ECONOMIC INEQUALITY THROUGH THE LENS OF FINANCE IN UKRAINE

NATIONAL ACADEMY OF SCIENCES OF UKRAINE
STATE ORGANISATION
"INSTITUTE FOR ECONOMICS AND FORECASTING
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ДЕРЖАВНА УСТАНОВА
«ІНСТИТУТ ЕКОНОМІКИ ТА ПРОГНОЗУВАННЯ
НАЦІОНАЛЬНОЇ АКАДЕМІЇ НАУК УКРАЇНИ»

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This monograph offers an evidence-based investigation of economic inequality in Ukraine, exploring its structural links to monetary and fiscal policies, digitalisation, and middle-class transformation, placing the national case within a broader international and theoretical framework. Drawing on Ukrainian data, eight chapters cover household income development, the distributional effects of monetary policy, the impact of fiscal policy on inequality, particularly the role of social transfers and the implications of shadow and P2P economies for taxation, the relationship between economic growth and inequality, the middle-class formation considering gender inequality, regional and sectoral inequalities shaped by digitalisation. It is essential reading for researchers, scholars, and policymakers engaged with inequality in transition economies.

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ABBREVIATIONS

EU	—	European Union
GDP	—	Gross domestic product
GGGI	—	Global gender gap index
GRP	—	Gross regional product
HANK	—	Heterogeneous Agent New Keynesian (model)
HHI	—	Herfindahl — Hirschman index
ICT	—	Information and communication technologies
IDLQP of the NAS of Ukraine	—	Institute for Demography and Life Quality Problems of the National Academy of Sciences of Ukraine (now Mykhailo Ptoukha Institute for Demography and Life Quality Research of the NAS of Ukraine)
IDP	—	Internally displaced persons
ILO	—	International labour organization
IoT	—	Internet of Things
NBU	—	National Bank of Ukraine
OECD	—	Organisation for Economic Co-operation and Development
OLS	—	Ordinary least squares
P2P	—	Peer-to-peer
PCA	—	Principal component analysis
POS	—	Point-of-sale (terminals)
PPP	—	Purchasing power parity
RANK	—	Representative Agent New Keynesian (model)
SME	—	Small and medium-sized enterprises
SSSU	—	State Statistics Service of Ukraine
UCSR	—	Ukrainian Centre for Social Reforms
VAT	—	Value added tax
WEF	—	World Economic Forum

PREFACE

Why does examining economic inequality in Ukraine through the lens of finance matter? The financial system not only serves as a way to transmit macroeconomic policies but also for redistributing resources and opportunities among different economic actors. Variations in financial conditions can differentially affect various parts of the population, causing disparities in income levels and distribution. As inequality increases, some individuals may have the opportunity to escape poverty, while the rising concentration of income at the top deciles reinforces the idea that the wealthy are accumulating wealth faster than the poor can improve their circumstances.

Exploring economic inequality necessitates moving beyond traditional indicators, which often fail to capture the influence of financial channels in shaping income distribution. Ukraine exemplifies this issue, for example, with its Gini remaining relatively low despite multiple banking crises and significant economic setbacks amid the full-scale war. This paradox prompts the question: how can an economy subjected to repeated severe shocks exhibit moderate levels of inequality? The explanation resides in the underappreciated role of finance. Why does this matter for policymaking? If inequality is perceived mainly as a labour-market issue, the focus is likely to be on investments in education and minimum-wage policies, overlooking the monetary transmission and fiscal redistribution channels, as well as the digital divide. Recognizing that addressing economic inequality requires financial policy solutions is crucial for a reconstruction that will not reproduce pre-war distributional imbalances.

This monograph constructs that framework, incorporating both financial and social perspectives in analysing economic inequality in Ukraine. This study examines the distributional effects of monetary policy alongside the redistributive capacity

of the fiscal policy, the role of digital financial services in reshaping regional and sectoral income distributions, and the middle class as the social stratum whose formation serves as a symptom of the trajectory of income distribution. Together, the eight chapters form a coherent argument about the financial determinants of inequality.

Chapter 1, "Economic inequality: distribution of household income", traces the evolution of inequality before and during wartime and examines the structure of household incomes, with particular focus on the middle class, emphasising the importance of supporting income diversification and expanding access to capital markets for lower and middle deciles as essential for reducing inequality. It highlights that income polarisation worsens during war. Low-income households rely heavily on social transfers and are highly vulnerable, while the middle-income class depends on wages, making it also susceptible to shocks. The middle-income class shrinks, and income becomes more concentrated in the upper deciles.

Chapter 2, "Monetary policy & economic inequality", explains how monetary policy affects inequality, emphasising income stratification in Ukraine since 2016, mainly due to changes in labour income. It highlights the link between labour income heterogeneity and economic factors such as monetisation and currency depreciation, while capital income and social transfers show institutional inertia. The Chapter presents evidence of household financial behaviour, revealing a shift towards liquidity preference, increased financial segmentation and persistent distrust in the national currency, which calls for improved financial inclusion.

Chapter 3, "Fiscal policy & economic inequality", offers an integrated framework for analysing how fiscal policy affects economic inequality, combining theoretical foundations with a comparative analysis of Ukrainian and global practices. It examines the main channels through which fiscal policy shapes income distribution, emphasising the relative effectiveness of various instruments. It investigates how Ukraine's fiscal policy tools influence income inequality. The findings demonstrate that social transfers are the primary means of income equalisation, while tax policy mainly serves as a mechanism to mobilise government revenues to fund those redistributive programmes.

Chapter 4, "Social transfers & economic inequality", explores how social transfers can alleviate economic inequality. In Ukraine, social programmes are often funded by taxes, which can worsen inequality. Despite significant social spending, many beneficiaries still live below the subsistence minimum. The assessment for 2010 to 2021 shows that social expenditures decreased economic inequality; however, as the proportion of transfers increases, income disparity between groups widens (state support mainly benefits the lower deciles, and capital income remains minimal for most). To improve the effectiveness of social transfers, two alternative approaches exist: (i) increasing the tax burden (inclu-

ding through regressive taxes) and expanding social expenditure — a strategy Ukraine currently employs; (ii) reducing the volume of transfers while enhancing their targeting, though this requires higher administrative costs and developing additional non-cash support measures (public services, indirect subsidies).

Chapter 5, "Tax policy & economic inequality", analyses Ukraine's tax system and its impact on economic inequality, calculating the Kakwani and Reynolds-Smolensky indices and highlighting the widespread use of regressive taxation to fund social benefits and wartime expenses. The tax structure largely sustains income inequality, contributing only modestly to its reduction through social transfers. While the shadow economy's effect on inequality remains theoretically negative, empirical evidence is lacking, suggesting it has not yet significantly influenced income distribution. The Chapter concludes that increasing tax progressivity may be unfeasible under current fiscal constraints and recommends stabilising revenues while better integrating tax policy with social transfers to enhance redistribution outcomes.

Chapter 6, "Economic inequality & economic growth", explores the relationship between economic growth and income inequality both globally and in Ukraine. Moderate inequality can foster economic growth, but excessive inequality hampers progress. The low Gini coefficient in Ukraine is mainly due to social transfers such as pensions. Although wage growth since 2014 has reduced disparities, regional imbalances and a weak middle class remain. The Chapter emphasises a connection between GDP and household income, alongside discrepancies between official income data and actual consumption. It supports policies that encourage sustainable wage growth and middle-class expansion without jeopardising macroeconomic stability.

Chapter 7, "Middle class & economic inequality", examines the connection between economic inequality and the development of the middle class, with a focus on Ukraine within a global perspective. It highlights the expansion of the global middle class, discusses current measurement methods and promotes a holistic approach that includes well-being indicators and expenditure measures. It also addresses gender aspects of inequality, highlighting progress in education and workforce participation with persistent gaps in earnings and leadership roles. Recommendations include targeted empowerment programmes, progressive tax reforms, and greater investment in education and healthcare to foster middle-class growth and gender equality.

Chapter 8, "Digitalisation & economic inequality", focuses on digital inequality: analysing the dynamics of digital infrastructure, financial services, the development of IT clusters, and their effects on regional and sectoral disparities. The main finding is that digitalisation influences economic inequality in Ukraine through two channels: (1) regional — a direct link has been identified between increased access to mobile Internet, higher income levels and reduced regional disparity; (2) sectoral — a technological premium has been observed

in sectors with substantial investments in digitalisation (information technology and finance), which results in higher labour costs for specialists servicing modern digital solutions and exacerbates income polarization across different sectors of the economy.

Therefore, this monograph aims to bring the issue of wealth and income distribution back to the forefront of economic analysis, drawing on international experience, theory and data from Ukraine to identify trends and suggest measures to reduce inequality, because understanding how finance and income inequality interact is essential for ensuring equal economic opportunities.

The monograph was produced within the research project "Financial tools for reducing economic inequality in Ukraine" (No. 0124U002254), carried out at the State Organisation "Institute for Economics and Forecasting of the National Academy of Sciences of Ukraine". The authors express their profound gratitude to the Armed Forces of Ukraine and the energy sector for their courage and unwavering dedication, which made this research possible.

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CHAPTER 1

ECONOMIC INEQUALITY: DISTRIBUTION OF HOUSEHOLD INCOME

Yuliia Shapoval

Chapter 1 examines the dynamics and structural drivers of economic inequality in Ukraine. Subchapter 1.1 focuses on the income share of the poorest 40% of households in relation to traditional inequality measures such as the Gini coefficient, decile and quartile ratios. The findings indicate a decrease in the share of monetary income held by the poorest households, alongside a rising trend in overall economic inequality. According to the Palma and Theil indices, the top 1% have experienced a general increase in income inequality, with a concentration of income in a narrow top group over 2018—2021. The full-scale war has further intensified these disparities: income inequality persists with a noticeable long tail in the upper deciles, indicating that some households earn monetary incomes many times that of the national average. The sharp rise in the Gini coefficient observed in 2023 highlights the index's sensitivity to extreme shifts in income distribution. Subchapter 1.2 concentrates on the income structure and heterogeneity channels, specifically on the middle-income class in Ukraine. It uses an index analysis and interdecile correlations to study data from the Households Living Conditions Survey for the 2007—2021 period. The results reveal: (i) a trend of increasing inequality since 2014 and (ii) a U-shaped pattern in the income structure (the poorest and the richest deciles show the highest concentration of income from one or two sources, such as social transfers or capital/wages), while the middle deciles display the greatest diversification. Overall, the middle-income class (deciles 4—7) is characterised by the absence of capital. Inter-decile gaps in capital income are the largest and tend to grow, increasing structural polarisation. It is suggested that reducing inequality involves developing institutional and financial mechanisms to support income diversification and improve access to capital income for the middle and lower deciles.

Introduction

In this monograph, economic inequality is defined as an unequal distribution of economic resources and opportunities, including both income and wealth, among individuals and household groups. In general, the research indicates that inequality depends not only on the amount of resources but also mainly on how they are distributed. Particularly, North (1990) emphasises that the differences in countries' well-being are explained less by resources or technologies and more by the quality and development of

their institutions, which shape incentives for economic behaviour. Acemoglu and Robinson (2012) have elaborated this issue, explaining how extractive institutions, created by elites for their own enrichment and power, affect national well-being, whereas inclusive institutions, conversely, foster a more equitable distribution of resources and prosperity. Stiglitz (2012) warns about the risks of inequality, which can hinder economic growth. Accordingly, inequality weakens aggregate demand, as the poorer segments of the population, who tend to spend most of their income, receive less, and it diminishes equality of opportunity, leading to a loss of human potential. Much of the income of the wealthiest is not a fair reward for innovation or contribution to society but is instead the result of manipulation, predatory lending, and other rent-seeking behaviours. For Deaton (2013), the history of human progress out of poverty and early death is intricately linked to the history of inequality. He contends that if the growth of incomes at the top harms other aspects of well-being (such as participation in democracy, health and education), then such growth cannot be justified. Piketty (2014) argues that the primary driver of inequality is the fact that the rate of return on capital exceeds the rate of economic growth. Atkinson (2015) asserts that outcome inequality also matters because society cannot ignore those suffering hardship, even if there was prior equality of opportunity. Reinert (2019) provides a historical perspective, demonstrating that affluent countries became wealthy through protectionism and state support but now impose free trade on poorer nations, thereby perpetuating global inequality. In the Ukrainian context, Heyets (2025) proves that reducing inequality and raising welfare levels is achievable not solely through economic mechanisms but also through institutional changes.

This Chapter addresses the issue of rising income polarisation by analysing changes in the income structure and the channels through which inequality develops, with particular focus on the role of the middle class. The Chapter argues that reducing inequality in Ukraine depends on developing institutional and financial mechanisms that encourage income diversification and expand access to capital, particularly for the lower and middle segments of households.

