49. Rossi, D., & Galbraith, J. (2016). *Exchange rates and industrial wage inequality in open economies* (UTIP Working Paper No. 71). Texas: The University of Texas at Austin. Retrieved from [https://utip.gov.utexas.edu/papers/utip\\_71.pdf](https://utip.gov.utexas.edu/papers/utip_71.pdf)
50. Rubin, A., & Segal, D. (2015). The effects of economic growth on income inequality in the US. *Journal of Macroeconomics*, 45, 258-273. <https://doi.org/10.1016/j.jmacro.2015.05.007>
51. Saiki, A., & Frost, J. (2014). Does unconventional monetary policy affect inequality? Evidence from Japan. *Applied Economics*, 46(36), 4445-4454. <https://doi.org/10.1080/00036846.2014.962229>
52. Samarina, A., & Nguyen, A. D. (2024). Does monetary policy affect income inequality in the euro area? *Journal of Money, Credit and Banking*, 56(1), 35-80. <https://doi.org/10.1111/jmcb.13017>
53. Shapoval, Yu., Kerimov, P., Shpanel-Yukhta, O., Korablin, S., Bublyk, Ye., & Brus, S. (2022). *Financial depth-economic growth nexus in Ukraine*. Kharkiv: PC Technology Center. <http://doi.org/10.15587/978-617-7319-61-9>
54. Shirai, S. (2018). *Considering new monetary policy frameworks and the case of Japan, part 2: Nominal GDP targeting and nominal wage targeting*. Retrieved from <https://cepr.org/voxeu/columns/considering-new-monetary-policy-frameworks-and-case-japan-part-2-nominal-gdp>
55. Siami-Namini, S., & Hudson, D. (2019). Inflation and income inequality in developed and developing countries. *Journal of Economic Studies*, 46(3), 611-632. <https://doi.org/10.1108/JES-02-2018-0045>
56. Sintos, A. (2023). Does inflation worsen income inequality? A meta-analysis. *Economic Systems*, 47(4), 101146. <https://doi.org/10.1016/j.ecosys.2023.101146>
57. State Statistics Service of Ukraine. (2024). Retrieved from <https://www.ukrstat.gov.ua>
58. Sun, Y. (2023). Income inequality, carbon emissions, and green development efficiency. *Environmental Science and Pollution Research*, 30(8), 21081-21091. <https://doi.org/10.1007/s11356-022-23583-8>
59. Suratman, E., Mayudi, G., & Hayet. (2022). Impact of inflation and exchange rate on ASEAN income inequality. *International Journal of Business and Society*, 23(1), 390-403. <https://doi.org/10.33736/ijbs.4621.2022>
60. Svensson, L. (2009). *Flexible inflation targeting – Lessons from the financial crisis, at the workshop “Towards a new framework for monetary policy. Lessons from the crisis,” organized by the Netherlands Bank*. Retrieved from <https://www.bis.org/review/r090923d.pdf>
61. Thorbecke, E., & Charumilind, C. (2002). Economic inequality and its socioeconomic impact. *World Development*, 30(9), 1477-1495. [https://doi.org/10.1016/S0305-750X\(02\)00052-9](https://doi.org/10.1016/S0305-750X(02)00052-9)
62. Wahiba, N. F., & El Weriemmi, M. (2014). The relationship between economic growth and income inequality. *International Journal of Economics and Financial Issues*, 4(1), 135-143. Retrieved from <https://www.econjournals.com/index.php/ijefi/article/view/657>
63. Wang, S., Gao, Y., & Luo, M. (2023). What drives income inequality? Bayesian evidence from the emerging market economies. *Journal of Applied Economics*, 26(1), 2237692. <https://doi.org/10.1080/15140326.2023.2237692>
64. Wildman, J. (2021). COVID-19 and income inequality in OECD countries. *The European Journal of Health Economics*, 22, 455-462. <https://doi.org/10.1007/s10198-021-01266-4>
65. World Bank. (2024). *World Bank country classifications by income level for 2024-2025*. Retrieved from <https://blogs.worldbank.org/en/opendata/world-bank-country-classifications-by-income-level-for-2024-2025>
66. World Development Indicators. (2024). *World Bank Data Bank*. Retrieved from <https://databank.worldbank.org/source/world-development-indicators>