1.1. Economic inequality in Ukraine: pre-war and wartime contexts

Inequality in Ukraine: pre-war context

Economic inequality has increased in Ukraine over the past decade despite periodic improvements. An analysis of the share of monetary income of the poorest 40% of households, along with traditional inequality indicators (Gini coefficient, decile and quintile ratios), reveals the following key trends (Fig 1.1): (i) a decline in the income share of the poor: from 2007 to 2021, the share of monetary income held by the poorest 40% of households fell from nearly 30% to 24% (indicating

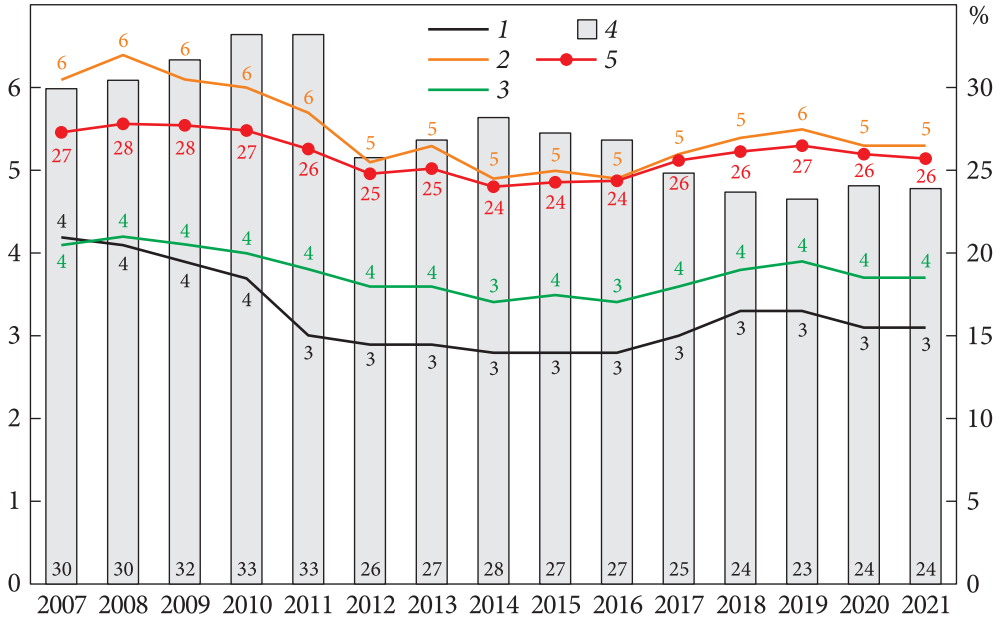

Fig. 1.1. Inequality indicators of household monetary income in Ukraine, 2007—2021.
Left scale: 1 — decile coefficient of differentiation of monetary incomes, times; *2* — ratio of monetary incomes of the 10% most and least well off population (decile fund ratio), times; *3* — ratio of monetary incomes of the 20% most and least well off population (quintile fund ratio), times; *right scale: 4* — share of monetary income of the poorest 40% of households, %; *5* — gini coefficient, %
Source: calculated by the author based on (SSSU, 2021).

that the income share of the poorest groups is gradually decreasing); (ii) a shift in trend after 2014: before 2014, inequality was decreasing (the income share of the poor was rising, and classical coefficients were declining), but since 2015, the trend has reversed, and inequality has increased again; and (iii) income polarisation: the simultaneous decline in the income share of the poor and the rise in the Gini coefficient and other inequality ratios.

Analysis of the distribution of households by decile group according to equivalised total income (calculated per household member using the equivalence scale), along with the median and mean values of these incomes, and the entry threshold, median, average and maximum total income of the top 1% in 2018—2021 (Fig 1.2) demonstrates that inequality has not only increased but has also become more concentrated among the wealthiest groups, specifically:

• The rise in income inequality mainly results from significantly higher income growth rates in the upper deciles: indicators for the top 1% (median, average, maximum) are rising faster than incomes in most other deciles; however, by 2021, the average income of the top 1% and decile 10 was nearly equalised.

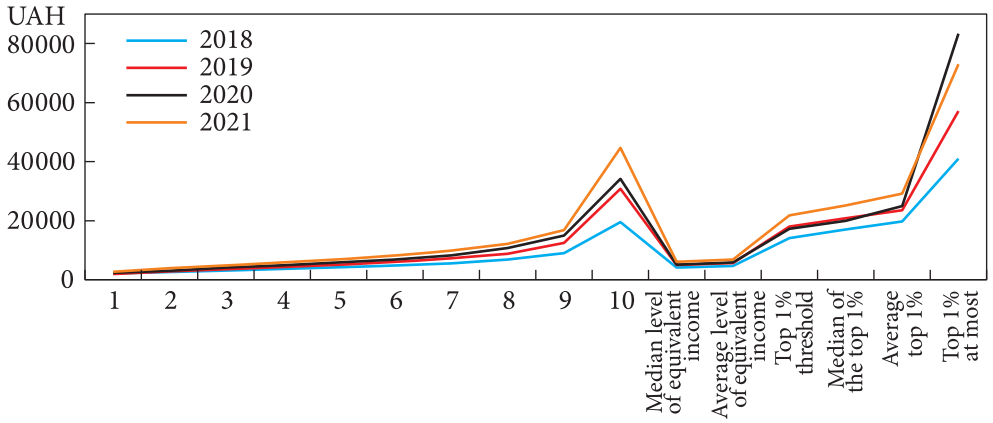

Fig. 1.2. Household total monthly income distribution by decile group and top 1% indicators in Ukraine, 2018—2021, UAH. The period for this calculation, 2018—2021, is limited to the availability of microdata from the Households Living Conditions Survey of the SSSU. For the upper part of the distribution, the calculation of the entry threshold (the minimum annual income from which a household member falls into the wealthiest 1%), median (the income that divides the top 1% group in half), mean (the arithmetic mean of incomes in this group) and maximum income of the top 1% of the population (based on the corresponding cumulative weight, taking into account the equivalent income per household member) was performed using annual data. To compare with aggregated monthly indicators, all results for the top 1% income were divided by 12. Since official data on wealth distribution in Ukraine is unavailable (the SSSU reflects total household incomes but does not include the total value of assets or property), the top 1% by income are considered the wealthy "in flow", not necessarily the wealthiest "in stocks", as some income, particularly in the upper deciles, may go undeclared. The decile distribution (average income within each decile group), the mean (arithmetic mean of equivalent income per household member across the entire population) and the median (the income that divides the population in half) are provided per household member

Source: calculated by the author based on (SSSU, 2021).

• The gap between the rich and the poor remains: (i) the difference between average and median income stays steady at 15—20%, indicating that a substantial share of income is concentrated at the top of the distribution; (ii) the income of the top 1% is several times greater than that of a "typical" individual (measured by median or average); (iii) within the top 1%, there is an additional "long tail", where the maximum markedly exceeds both the average and median values of this group. This points to an even smaller circle of individuals with extremely high incomes within the "top".

Although, since the full-scale war, the Households Living Conditions Survey, which is the main source of data for inequality research in Ukraine, has not yet (as of June 2025) been conducted, the trends in structural differentiation and the

growth of inter-decile gaps identified over 2007—2021 are likely to persist, as macroeconomic turbulence and the specific distribution of shocks during the war further increase the vulnerability of the extreme deciles and restrict social mobility.

Inequality in Ukraine under the full-scale war

Since the outbreak of the full-scale war, several changes have been observed that directly influence the distribution of household income. Firstly, the loss of territories overall causes a distortion of the country's socio-economic structure, as the share of regions with historically higher or lower average wages diminishes. Many households either disappear from the register entirely (due to deaths, migration) or lose all legal sources of income, shifting the distribution towards zero. In turn, migration abroad (mainly of young, economically active individuals) reduces the core of solvent households. The sample shifts towards residual groups (pensioners, people with disabilities), who typically have much lower incomes. Secondly, the militarisation of the economy has led to increased employment in the military sector, meaning that the proportion of households with regular, often higher incomes (salaries, bonuses, additional social security) has risen. At the same time, a significant part of the civilian labour market has experienced income stagnation or job losses. Furthermore, the increase in the share of veterans prompts the expansion of social packages for veterans, persons with disabilities and related professionals, creating a new institutional layer that often provides stable, but still modest, incomes. Thirdly, traditional segments of the middle class (small and medium-sized businesses, creative professions, IT) are losing income on a large scale or are forced into the shadow economy, where income is unreported, and poverty measured by official standards continues to grow.

The Gini coefficient, calculated based on the Survey on the Socio-Economic Status of Households in 2023 (UNICEF; IDLQP of the NAS of Ukraine; UCSR, 2025), indicates a significantly higher level of income inequality (42%) than in the pre-war years (in 2021 — 24.4% according to the Households Living Conditions Survey from the SSSU (2021). This increase results from a combination of the following methodological and economic factors:

- The full-scale war caused a significant loss of income for many households, resulting in increased income concentration within the top deciles (the fat tail effect): (i) the upper tail remains, but the core shifts downwards; (ii) the income share of deciles 1 and 2 drops to about 2—3%, while that of decile 10 exceeds 30%.
- A significant number of households with zero or minimal income have emerged in the distribution, expanding the area between the cumulative income and household shares (Lorenz lines), which in turn increases the Gini coefficient. Similarly, if the top decile or quintile does not lose income (or even gains), the Gini coefficient rises exponentially.

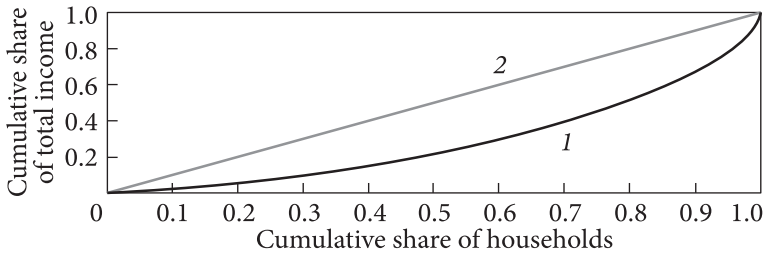

Fig. 1.3. Lorenz curve for the distribution of household total income in Ukraine, 2023: *1* — lorenz curve; *2* — perfect equality
Source: calculated by the author based on (UNICEF; IDLQP of the NAS of Ukraine; UCSR, 2025).

• The structure of the sample has altered: some middle-class households may have lost income or been entirely excluded from the register, and the proportion of people with zero or very low income may have grown. In short, a structural gap in income distribution has developed, leading to a sharp increase in the Gini coefficient.

The deviation of the Lorenz curve (blue line) from the line of perfect equality (yellow line) illustrates a significant level of economic inequality (Fig. 1.3). The Lorenz curve indicates that the bottom 50% of households own only 22.1% of total income, while the top decile (the richest 10%) receives 32.5%. This distribution highlights a high degree of economic inequality. The Lorenz curve diverges noticeably from the line of perfect equality, clearly reflecting the concentration of income within a relatively small segment of households.

Table 1.1. **Decile and quintile distribution of household total income in Ukraine, 2023, UAH**

Group	Average total income per household member	Median total income per household member	Group	Average total income per household member	Median total income per household member
Decile			9	14.239	15.000
1	1.922	2.000	10	29.259	22.500
2	3.152	3.150	*Quintile*		
3	4.038	4.000	1	2539	2667
4	4.946	5.000	2	4492	4500
5	5.903	6.000	3	6513	6500
6	7.124	7.000	4	9760	10000
7	8.782	8.667	5	21747	16667
8	10.737	10.000			

Source: calculated by the author based on (UNICEF; IDLQP of the NAS of Ukraine; UCSR, 2025).

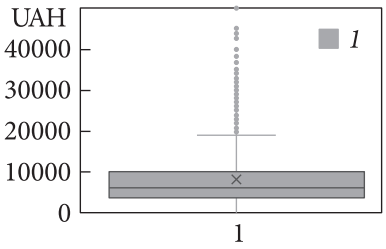

Fig. 1.4. Distribution of total monthly income per household member in Ukraine, 2023, UAH: *1* — income per month per household member, UAH
Source: calculated by the author based on (UNICEF; IDLQP of the NAS of Ukraine; UCSR, 2025).

The lowest deciles 1—3 have the lowest income levels and share of total income (about 2—4%), shown in intense red (Table 1.1). In contrast, top decile 10 accumulates more than 32% of total income, highlighted in deep green. This highlights a high concentration of income among a small share of households and confirms the structural inequality in wealth distribution. Additionally, the cumulative income share demonstrates that 50% of households (the top 5 deciles) collectively hold only 22.1% of the income, while the top deciles control the majority of the income.

The quintile distribution in 2023 offers a clearer view of the extremes and the gap between the poorest and richest groups (Table 1.1). Notably, the sections of the table highlighted in red correspond to the lowest quintiles, where the lowest average and median incomes are observed, along with the smallest share of total income (for example, quintile 1 receives only 5.6% of income). Conversely, the top quintile (20% of the wealthiest households) is highlighted in deep green, emphasising its dominance: this group accounts for nearly half of all income (48.3%). An analysis of the cumulative income share shows that the bottom 40% of households (the first two quintiles) own just 15.6% of the income, while the top 40% (quintiles 4 and 5) hold almost 70%. The growth in median and average income across quintiles is markedly uneven, with the largest increase occurring between quintiles 4 and 5, indicating a distinctly defined top of the income distribution.

A pronounced right-skewed income distribution among Ukrainian households in 2023 is also evident from Fig. 1.4. The "box" (interquartile range, representing the central 50% of observations) is located within relatively low income levels, indicating a concentration of households in the lower segment of the distribution. The line inside the "box" indicates the median income (50th percentile), which remains significantly below the extreme upper values. The "whiskers" represent the range of "non-outlier incomes", while the numerous "outliers" (individual points above the upper whisker) form an extended upper tail, reflecting significant income dispersion.

The dynamics of the Palm and Theil indices in 2018—2021, according to SSSU (2021), showed that the increase in inequality in Ukraine is primarily caused by the widening gap between the richest and poorest groups, rather than changes in average incomes. The Theil index remained relatively stable within 0.13—0.14; after the moderate rise in 2019—2020; overall inequality decreased

again in 2021. This stability is a positive sign, suggesting that there were no significant shocks in income distribution during this period. Meanwhile, the preservation of a substantial share of income within the top decile, as recorded by the Palm index (which was relatively low at 0.74 in 2018, increased to 0.81 in 2019 and remained high in 2020—2021 at 0.79—0.76), indicates that structural inequality intensifies among the extreme groups of the population. However, in 2023, based on data from UNICEF; IDLQP of the NAS of Ukraine; UCSR (2025), overall inequality rose sharply: (i) the Theil index increased to 0.31, nearly doubled the previous average and (ii) the Palm index reached 1.91, indicating a significant concentration of income in the top 10% of households (they earn almost twice as much total income as the "bottom 40%" combined).

Conclusion. Over 2007—2021, the decline in the share of income held by the poor was accompanied by an increase in the Gini coefficient and the decile coefficient, indicating greater income polarisation. The dynamics of income inequality in Ukraine from 2018 to 2021 indicates: (i) growth in absolute incomes across all decile groups; (ii) a more pronounced concentration of income at the top of the distribution; and (iii) increasing inequality among the wealthy, with not only the rich-poor gap but also disparities within the wealthy group itself (between typical and super-rich incomes). The Theil and Palma indices suggest that structural inequality in Ukraine during 2018—2021 mainly increased through the top decile, rather than by the stretching of average incomes. In 2023, there is a shift towards the sharper polarisation, with income growth among the wealthiest outpacing that among the poorest.

Analysis of income inequality in Ukraine during the full-scale war, through comparison of decile, quantile and the Lorenz curve, demonstrates that in 2023, the bottom half of households holds only a fifth of all income, while the top tenth (top decile) possesses more than a third. The rise in the Gini coefficient in 2023 is driven not only by statistical effects but also by deep structural transformations caused by the full-scale war, specifically:

- The bottom of the income distribution is expanding rapidly (the number of households with minimum incomes, social benefits, or no income is increasing).
- Simultaneously, a new upper class is emerging and consolidating (those with stable military or official incomes), as well as groups involved in the war economy; notably, quintile 5 (20% of the population) amasses nearly half of all income (48.3%).
- The middle-income class is shrinking due to job losses, migration, and changes in residence. Income growth is uneven across quintiles: the third and fourth quintiles have considerably lower average incomes than the top quintile, and their share of total income is far less. This suggests that the middle layer is relatively poorer or diminishing, with many middle-class households losing jobs or experiencing income reductions because of war, migration, and shifts in professional structures.

1.2. Structure and heterogeneity of household income structure in Ukraine

The structure of average household monetary income by decile group over 2007—2021 (Fig. 1.5) shows that the lowest deciles are dominated by pensions and social transfers, the middle deciles have the highest diversification across labour, social and entrepreneurial incomes, and the highest deciles are primarily composed of wages and capital income:

- deciles 1—3 (left) are predominantly reliant on pensions, social benefits, and transfers; the combined share of these often surpasses that of wages;
- middle deciles (4—7) display the greatest income diversification: wages are the primary source (45—55%), but there is also a notable share of pensions, entrepreneurship and social assistance;
- deciles 8—10 (right) are mainly driven by labour and capital incomes: (i) wages peak at 60—65%; (ii) income from entrepreneurship, property and sales of property increases significantly; and (iii) pensions and social transfers are minimal.

The structure of household total income portfolios by decile groups in 2023 (calculated per household member) demonstrates a similar trend to previous patterns — the segmentation of households based on their main source of income, as illustrated in (Fig 1.6):

- Polarisation of income sources: in the first decile groups, most individuals reside in households where social transfers are the primary income source (ranging from 53% to 67% in deciles 1—3). The proportion relying on wages in these groups is approximately 30—38%. This highlights the dependence of the most vulnerable segments of the population on pensions, social payments, subsidies, and benefits, emphasising their structural vulnerability.
- Transition towards wages in the middle and upper deciles: from the 4th decile onwards, there is a steady increase in the share of individuals for whom wages are the main income source, rising from 59% in deciles 4—5 to 74—87% in deciles 6—9. This indicates that formal employment becomes progressively more significant for middle- and high-income groups.
- Concentration of income from entrepreneurial activities among the wealthiest: business income is the main source only in the highest decile 10 —16.4%, whereas in the other deciles, this figure does not exceed 1—6%;
- Assistance from relatives and income from personal subsistence farming play a minimal role in shaping income structure: their share in each decile is below 6%.

Consequently, firstly, the fact that in the middle deciles, the share of wages is nearly 74—87%, and business remains marginal even in deciles 7—9, indicates not only the concentration of business income among the wealthy but also the absence of widespread “average” small business, driving upward income

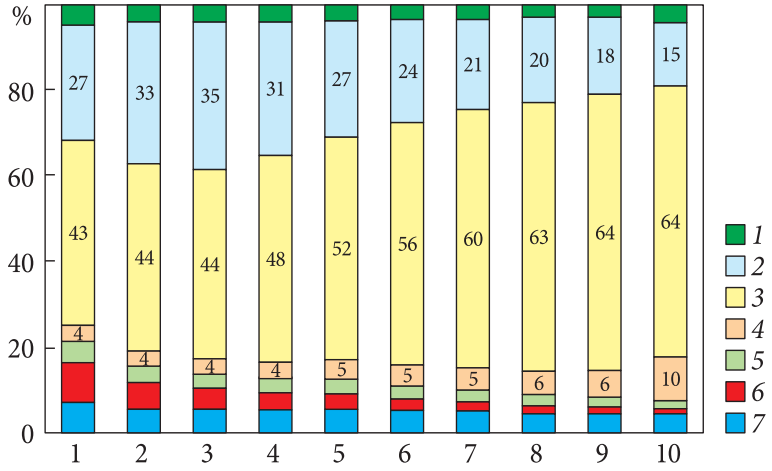

Fig. 1.5. Structure of average household monetary income by decile groups in Ukraine, 2007—2021, %: *1* — scholarships; *2* — pensions; *3* — wages (labour income); *4* — income from business and self-employment; *5* — income from the sale of agricultural products; *6* — income from the sale of personal and household property; *7* — income from sale of real estate

Source: compiled by the author based on data (SSSU, 2021).

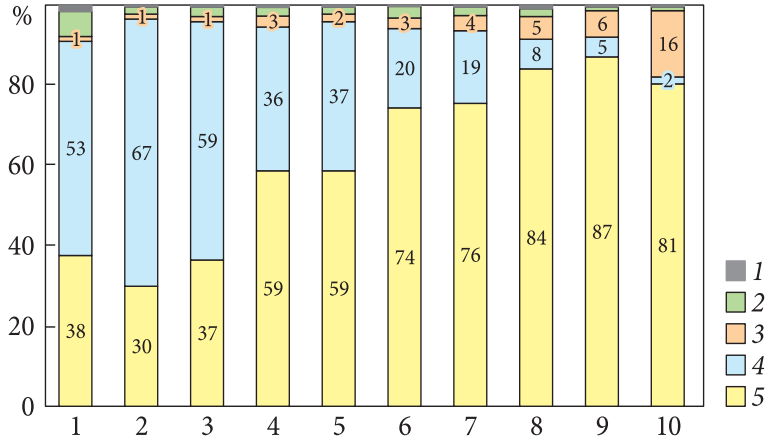

Fig. 1.6. Structure of household total income by decile group in Ukraine, 2023, %: *1* — income from personal subsidiary farming, including consumption in monetary terms; *2* — monetary assistance from relatives or friends; *3* — income from business activities; *4* — pensions, scholarships, social assistance, benefits and subsidies, aid from international organisations; *5* — wages (labour income)

Source: calculated by the author based on (UNICEF; IDLQP of the NAS of Ukraine; UCSR, 2025).

movement. Secondly, the high proportion of people in the lower deciles, whose main income source is social transfers, highlights a "vicious circle of poverty". Thirdly, although in the 10th decile the share of business rises sharply, wages still predominate, meaning even the wealthiest have a hybrid income. Fourthly, the low share of income from business in most deciles results not only from genuine poverty but also from shadow employment.

Income heterogeneity: distribution of PCA and HHI indices in 2007—2021

The dynamics of the household monetary income structure index (PCA) by decile group in 2007—2021 (Fig. 1.7) confirms a stable difference between groups and the vulnerability of the extreme deciles to economic shocks, particularly:

- Middle deciles (4—7) have the highest index in almost all years; this is where the income structure is most market-based (wages, entrepreneurship, property prevail, and the role of transfers is minimal).
- Extreme deciles (1, 2 and 9, 10) have a lower index: (i) poor households are dominated by pensions, social assistance and cash transfers (the index is minimal and almost unchanged); (ii) for the wealthy, the structure is more focused on earnings and capital, but with little diversification.
- During the crisis years (2014—2015, 2020—2021), there are changes in certain groups (for example, decile 10 declines from 2014): (i) lower deciles remain more dependent on transfers throughout the years (their index is consistently low); (ii) the middle deciles have the highest index, which remains the most stable over time; (iii) the upper deciles (particularly the 10th) — the index slightly decreases after the crisis years, possibly due to the growing share of one-time or capital income.
- The U-shaped structure persists in every analysed year: (i) the middle class has the highest marketability and diversification of income; (ii) the extreme deciles are the most vulnerable to shocks (transfers or a narrow income portfolio).

The Herfindahl — Hirschman income concentration index (HHI) by decile group over 2007—2021 indicates that the income structure of the wealthiest 10% of Ukrainian households is less diversified than that of the other groups. In 2020—2021, the HHI in decile 10 was above 0.55, whereas in the lowest decile it was below 0.5. Specifically, the HHI in decile 10 exceeded 0.55, while in the lower deciles it ranged from 0.27 to 0.33. This suggests that the wealthy are more affected by changes in key income sources (salaries, asset income), whereas poorer groups maintain greater diversification, although it is not substantial. According to Table 1.2:

- Poor deciles (left, red/yellow cells): HHI is within 0.27—0.34, indicating that even the poorest do not have a single-source income structure, but still rely on more income types (e.g., pensions, social assistance);

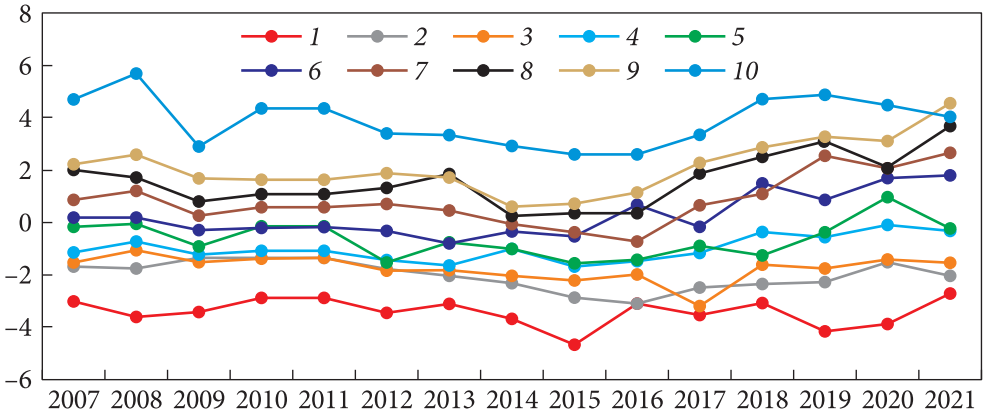

Fig. 1.7. Household's monetary income structure index (PCA) by decile group in Ukraine, 2007—2021. An increase in the PCA-based index indicates a shift in the income structure towards a more market-oriented and diversified portfolio, where salaries, entrepreneurial and property incomes play a greater role, and the dependence on transfers is minimal. A decrease in the index reflects either a growing importance of transfers (such as pensions, social or financial assistance) or a less diversified portfolio (i.e., over-reliance on a single income source, even if market-based). The PCA index is not a percentage or an income level and can take positive, negative, or zero values. Zero is the average for the whole sample (due to centring in the PCA calculation). Positive values indicate a more market-driven, diversified income structure. Negative values indicate a structure that is either more socially dependent (due to more transfers) or overly concentrated on one source
Source: compiled by the author based on data (SSSU, 2021).

• Middle deciles: HHI consistently shows a minimum in the middle deciles and a maximum in the extreme deciles, suggesting that income portfolios are the most concentrated among the poor and the rich;

• Rich deciles (right, green, HHI > 0.5): The income structure is much less diversified, often dominated by one source (wages or property income);

• In 2017—2021, the HHI of the wealthy increased (greener on the right), indicating rising income concentration among the richest, who are increasingly dependent on one or two sources. In the poor deciles, the HHI fluctuates somewhat, but there are no increases comparable to those in the wealthy deciles.

Thus, analysis of the HHI by decile groups over 2007—2021 shows that Ukraine's wealthiest households have the most concentrated income structures, mainly relying on wages and capital income. The poorest also have relatively concentrated incomes, primarily from social transfers, though less than the rich. Specifically, the *average HHI for 2007—2021* demonstrates that the most diversified income portfolios are in the lowest deciles, as the poor receive income from various sources: pensions, transfers, benefits and some labour and other earnings. The highest HHI appears in the top deciles, indicating that the

income of the wealthiest households is concentrated around one or two sources, such as wages and capital income. The U-shape did not materialise in 2007—2021, since the middle class does not exhibit the lowest concentration; it occupies an intermediate position, not the bottom of the curve.

Therefore, an analysis of the HHI index for 2007—2021 reveals a steady increase in income source concentration from the lowest to the highest deciles: the income portfolios of poor households remain fairly diversified, while the wealthy concentrate their income in a few dominant channels (mainly labour and capital income). This reflects a rise in structural polarisation and highlights the need for instruments to diversify income sources among the top deciles.

According to the PCA-based income structure index, the average deciles demonstrate the highest level of market orientation and well-balanced income portfolios, with incomes primarily derived from labour, entrepreneurship and property, and little reliance on transfers. However, the HHI shows a consistent increase in concentration from the poorest to the wealthiest deciles, without a clear U-shape. The middle class groups do not display the lowest HHI but instead

Table 1.2. **Herfindahl — Hirschman index of household monetary income portfolio by decile group in Ukraine, 2007—2021**

Year	1	2	3	4	5	6	7	8	9	10
2007	0.31	0.34	0.34	0.33	0.36	0.37	0.42	0.49	0.45	0.42
2008	0.30	0.33	0.35	0.34	0.36	0.39	0.41	0.44	0.45	0.38
2009	0.31	0.34	0.33	0.35	0.35	0.36	0.38	0.39	0.39	0.42
2010	0.30	0.33	0.33	0.33	0.35	0.34	0.37	0.39	0.40	0.38
2011	0.30	0.33	0.33	0.33	0.35	0.34	0.37	0.39	0.40	0.38
2012	0.29	0.32	0.33	0.34	0.34	0.38	0.42	0.43	0.45	0.44
2013	0.29	0.32	0.33	0.33	0.35	0.37	0.39	0.43	0.45	0.46
2014	0.27	0.29	0.31	0.32	0.33	0.38	0.39	0.39	0.42	0.40
2015	0.28	0.31	0.31	0.32	0.31	0.36	0.37	0.39	0.41	0.38
2016	0.30	0.30	0.30	0.32	0.33	0.35	0.38	0.39	0.40	0.46
2017	0.26	0.31	0.30	0.34	0.34	0.40	0.45	0.48	0.52	0.52
2018	0.27	0.31	0.30	0.36	0.36	0.41	0.44	0.51	0.50	0.52
2019	0.27	0.29	0.31	0.37	0.40	0.44	0.50	0.50	0.53	0.52
2020	0.28	0.32	0.32	0.33	0.39	0.45	0.42	0.49	0.55	0.56
2021	0.28	0.32	0.34	0.34	0.35	0.48	0.54	0.56	0.54	0.53

Note: A high HHI indicates dominance by one or two sources of income (low diversification). A low HHI signifies a more diversified income portfolio across the decile.
Source: compiled by the author based on data (SSSU, 2021).

hold an intermediate position: their income portfolios are less diverse than those of the poorest groups but more diverse than those of the wealthiest households. This variation reflects methodological differences: the PCA index considers both diversification and market orientation, whereas the HHI only measures the concentration of income sources.

Dynamics of labour and capital monetary income shares in 2007—2021

The dynamics *of the share of wage income within the monetary income structure across household deciles* reveals the following: (i) in the upper deciles ((particularly in deciles 10 (top) and 9)), wage income dominates (indicated by the highest colour intensities); (ii) in the lowest deciles, the share of wage income is the smallest (represented by the faintest colour intensities) (Table 1.3), particularly:

• Progressive increase in the significance of wages from the poorest to the wealthiest groups: (i) wage income as a proportion of total income rises clearly with each higher decile; (ii) in deciles 1 to 3, wages account for 32—45% of house-

Table 1.3. **Share of wages in the structure of household monetary income by decile group in Ukraine, 2007—2021, %**

Year	1	2	3	4	5	6	7	8	9	10
2007	49.8	52	40.4	42.5	51.1	53.9	60.3	67.6	64.1	61.3
2008	48.7	50.4	47.1	48.2	52.5	56.2	59.1	62.2	63	57.7
2009	49.3	51.1	45.3	47.5	49.9	52.9	55.3	56.3	57.8	60.5
2010	49.3	50.9	45.9	46	50.9	49.3	54.6	56.3	57.9	57
2011	49.3	50.9	45.9	46	50.9	49.3	54.6	56.3	57.9	57
2012	46.2	43.3	43.3	45.6	48.9	54.6	59.7	60.6	63.2	62.5
2013	47	42.1	44.1	45.1	50.7	54.4	55.8	60.6	62.7	64.8
2014	43.8	42.2	42.8	45.6	47.1	54.7	57.7	57.2	61.2	59.5
2015	45.5	41.5	42.1	47	45.7	52.7	55.7	58.3	60.5	57.5
2016	43.6	37.2	41.2	45.8	48.9	53.7	57	58.8	59.6	65.4
2017	36.8	37.7	40.2	50.7	51.5	59.4	64	66.9	71	70.6
2018	32.3	38.5	44.2	52.5	54.4	61	63.8	69.6	68.7	69.8
2019	32.1	38	42	54.4	59.4	63.7	68.7	68.4	71.6	70.1
2020	36	41.6	46	50.2	57.7	63.9	61.9	67.3	72.8	73.2
2021	34.9	39.7	48.6	51.1	54.5	66.7	71.8	73.1	71.9	71.3

Note: the deeper the green colour, the greater the role of wages in the income of this group; the lighter (yellow-orange), the lower.
Source: compiled by the author based on data (SSSU, 2021).

hold income on average; and (iii) from deciles 6—7, the share of wage income consistently exceeds 55—60%, reaching 70—73% in decile 10 over the most prosperous years.

• Maximum concentration of wage income in the highest deciles, reflecting a structural shift: the wealthier the household, the more prominent the role of the labour market in its income composition.

This pattern reflects a structural shift in income composition: for wealthier households, the labour market becomes the primary source of income, whereas for poorer households, wages play a relatively minor role. As a result, the wealthiest households are more closely linked to labour market performance and may be more vulnerable to labour market volatility. This emphasises the importance of improving access to stable and high-quality employment to reduce inequality.

Table 1.4. **Share of capital in the structure of household monetary income by decile group in Ukraine, 2007—2021, %**

Year	1	2	3	4	5	6	7	8	9	10
2007	4.4	3.8	3.5	4.7	4.5	5.2	5	4.2	6.5	14.7
2008	4.5	4.3	4	4.6	5.2	4.8	7.3	6.4	7.1	14.6
2009	4.7	5.5	4.9	4.1	6	5.9	6.5	5.7	9.6	9.2
2010	5.2	5.2	4.7	6	6.3	7	8	7.9	7.1	13.9
2011	5.2	5.2	4.7	6	6.3	7	8	7.9	7.1	13.9
2012	5.1	4.4	4.2	5	4.6	5	4.3	5.2	5.8	8.7
2013	5	3.3	3.6	5	4.7	4.4	6.1	7.2	4.7	8.2
2014	6.4	5.2	4.5	5.5	6.2	4.5	5.1	6.4	5.7	12.5
2015	4.9	3.5	4.3	6	6.1	5.1	6.4	7.1	6.4	14.2
2016	3.3	4.3	6.3	6.6	5.2	9.5	4.2	7.8	9.4	11.9
2017	6.8	4.3	4.6	6.2	6.7	6.6	6.2	6.5	5.7	9.1
2018	6.5	5.6	8.1	5.7	6.2	9	7.6	5.4	9.1	11.6
2019	5.6	6.6	6	4.9	6.3	6.8	6.6	9.5	8	12.8
2020	3.6	4.5	6.3	8.2	8	6.1	8.2	6	5.4	11.2
2021	7.6	5	3.9	7	8.9	4.8	5.1	7	10.1	9.4

Note: capital income is the sum of income from entrepreneurial activity and self-employment, income from property, income from the sale of personal and household property and income from the sale of real estate. Income from the sale of agricultural products is listed separately because it has mixed characteristics, combining aspects of labour and entrepreneurial incomes, but it does not fit the traditional definition of capital income. Instead, it is more similar to labour or micro-entrepreneurship incomes than to rental or capital income. The more intense the colouration, the greater the share of income derived from capital sources.
Source: compiled by the author based on data (SSSU, 2021).

Overall, in 2007—2021, a consistent trend is clear: the gap between deciles in terms of wage income shares has hardly narrowed, and the proportion of wage income among the wealthy remains high. In crisis years (2014—2015, 2020—2021), the share of wages in the upper deciles even increased, which may indicate the retention or growth of formal employment.

Analysis of *the dynamics of capital income share within household income structure across deciles* shows that: (i) the largest share of capital income is concentrated in the highest decile 10 (right column is the most saturated), (ii) in the poorer and middle deciles (left columns), the share of such income stays low (Table 1.4), particularly:

• High concentration of capital income in the top decile: the highest share of capital income is consistently observed in decile 10, where this income component reaches 8—14% (sometimes higher) in different years. This indicates that wealthy households have significantly greater opportunities to derive substantial income from entrepreneurship, property and asset transactions.

• Limited access to capital income in the other deciles: for poorer and middle deciles, the share of capital income in the overall portfolio rarely exceeds

Table 1.5. **Share of social transfers in the structure of household monetary income by decile group in Ukraine, 2007—2021, %**

Year	1	2	3	4	5	6	7	8	9	10
2007	27.6	30.4	44.4	41.4	32.9	29.9	24.6	19	20.2	15.9
2008	28.8	32.4	38.5	36	31.5	28	24.1	22	22.3	20.2
2009	30.3	31.5	39.6	39.1	34.7	31.1	28.4	28.4	24.1	22.2
2010	29.2	32.5	38.8	37.6	33.2	32.6	26.8	26.7	26.5	20.4
2011	29.2	32.5	38.8	37.6	33.2	32.6	26.8	26.7	26.5	20.4
2012	33.4	41.2	42	39.3	36.3	31.1	26.9	26.4	23.7	21.1
2013	33.4	45.1	42.4	39.6	35.4	31.4	29.8	25	25.1	18.6
2014	35.7	41.8	42.4	39.1	36	31.6	26.4	26.4	22.9	19.5
2015	35	43.5	42.6	35.8	35.5	30.9	26.5	23.9	21.6	17
2016	40.2	46.7	40.5	38	34	26.6	26.6	23	19.9	11.8
2017	44.2	47.4	42.5	31.7	30.6	22.7	20.5	18	13.3	10.6
2018	47.9	44.1	35.3	31.6	26.9	20.6	18.8	17.8	13.4	12.6
2019	48.8	44.2	40.5	29.2	24.3	19.6	17.3	15.1	12.4	10.6
2020	44.8	43.6	36.8	31	25.2	21.4	20.5	20.4	15	10
2021	44.2	45.7	38.3	31.2	25	20.8	17.3	14.3	13	11.5

Note: green — maximum share values, yellow-orange — moderate values, red — minimum shares.
Source: compiled by the author based on data (SSSU, 2021).

5—7%, and is often even lower. This reflects a structural inequality in access to capital and entrepreneurial opportunities, as labour income and transfers predominate in these groups rather than income from assets.

• The structural pattern remained largely unchanged during 2007—2021: the concentration of capital income in the top decile persists, with no significant shifts in the other groups. Thus, the share of capital income (property, entrepreneurship, sales of property/real estate) in the 10th decile is consistently much higher (8—14%) and shows considerable volatility.

The dynamics of *the share of capital income within the monetary income structure across household deciles* demonstrates (Table 1.5):

• Dominance of social transfers in the lower deciles: in deciles 1—3, the share of social transfers remains consistently the highest in 2007—2021, ranging from 35% to 55%. This indicates that, for the poorest households, transfers continue to be a crucial source of subsistence and the main safety net during periods of crisis.

• Declining role of social transfers with increasing income decile: from decile 4 to 5, the share of social transfers gradually decreases and becomes negligible in deciles 8 to 10 (in most years, less than 15%, often as low as 5—7%). In top decile 10, transfers are minimal, emphasising a low dependence of affluent households on social redistribution mechanisms.

Thus, in 2007—2021, structural polarization concerning the role of social transfers has persisted: the gap between the poor and the rich in terms of social transfer shares remains consistently high.

In conclusion, the analysis of the share of wages in the income structure reveals that it increases becoming the main source of household income for affluent households, while its proportion steadily declines among poorer groups, giving way to pensions and social assistance. This pattern suggests growing welfare disparities and heightened vulnerability of the lower deciles to labour market and monetary policy shocks. The examination of social transfers' share in the monetary income structure by decile groups demonstrates that social transfers remain a crucial source of financial support for the lowest deciles of households. The analysis of capital income's share in the monetary income structure by decile group confirms that this source is heavily concentrated among the wealthiest households. For the rest of the population, access to income from entrepreneurship, property and assets remains limited, reinforcing structural inequality and interdecile gaps.

Income heterogeneity: the interdecile ratios in 2007—2021

The dynamics of interdecile ratios reflects changes or stability in polarization: an increasing trend indicates a widening gap; a decrease or stability suggests relative consistency in structural differences. Accordingly (Fig. 1.8):

• Labour income (wages): the ratio 10/1 (income of decile 10 to that of decile 1) remains consistently high, exceeding 2.5—3 in different years. This indicates that wages as a source of well-being are most concentrated among the upper deciles, while the lower deciles have limited access to high-paid work.

• Capital income: the 10/1 ratio is typically the highest across all groups, spanning from 4 to 8, and sometimes even higher. Nearly all capital income is concentrated in the upper decile, rendering this channel practically inaccessible to the poor. The 10/5 ratio is also very high, indicating that the wealthy own most of the capital.

• Social transfers: the ratios 10/1 and 10/5 are less than 1 (often 0.3—0.6), meaning transfers are mainly directed towards the poor and are almost absent among the wealthy. The 5/1 ratio is also less than 1 or close to 1, confirming that the main social flows target the lower deciles.

• Private and other transfers: the ratios 10/1 and 10/5 are generally below 1, which shows that this income source primarily benefits the lower and middle deciles rather than the upper ones.

• Income from the sale of agricultural products: the gaps are smaller, with ratios sometimes approaching 1. However, in different years, the role of agricultural income for the poor increases, as well as for certain middle deciles.

Thus, the dynamics of interdecile ratios (10/1, 10/5, 5/1) across decile-based income groups highlights the level of structural inequality. Labour and capital income show the highest interdecile ratios, indicating their greatest concentration in the upper deciles and the widening of structural inequality in the distribution of labour and capital. Social transfers, private transfers, and agricultural income are characterised by low or even less than one ratios, meaning these income sources are dominant in poorer groups and do not significantly feature in the "income portfolios" of wealthier deciles.

Middle-income class trends in Ukraine in 2007—2021

Analysis of household monetary incomes across average deciles from 2007 to 2021 (i.e., by statistical group) reveals a trend towards the decline of the middle class: its income structure does not enable it to reduce reliance on social mechanisms (as the poor do) or to attain financial independence (as the wealthy do). Specifically, the erosion of the middle class is driven by the heterogeneity of monetary income:

• Income composition: (i) for deciles 4—7, wages are the primary source of income, constituting 50—60%; (ii) social transfers for this group are gradually

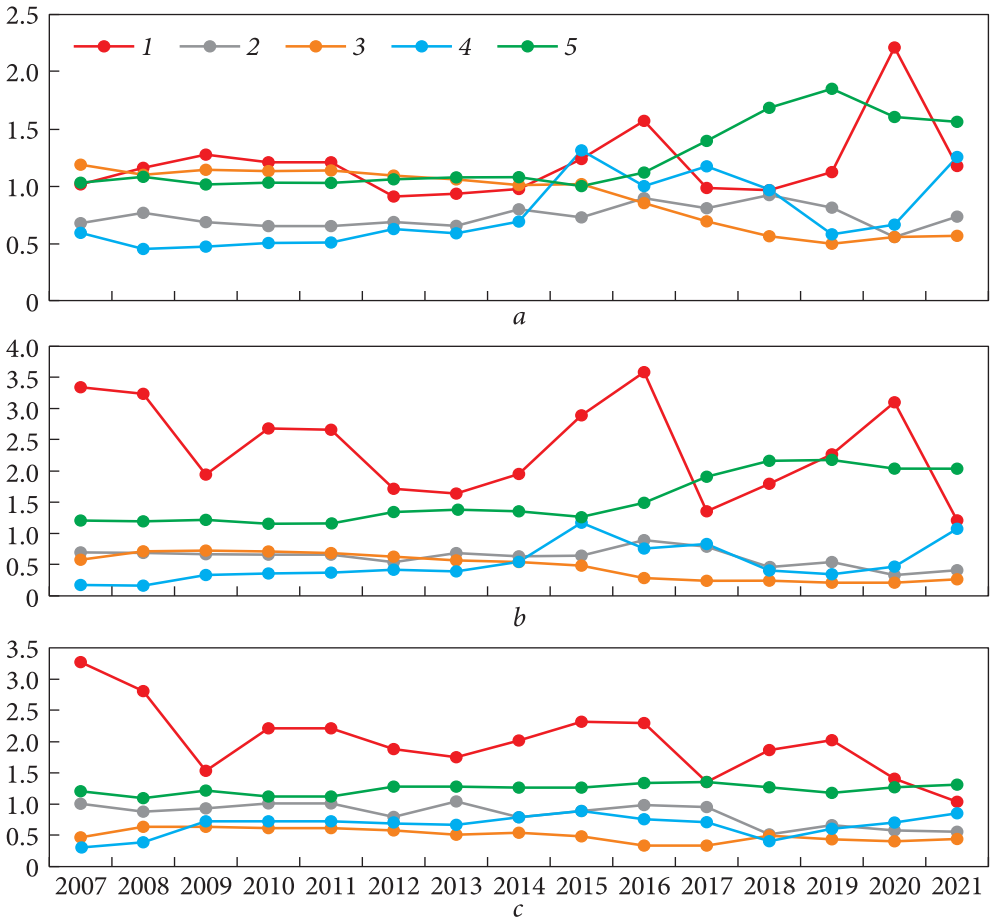

Fig. 1.8. Interdecile ratio: *a* — 5/1 for household monetary income groups in Ukraine, average for 2007—2021, times. Rising line means increasing advantage of decile 5 in a particular income over decile 1. Decrease means approaching/exceeding the corresponding income in the lower decile; *b* — interdecile ratio 10/1 for household monetary income groups in Ukraine, average for 2007—2021, times; *c* — interdecile ratio 10/5 for household monetary income groups in Ukraine, average for 2007—2021, times: *1* — capital income; *2* — private transfers and other income; *3* — social transfers; *4* — income from the sale of agricultural products; *5* — wages (labour income)
Source: compiled by the author based on data (SSSU, 2021).

declining (from 22—25% in 2007 to 15—18% in 2021), indicating increased dependence on the labour market; (iii) capital income remains modest — around 26% of the income portfolio in most years.

• Income dynamics: (i) from 2007 to 2021, the proportion of wages in the middle class income has not increased significantly, with only slight increases in certain years such as 2017—2019; (ii) during crisis periods (2014—2015, 2020—

2021), wages experienced slight declines, while social transfers temporarily increased; (iii) the relative position of the middle class: amidst rising capital incomes in the top deciles and a steady share of transfers in the bottom deciles, the structural profile of the middle class appears balanced. However, its incomes remain distant from those of the top deciles and do not enable it to close the capital gap.

Therefore, based on the analysis of monetary incomes of average deciles from 2007 to 2021, the middle-income class in Ukraine (deciles 4—7) is primarily composed of labour income, has the highest portfolio diversification, but remains dependent on the labour market and shows no signs of capitalised wealth. The income structure of Ukraine's middle class is not strengthening; instead, it is squeezed by polarisation: (i) the upper deciles are moving further away due to the growth of capital income; (ii) the lower deciles remain reliant on transfers; (iii) the middle class remains salary-dependent and vulnerable, with limited income diversification and virtually no access to capital.

Although the breakdown by decile groups is useful for analysing the income structure (sources, concentration), the middle-income class is not always confined to deciles 4—7; it is a broader or narrower concept depending on the distribution (because deciles can have blurred boundaries due to uneven income levels, especially in countries with high inequality). Most international studies (OECD, World Bank, UNDP) define the middle class as the share of households with income within a specific range around the median, because using the median avoids the influence of outliers (extremely wealthy or poor households), unlike the mean income.

Income heterogeneity channel: distribution of households by income relative to the median. According to the analysis of the middle-income class based on median income, this share mainly fluctuated between 40% and 70% from 2007 to 2021 (Fig. 1.9), in particular:

- Real median income (CPI deflator): the growth from 2007 to 2013, decline in 2014—2015, and subsequent rise (2016—2021) reflect the macroeconomic situation.
- The size of the core middle class in real terms behaves similarly to median income, rising until 2013, falling in 2015, then increasing again.
- The median/mean ratio consistently fluctuates between 86% and 89% over the entire period. This is surprising because, logically, this ratio should increase during years of income compression (approaching 1, indicating more even distribution). The distribution likely compresses without a noticeable effect on the mean/median indicator. The median ratio does not fully capture the distribution's tails if they move in parallel. It is a rough indicator, as it may not detect structural changes if mean and median incomes change simultaneously.
- The shares below 60% and 75% of the median (indicators of relative poverty thresholds) also change little: from 2007—2017, they remain steady at 7—11% (<60%) and 18—25% (<75%). When the distribution compresses, all individuals experiencing poverty can approach 70—80% of the median, allowing this indicator to remain stable.

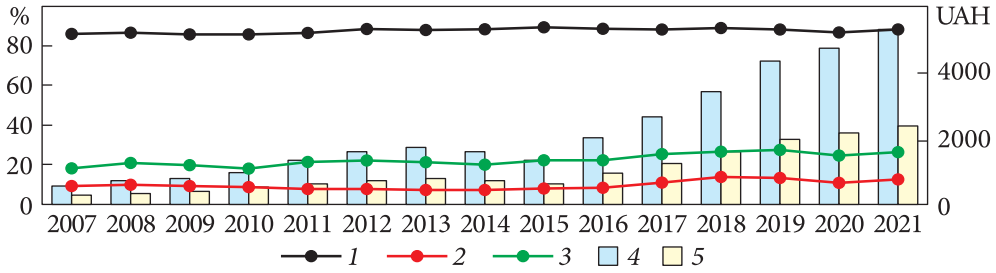

Fig. 1.9. Middle-income class indicators in Ukraine, 2007—2021. *Left scale: 1* — median-to-mean ratio, %; *2* — cumulative share of households with monetary income <60% of median, %; *3* — cumulative share of households with monetary income <75% of median, %; *right scale: 4* — real median income (CPI-adjusted), per household member per month, UAH; *5* — width of the middle-income class (core), real (CPI-adjusted), per household member per month, UAH
Source: compiled by the author based on data (SSSU, 2021).

• The share of the core middle class increases sharply: from 2007—2010, it stays low (40—43%), then rises during the crisis years (51% in 2011, 74% in 2012—2015), falls again in 2018 (48%), and increases once more (67—72% in 2019—2021). The fact that, during economic downturns, the middle class becomes as wide as possible (despite contradicting the concept of real well-being) aligns with the statistical effect of distribution compression. During shocks, the gap between rich and poor narrows (as upper incomes fall and lower incomes are supported through transfers), pulling everyone closer to the median. This causes the core middle class to appear broader because fewer people fall outside the 75—120% range of the median. Conversely, during periods of economic growth (2007—2010, 2018), greater disparity emerges: some households become wealthier, while others become poorer. Consequently, fewer people are near the median, narrowing the middle class. Additionally, a high share of the core middle class in a crisis is not necessarily positive, as society becomes more uniformly middle-poor.

The dynamics of the middle-income class core (households with incomes within 75—120% of the median) in 2007—2021 shows (Fig. 1.10): (i) the share of the core sharply increased in 2012—2017, declined again in 2018, and later increased, but without significant growth at the edges; (ii) the share of the super-core (90—110% of the median) also grew (from 19% to 30%), but its proportion within the core decreased (from 45% to 39—40%), indicating a redistribution of households from the centre to the boundaries of the core.

The changes observed in the middle class structure reflect general trends towards reduced income differentiation, or a compression of the distribution, at certain times. However, this process was not primarily driven by increased concentration of households around the median but by a larger share of households near the boundaries of the middle class (75—90% and 110—120% of the median). In other words, the middle class expands through the equalisation effect, but its internal structure becomes less concentrated.

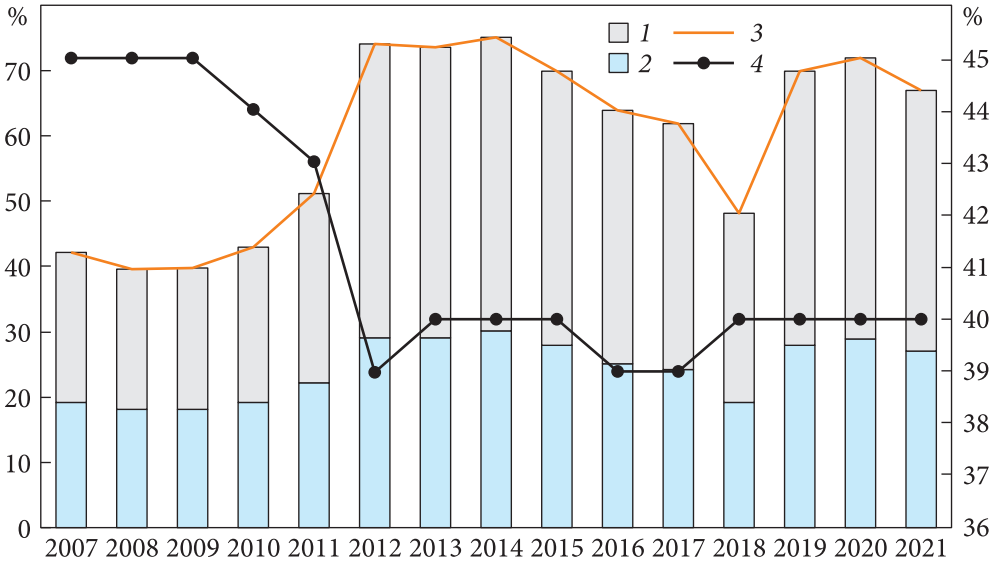

Fig. 1.10. Structure of the middle-income class in Ukraine, 2007—2021, %. The share of the middle-income class in the total number of households is defined as the difference between the cumulative share of households with an income below 120% of the median and those with an income below 75% of the median. The "super-core" (90—110% of the median) represents the densest centre of the middle-income class (households whose income is very close to the median). The fringes of the core are those in the 75—90% and 110—120% ranges of the median brackets, i.e., the "lower middle" and "upper middle" classes, respectively. The share of the "super-core" within the core refers to the percentage of the "super-core" (households within the narrow 90—110% of the median range) out of the total core (75—120% of the median). *Left scale: 1* — share of the middle-income class — super-core (90—110% of the median), %; *2* — share of the middle-income class — fringes (75—90% + 110—120% of the median), %; *3* — share of the middle-income class — core (75—120% of the median), %; *right scale: 4* — share of the middle-income class — super-core within the core, %
Source: compiled by the author based on data (SSSU, 2021).

Although in international practice, the core of the middle-income class is usually defined as the income range between 75% and 200% of the median (with countries possessing detailed survey data able to distinguish both the core (75—120% or 90—110%) and the extended middle class (120—200%), in the SSSU data on household distribution by monetary income per capita for 2007—2021, the maximum income thresholds generally do not exceed 120% of the median. Extrapolation is necessary for higher thresholds (130%, 150%, or 200% of the median), which introduces econometric bias and results in an artificial overestimation of the middle-income class share (bringing the indicator closer to 100%). For this reason, this study relies on the 75—120% of the median interval, which is consistently covered by actual thresholds in official data throughout 2007—

2021 and is used in many international studies as an additional or narrower criterion for the middle class (particularly in countries with a compressed income distribution). However, the 75—120% of the median approach provides a minimalist estimate of the middle class (core middle class) and does not include extended (upper/lower middle class) groups, typical in developed countries.

Conclusion. The structure of average household monetary income by decile from 2007 to 2021 in Ukraine reveals that the higher the decile, the more significant the role of active monetary income (salary, entrepreneurship, property). Conversely, the lower the decile, the more reliance on passive monetary income (pensions, social assistance, financial aid from relatives). The poor mainly depend on transfers; the wealthy rely on labour and capital income, while the middle class demonstrates the most notable diversity. The trends in the household monetary income structure index (PCA) by decile over 2007—2021 show that the middle class (deciles 4—7) has the most market-oriented and diversified income structure. Meanwhile, the extreme deciles remain vulnerable: social transfers and pensions dominate for the poor, whereas the wealthy mainly depend on labour and capital income, which heightens structural inequality. According to the HH index, the extreme deciles (1 and 10) have a more concentrated income structure and are consequently more at risk.

An analysis of labour and capital income shares demonstrates that the proportion of capital income in the wealthier deciles is significantly higher than in the poorer ones. The middle deciles have the smallest share of capital income and the most diversified income streams, meaning their income is less affected by macroeconomic shocks, particularly monetary ones, because fluctuations in one type of income (such as interest rate increases or pension delays) are offset by the others.

An examination of the interdecile ratios reveals that the most significant disparities are in labour and capital income. In contrast, social and private transfers and income from the sale of agricultural products are more typical of the lower deciles. This polarisation persisted from 2007 to 2021, highlighting the ongoing structural inequality in Ukraine.

Trends in middle-income class indicators, particularly in structure, are inversely related to the degree of income polarisation: during crisis years, the core widens; in periods of economic growth, it narrows. The expansion of the middle-income class during crises does not indicate progress but instead points to widespread impoverishment. Establishing a middle class requires macroeconomic stability and targeted policies to reduce inequality and support incomes.

Conclusions

The dynamics of the income share of the poorest 40% of households follows traditional measures of economic inequality, such as the Gini and decile coefficients. From 2007 to 2021, Ukraine experienced a steady decrease in the monetary income share of these households, falling from nearly 30% to about 24%. Until 2014,

inequality declined, but since 2015, a new pattern of increasing inequality has emerged. This indicates the influence of structural economic and institutional changes that may have disproportionately benefited higher-income groups.

Analysis of household income distribution by decile by the level of equivalent total income as well as the median and average values of these incomes, the entry threshold, median, average and maximum incomes of the top 1%, along with Palma and Theil indices over 2018—2021 in Ukraine, revealed that there is not only overall polarisation (the rich versus the poor) increasing in the income structure but also the depth of polarisation within the group of the rich. This contradicts the idea of the "trickle-down effect", which suggests that that wealth concentrated at the top will ultimately benefit everyone. It is refuted by the data showing stagnant incomes for the majority while the top prospers. In contrast, the Ukrainian practice indicates an increase in social stratification and income concentration within a very narrow group of people. This aligns with Piketty (2014) on the tendency of wealth to concentrate under certain economic and political conditions, Atkinson (2015) — on the reinforcing effect of economic forces in the absence of redistribution, Acemoglu and Robinson (2013) — on the enrichment of elites under extractive institutions and Stiglitz (2012) — on the role of unregulated financial systems in fostering wealth concentration.

Since the start of the full-scale war, income inequality in Ukraine remains significant, with a pronounced long tail among the top deciles indicating extreme income concentration. The rise in the Gini coefficient in 2023 highlights the measure's sensitivity to severe income losses and gains across different household segments, particularly amid war-related shocks such as territorial loss, migration, professional restructuring and the emergence of new social groups. Analysis for the 2007—2021 period indicates that the poorest deciles mainly depend on pensions and social assistance. Middle deciles have more diversified income sources (though still modest and vulnerable), while the wealthiest deciles earn from wages and capital. Although diversification among the middle class offers some stability, economic shocks have led to a contraction and erosion of this group. For those with low incomes, diversification chiefly relies on various social transfers, which do not significantly reduce their vulnerability due to limited participation in the market. An analysis of the main income sources by decile groups of equivalent income per household member in 2023 also found social transfers to dominate in the lower deciles, with wages prevailing in the middle and upper groups. The income structure in 2023 does not suggest a large segment of the population with a diverse income portfolio; most depend solely on transfers or wages.

These ongoing patterns reinforce income stratification, leaving lower and middle deciles more exposed to risks. Socio-economic policies should aim to broaden access to capital income and entrepreneurship, improve targeting of social support, promote wage growth and quality employment, and bolster education and retraining efforts to foster upward mobility.

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CHAPTER 2

MONETARY POLICY & ECONOMIC INEQUALITY

Yuliia Shapoval

Chapter 2 examines the relationship between monetary policy and economic inequality in Ukraine. Subchapter 2.1 provides a broad view on how monetary policy, directly affected by inflation, impacts economic inequality, which manifests itself through: (i) income structure and diversity; (ii) investment portfolio composition and financial segmentation; (iii) the redistribution of savings. Subchapter 2.2 discusses how to consider income diversity when formulating monetary policy. Analysis of income heterogeneity and structural change indices (PCA) in 2007—2021 revealed a simultaneous rise in labour income, social transfer heterogeneity, and the PCA composite index after 2016, indicating the start of a phase of rapid stratification in household income structure in Ukraine, while capital income heterogeneity does not influence the overall structural shift, reflecting the institutional inertia of this segment. Using OLS regression analysis to assess the sensitivity of labour, capital income, and social transfer heterogeneity to changes in monetisation, credit depth, exchange rate, key rate, and inflation from 2007—2021, it is found that household labour income heterogeneity shows a consistent positive correlation with the level of monetisation and responds positively to hryvnia devaluation. In contrast, the structural heterogeneity of capital income and social transfers remains inert and nearly unchanged by macroeconomic fluctuations. The findings also indicate that the dynamics of Ukraine's middle class from 2007 to 2021 was shaped by monetisation and hryvnia depreciation, highlighting the role of monetary policy in driving labour income inequality.

Subchapter 2.3 explores the development of the main financial instruments used by Ukrainian households from 2006 to May 2025, focusing on deposit and loan portfolio structures, foreign currency operations, and investment in domestic government bonds. The results suggest household savings strategies have shifted from yield-focused to liquidity prioritisation, as shown by the rising dominance of current deposits. The composition of household portfolios of domestic government bonds from 2010 to May 2025 reflects adaptive strategies of financially literate households, while the consistently high share of foreign currency holdings indicates ongoing limited confidence in the national currency. The trend in household loan portfolios reveals that growth is mainly driven by consumer lending, with mortgage lending gradually recovering. These outcomes underscore the increasing financial segmentation within households.

Introduction

The assessment of the impact of monetary policy on economic inequality largely depends on how representative the inequality indicators used in empirical studies are. Therefore, for a comprehensive analysis of how monetary policy affects economic inequality, it is

insufficient to focus only on the Gini coefficient and survey data, which often restrict information on the highest incomes. It is widely accepted that evaluating its impact on income and wealth inequality is essential, meaning that it examines the entire income distribution, including the top 1%. This can only be achieved with large-scale, disaggregated data, which national statistical offices often restrict.

Since 2020, the global economy has been affected by a series of inflationary shocks, driven by the Covid-19 pandemic and escalating geopolitical tensions, such as Russia's full-scale war against Ukraine. While the inflation targeting regime has demonstrated considerable effectiveness in maintaining price stability over the past 35 years, its capacity to respond to structural changes and prolonged shocks remains limited. For instance, a sharp rise in energy prices or the imposition of tariffs is typically treated as a transitory phenomenon that does not necessitate an immediate monetary policy response. However, when such shocks become persistent, ignoring them can lead to deanchoring inflation expectations. In addition, in the face of fiscal pressures, central banks are compelled to reassess the toolkit used to maintain price stability. This underscores the growing demand for a robust monetary policy framework to manage both demand- and supply-side shocks.

Understanding the distributional impact of monetary policy shocks on household consumption, borrowing and investment behaviour is essential for designing a monetary policy strategy that promotes price stability and the population's economic well-being. However, Ukraine's inflation — monetary policy — inequality nexus has not been systematically explored. This is mainly due to limited access to detailed microdata, time-series constraints in household surveys and the underutilisation of heterogeneity-based approaches in applied monetary policy research. As international economic discourse increasingly recognises the distributional effects of monetary policy, there is a growing need to generate evidence-based insights tailored to Ukraine's context. This will ensure that the National Bank of Ukraine can make well-justified monetary policy decisions while maintaining its commitment to price stability.

While traditional methods for assessing monetary policy have primarily focused on aggregate outcomes, they often neglect how such policies influence the distribution of income, savings and access to financial resources across various social groups. This Chapter seeks to address this gap by examining the channels through which monetary policy affects economic inequality in Ukraine. Special attention is given to the diversity of income sources, the evolution of household investment and savings behaviours and the growing financial segmentation within the population. The analysis acknowledges that monetary policy effects are neither uniform nor neutral; instead, they tend to exacerbate existing disparities, as wealthier households and financially literate groups are generally better positioned to benefit from changes in liquidity and asset returns.

2.1. Channels of monetary policy transmission to inequality: theory and international evidence

Until the 21st century, technological change, global trade and the labour market had been seen as the main drivers of economic inequality, while the influence of monetary policy was underestimated. However, recent research confirms its significant impact. In the context of price and financial stability, monetary policy aims to stabilise income and wealth rather than prioritising the distribution or redistribution of economic resources. Its effect on inequality is indirect and operates through economic mechanisms related to income, savings and debt structures. Income and wealth distribution are shaped not only by fiscal policy but also by monetary policy, as both macroeconomic tools influence the same economic processes, including income distribution. The distributional effects of monetary policy may be more substantial than the overall macroeconomic effects observed through the transmission mechanism.

In particular, Davtyan (2017), using data from 1983—2012, assessed the distributional impact of monetary policy in the United States, employing inequality indicators encompassing the entire income distribution, including the top 1%. The study suggested that rising interest rates assist in reducing income inequality. This effect is explained by the fact that restrictive policy measures disproportionately affect the incomes of the wealthiest segments of the population, decreasing their incomes more than those of other socio-economic groups do. Similarly, Amberg et al. (2022), based on an administrative panel data set for 1999—2018 in Sweden, demonstrate that accounting for the extreme right end of the distribution (the top 1%) is crucial for a deeper understanding of how monetary policy affects individuals' incomes. The authors found that the Gini coefficient shows little change, as the significant effects at both ends of the income distribution balance each other. Meanwhile, other indicators, such as the share of income held by the wealthiest, suggest an increase in inequality, while the standard deviation of the logarithm of income indicates a decline. The key finding is that the effects of monetary policy shocks are U-shaped across the income distribution: expansionary shocks result in higher incomes for both high- and low-income individuals compared to middle-income individuals. This indicates that the monetary impact is not uniform across different income groups.

It is worth noting that RANK models overlook the distributional effects of monetary policy, as these models mainly rely on the intertemporal substitution channel, whereby lower interest rates prompt households to increase consumption. In contrast, this channel is much weaker in HANK models. This is because such models consider many households' constraints: it is challenging to adjust consumption over time due to low wealth or illiquid assets. Conversely, in HANK models, the primary transmission channel of monetary policy relates to changes in households' disposable income, particularly in those with a high marginal

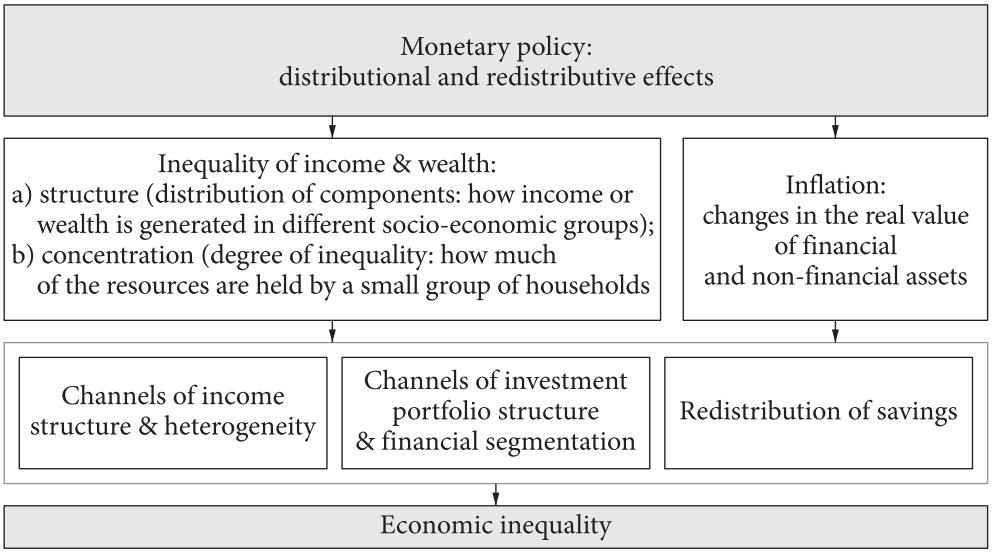

Fig. 2.1. Mechanism of the monetary policy impact on economic inequality
Source: developed by the author.

propensity to consume. These changes often result in resource redistribution among different groups, where some benefit while the others incur losses (e.g., debtors versus creditors) due to monetary policy shifts. Therefore, the findings of Kaplan et al. (2018) suggest that the HANK model offers an empirically realistic distribution of household wealth and marginal propensity to consume. In this context, the indirect effects of an unexpected interest rate reduction (through increased labour demand in the overall equilibrium) significantly surpass the direct impact, such as intertemporal substitution.

No widely accepted classification of the channels through which monetary policy impacts economic inequality exists. Nonetheless, the academic literature suggests several distinct approaches. For example, Coibion et al. (2012) summarise four main channels: income structure, financial segmentation, redistribution of savings and earnings heterogeneity. Similarly, Nakajima (2015) identifies four channels: portfolio structure, reallocation due to expected inflation, wages heterogeneity and income structure. Davtyan (2017) expands the framework to include five channels: income structure, financial segmentation, income redistribution, savings redistribution and earnings heterogeneity. In turn, Bunn et al. (2018) elaborate on six channels: lower debt payments for borrowers and lower savings income for savers; higher labour income owing to higher employment and wages; increased financial wealth due to lower interest rates and higher asset prices; increased wealth from residential real estate; effects on pension wealth and the influence of inflation on the real value of debt and deposits fixed in nominal terms. Other studies provide further refinements: Ampudia et al.

(2018) distinguish between direct channels (such as reallocation of savings, unexpected inflation, interest rate effects and portfolio structure) and indirect channels (including heterogeneity of earnings and income structure), while Colciago et al. (2019) identify six channels: reallocation of savings, unexpected inflation, interest rate impact, portfolio structure, heterogeneity of earnings and income structure; with Dolado et al. (2021) highlighting six channels: redistribution of savings, interest rate effects, inflation tax, income structure, heterogeneity of intertemporal substitution and heterogeneity of earnings.

Despite these classifications, the literature consistently emphasises that monetary policy impacts economic inequality through various interconnected channels, both distributively and redistributively (Fig. 2.1).

Income channel: income structure and heterogeneity

The income structure subchannel demonstrates how monetary changes influence various sources of primary and secondary incomes (such as earnings from labour, business activities, and financial instruments); the resulting impact on income disparities between households (e.g., employees versus business and asset owners); or the disproportionate growth of financial income compared to wages. Expansionary monetary policy tends to increase inequality in this subchannel. For instance, Amaral (2017), using data from the United States, demonstrated that households receive income from different sources that respond differently to changes in monetary policy. Specifically, households at the lower end of the income spectrum rely heavily on transfers (such as unemployment benefits and food stamps), those closer to the median depend on labour income, and households at the top primarily derive income from business and capital assets. Expansionary monetary policy can produce mixed distributional effects. On the one hand, such policies boost wages and reduce unemployment, potentially increasing inequality at the lower end of the distribution because transfer incomes are relatively unaffected by economic shifts. On the other hand, lower interest rates diminish income from financial assets (interest), which is mainly earned by wealthier households, potentially helping to reduce inequality at the upper end of the distribution. Consequently, the effects of monetary policy depend on how household income sources are structured across different parts of the distribution.

The heterogeneity sub-channel illustrates how changes in monetary policy impact inequality in primary income from labour**,** which is the sole source of income, including differences in wages flexibility across various worker categories. Expansionary monetary policy can lessen primary income inequality, as the most significant benefits from reduced unemployment go to low-income workers. However, this effect may be limited due to varying wage flexibility among groups with different income levels. Specifically, Dolado et al. (2021)

found that an increase in labour demand caused by an unexpected decrease in interest rates leads to higher wages, as companies hire more workers. Highly skilled workers experience wage increases more rapidly because they are better equipped to work with new technologies and equipment that companies invest in. Consequently, under expansionary policies, the wages of highly skilled workers grow much faster than those of less skilled workers, thereby increasing income inequality. Amberg et al. (2022) observed that in Sweden, the response of labour income is driven by an earnings heterogeneity channel: lower incomes are more sensitive to shocks, explaining the significant effects in low-income groups due to changes in labour income. Simultaneously, the response of capital income is governed by the income structure channel: the share of capital income in total income is higher among high-income groups, which accounts for the considerable impact of monetary shocks on these groups.

Inflation: changes in interest rates alter the maturity profile of assets and liabilities

Investment portfolio structure and financial segmentation. The investment portfolio structure sub-channel illustrates how monetary changes influence inequality through variations in asset distribution (stocks, bonds, deposits, cash, real estate, and investment instruments). Expansionary monetary policy amplifies inequality along this sub-channel. Low-income households tend to allocate a significant portion of their assets to cash or deposits, whereas high-income groups hold a diverse range of financial instruments. For example, Albanese's (2007) study examines the concept that low-income households rely heavily on cash for a substantial part of their expenditures, increasing their vulnerability to inflation. This is because inflation raises transaction costs and diminishes the real value of savings. Consequently, inflation exerts a redistributive effect: it worsens the economic conditions of poorer households while conferring benefits on wealthier households with a smaller proportion of cash assets.

Financial segmentation sub-channel: varying access levels to financial markets result in an uneven distribution of benefits from monetary changes, which leads to the concentration of resources among certain groups within the population. This mechanism relies on the fact that individuals and organisations with regular access to financial markets are the first to experience shifts in the money supply. Expansionary monetary policy tends to amplify inequality through this sub-channel. For instance, Coibion et al. (2012) found that agents who actively participate in financial transactions generally have higher incomes and consumption than others, suggesting that consumption inequality will likely rise following expansionary policy shocks. Williamson's (2008) study demonstrates that market participants with better access to financial markets (such as banks, financial institutions, and wealthy households) are the initial beneficiaries of expansio-

nary monetary policy. This process results in several significant effects: a) resource concentration among connected market participants, as they are the first to access the new money supplied by the central bank, leading to a redistribution of income and wealth in their favour; b) restricted access to financial markets for other groups, as unconnected market participants who rarely trade or lack access remain more vulnerable to monetary policy impacts, thereby deepening their economic hardship.

Redistribution of savings: shows how monetary changes influence sharing economic gains and losses between savers and debtors. Expansionary monetary policy tends to increase inequality through this channel. Rising interest rates or Rising interest rates or lower inflation benefit savers by boosting the real value of their savings and interest income lowering inflation benefit savers by boosting the real value of their savings and interest income. Conversely, debtors face an increase in the real value of their debt obligations, which worsens their financial situation. In particular, Doepke and Schneider (2006) have shown that inflation has a greater effect on wealthier and older households, whose assets are often not fully protected from unexpected inflation. For example, in the postwar US, since the 1980s, there has been a notable rise in the share of nominal assets owned by foreigners, which has heightened the potential for inflation-driven wealth redistribution from foreign to domestic households. Wealthy and elderly households, who primarily held bonds, experienced the most significant losses from inflation due to the depreciation of their nominal assets. In contrast, younger, middle-class households with fixed mortgages benefited from inflation as the real value of their liabilities declined. Therefore, inflation leads to a redistribution of nominal wealth among different economic agents.

The overall effect on wealth inequality is generally small because of the offsetting impacts of different channels. Monetary policy influences how wealth is distributed, depending on the historical context. Notably, Medlin and Epstein (2017), analysing US data from 1976 to 2012, found that the impact of expansionary monetary policy has shifted over time. During 1976—1980, its effects were less significant, whereas from 1990 to 2006, they became more noticeable, particularly due to the policy's emphasis on supporting the stock market. The authors observed that expansionary policy, which involved a 100 basis point reduction in the key policy rate, contributed to increasing wealth inequality. This manifested in: (i) a rise in the shares of wealth owned by the top 1% and top 10% of the population, while reducing the shares for the bottom 50% and middle 40%; (ii) a rise in the Gini coefficient by 0.005 (according to Realtime Inequality) and 0.015 (according to the Distributional Financial Accounts). The distributional effects of monetary policy are transmitted through channels such as the redistribution of savings, shifts in asset composition, and unexpected inflation. Lower interest rates encourage stock and real estate price growth, which are predominantly owned by high-income households. Therefore, while expansionary policies promote economic

development, they also tend to increase wealth inequality because of their disproportionate impact on asset prices held by the wealthiest of society.

The findings of Franconi and Rell (2023) (also based on the US, but with more recent data from 1982—2022) demonstrate that, firstly, interest rate cuts initially reduce inequality by positively affecting the net worth of lower-income households, but in the medium term, inequality increases due to disproportionate wealth growth among high-income groups. Secondly, central bank asset purchases (QE) increase inequality in the short run, as the highest-income households' benefit significantly. Still, these effects diminish and become less sustainable in the medium run. The authors identify two main channels through which monetary policy affects inequality: (i) real estate: the key channel for lower-income households; changes in housing prices significantly impact their net worth, but rising mortgage debt burdens gradually reduce this positive effect; (ii) capital gains: higher-income households benefit from the heterogeneity of their investment portfolios, which include price-sensitive assets. Regarding distributional effects, interest rate cuts temporarily reduce inequality in the short run, while asset purchases increase it. In the long run, the impact of monetary policy is mainly determined by the instruments employed. In particular, households in the top 10% of wealth receive the most significant benefits, mainly through capital gains. At the same time, households in the bottom 50% are far more exposed to the risk of declining net worth due to increased debt burden. Therefore, monetary policy exerts a heterogeneous impact on wealth inequality depending on the instruments used.

Conclusion. The impact of monetary policy on economic inequality (income and wealth distribution) depends on how much asset prices change and the types of assets or debts held by different groups in the population: (i) with an expansionary policy, asset prices (stocks, bonds, real estate) tend to rise and benefit those with large asset portfolios, i.e., wealthy households; (ii) with a restrictive policy, asset prices can fall due to higher borrowing costs and decreased demand, causing asset owners (often wealthy households) to lose out, and households with debt can also suffer as rising interest rates make their debts more expensive. Additionally, inflation affects real incomes and purchasing power differently across socioeconomic strata, depending on the structure of household consumption and income sources. Empirical studies emphasise the importance of assessing household heterogeneity to understand the impact of monetary policy when indirect effects become significant.

2.2. Impact of monetary policy on economic inequality in Ukraine

Monetary policy effects on the household monetary income heterogeneity in Ukraine in 2007—2021

The analysis of the dynamics of indices measuring heterogeneity in household income sources (wages, capital income, social transfers) and the overall PCA index in 2007—2021 reveals the following structural shifts in income distribution (Fig. 2.2): (i) 2007—2015: no structural breaks; all heterogeneity indices remained relatively stable or fluctuated within 2 percentage points, and the PCA index was negative, indicating a relatively unchanged income distribution structure; (ii) 2016—2021: a period of intense structural polarisation characterised by rising wages and social transfers heterogeneity (nearly doubling between 2016 and 2019). Meanwhile, the capital income index stayed low and stable (1.9—2.5 percentage points compared to 8—15 for other categories). Before 2016, the PCA index was consistently low or negative, suggesting no significant structural changes; however, after 2016, it increased rapidly (from — 16.7 in 2016 to 27.4 in 2021), indicating substantial stratification of household income sources, mainly driven by labour income and social transfers. Additionally, the heterogeneity index of social transfers decreased gradually from 2007 to 2009, suggesting that social support was becoming more targeted towards poorer households. Yet, from 2012 onwards, this index began to rise, reaching a peak in 2018—2019. This implies that social benefits are increasingly concentrated in the top deciles, and social policy has ceased to compensate for inequality.

Therefore, the simultaneous increase in the wage heterogeneity indices and social transfers, without changes in capital income, indicates that the source of structural shifts was labour income and transfers rather than capital income. The rise in the social transfer heterogeneity index suggests that social policy is not effectively ensuring income equality: transfers tend to be concentrated in the top deciles, and the targeted support system is weakening. The composite index (PCA) demonstrates an increased structural polarisation since 2016.

The OLS regression analysis for household monetary income heterogeneity indices and the composite PCA index as a function of macroeconomic (particularly monetary) factors for Ukraine shows that heterogeneity of labour income in Ukraine is most sensitive to monetary changes. In contrast, heterogeneity of capital income and social transfers appears essentially inert and nearly unresponsive to macroeconomic fluctuations, particularly (Table 2.1):

- Wage heterogeneity: M2/GDP has a positive and statistically significant effect on wage heterogeneity ($\beta = 0.39$; $p = 0.04$). An increase in the economy's monetisation level is associated with greater unevenness in labour income. The hryvnia exchange rate also has a positive and marginally statistically significant effect

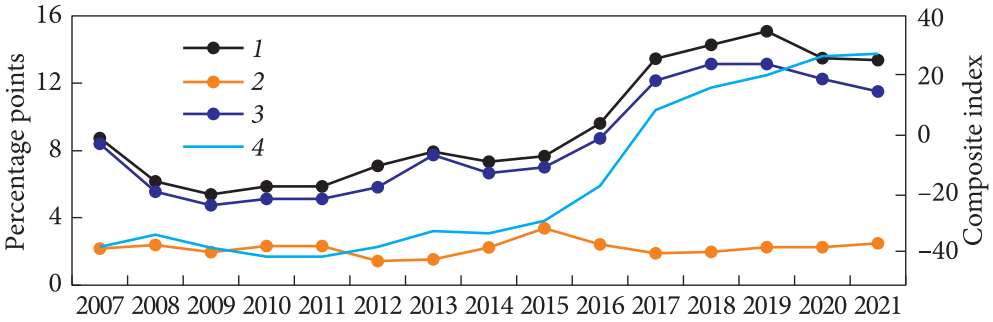

Fig. 2.2. Income source heterogeneity indices and the PCA structural change index in Ukraine, 2007—2021. The heterogeneity index is calculated in percentage points (p.p.); it is the standard deviation of the decile shares for each type of income in each year, i.e., this measure proves how unevenly the respective income is distributed among different deciles of the population. The composite index (PCA) is unitless (as it is a linear combination of all components measured in dimensionless units, but is based on percentage values) and provides a summary measure of structural shifts across all sources simultaneously, across all deciles. *Left scale: 1* — index of wages (labour income) heterogeneity, p.p.; *2* — index of heterogeneity of capital income, p.p.; *3* — index of heterogeneity of social transfers, p.p.; *right scale: 4* — PCA index
Source: author's calculations based on data (SSSU, 2021; NBU, n. d.).

Table 2.1. **OLS regression for household monetary income heterogeneity indices and the composite PCA index as a function of macroeconomic, particularly monetary, factors in Ukraine, 2007—2021**

Dependent variable	Constant	M2-to-GDP ratio (p)	Exchange rate (p)	NBU policy rate (p)	CPI (p)	R^2
Wage income heterogeneity	−0.72	0.39 ** (0.04)	0.16 (0.06)	0.09 (0.60)	0.12 (0.38)	0.90
Capital income heterogeneity	3.21	−0.02 (0.76)	0.05 (0.10)	0.09 (0.09)	0.02 (0.38)	0.57
Social transfers heterogeneity	3.65	0.12 (0.15)	0.06 (0.14)	0.06 (0.63)	0.06 (0.22)	0.70
PCA index	32.75	−1.78 *** (0.005)	0.93 ** (0.01)	0.41 (0.32)	−0.18 (0.23)	0.97

Note: p-values in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Source: author's calculations based on data (SSSU, 2021; NBU, n. d.).

($\beta = 0.16$; $p = 0.06$). Hryvnia devaluation tends to increase structural inequality. The other variables (credit depth, discount rate, inflation) are insignificant.

- Capital income heterogeneity: none of the macro indicators shows statistical significance. The discount rate indicates a weak positive trend ($\beta = 0.09$; $p = 0.09$).

• Social transfers heterogeneity: none of the macro indicators significantly impact the differentiation of social transfers.

• Composite index of structural changes (PCA): M2/GDP ($\beta = -1.78$, $p = 0.005$, negative) and the hryvnia exchange rate ($\beta = 0.93$, $p = 0.01$, positive) are statistically significant. Increasing monetisation promotes structural income equalisation, while hryvnia devaluation tends to widen structural gaps.

Thus, the distribution of social transfers remains stable and inertial — its variability over time is driven by government policies and institutional arrangements rather than by market or monetary shocks. None of the macroeconomic factors has a statistically significant impact on the heterogeneity of social benefits. The composite index of structural change (PCA) is sensitive to monetary factors: (i) M2/GDP has a negative and statistically significant effect ($p = 0.005$), meaning that an increase in the monetisation of the economy helps to equalise the structure of incomes (reducing structural polarisation); (ii) the hryvnia exchange rate (devaluation) has a positive effect ($p = 0.01$), indicating that an increase in the dollar raises structural changes and heterogeneity.

Monetary policy effects on the middle class in Ukraine from 2007 to 2021

Linear modelling (OLS) was used on annual time series data from 2007 to 2021, due to the limited sample period (15 years), to evaluate the influence of monetary and macroeconomic factors on the dynamics of the core middle class. The dependent variable is the share of the core middle class, defined as the difference between the cumulative share of households with incomes below 120% of the median and those below 75% of the median. This is an annual average measure, as the Households Living Conditions Survey from the SSSU is based on yearly data (reflecting the distribution of households by average monthly income for each year). The independent variables include: the average annual M2/GDP ratio (at current prices), the average yearly NBU key policy rate, the average annual official UAH/USD exchange rate, and the average annual inflation rate (CPI, year-on-year from January to December). The OLS regression model presents the following findings (Table 2.2):

• An increase in the M2/GDP ratio is associated with the expansion of the core middle class ($p = 0.009$). Greater monetisation may be consistent with a mechanism whereby more households can achieve a stable, higher income level, enabling them to enter the core middle class. The share of both the poor and the wealthy diminishes in favour of the middle.

• Hryvnia depreciation (an increase in the exchange rate) is also statistically significantly linked to growth in the core. Depreciation often stimulates export-oriented sectors, agriculture, IT and entrepreneurs operating in foreign markets. Producers, workers and contractors in these sectors can secure higher incomes in UAH (particularly when earning in foreign currency and spending

in UAH). During crises, depreciation also compresses the upper and lower ends of the income distribution (the poor become poorer, the wealthy protect themselves through assets). At the same time, those replenish the middle class with incomes derived from foreign markets.

Table 2.2. **OLS regression for the core of the middle-income class (75—120% of the median) in Ukraine, 2007—2021**

Parameter	Coef-ficient	Std. Error	t-sta-tistic	p-value	Parameter	Coef-ficient	Std. Error	t-sta-tistic	p-value
Constant	6.27	37.02	0.17	0.869	USD/UAH exchange rate	1.62***	0.46	3.50	0.006
M2/GDP	1.48***	0.46	3.23	0.009	CPI (inflation)	–0.34	0.31	–1.09	0.303
Policy rate	–0.15	0.91	–0.17	0.870	R^2	0.62			

Note: p-values in parentheses: * p < 0.1, ** p < 0.05, *** p < 0.01.
Source: author's calculations based on data (SSSU, 2021; NBU, n. d.).

Table 2.3. **OLS regression for the super-core of the middle-income class (90—110% of the median) in Ukraine, 2007—2021**

Parameter	Coef-ficient	Std. Error	t-sta-tistic	p-value	Parameter	Coef-ficient	Std. Error	t-sta-tistic	p-value
Constant	4.53	13.51	0.34	0.745	USD/UAH exchange rate	0.53***	0.17	3.16	0.010**
M2/GDP, %	0.50***	0.17	3.01	0.013**	CPI, %	–0.09	0.11	–0.78	0.455
Policy rate, %	–0.14	0.33	–0.43	0.677	R^2	0.56			

Note: p-values in parentheses: * p < 0.1, ** p < 0.05, *** p < 0.01.
Source: author's calculations based on data (SSSU, 2021; NBU, n. d.).

Table 2.4. **OLS regression for the fringes of the middle-income class (75—90% + 110—120% of the median) in Ukraine, 2007—2021**

Parameter	Coef-ficient	Std. Error	t-sta-tistic	p-value	Parameter	Coef-ficient	Std. Error	t-sta-tistic	p-value
Constant	0.42	23.99	0.02	0.986	USD/UAH exchange rate	1.10 ***	0.30	3.65	0.004
M2/GDP, %	0.98***	0.30	3.30	0.008	CPI, %	–0.24	0.20	–1.18	0.265
Policy rate, %	–0.03	0.59	–0.06	0.954	R^2	0.64			

Note: p-values in parentheses: * p < 0.1, ** p < 0.05, *** p < 0.01.
Source: author's calculations based on data (SSSU, 2021; NBU, n. d.).

• Inflation and the NBU key policy rate have no statistically significant effect in this sample. Within this short time series and given the aggregate price level, neither inflation nor the policy rate has a direct or stable impact on the size of the middle class. In Ukraine, inflation has primarily affected people experiencing poverty through rises in prices for basic goods, but has not materially altered the structure of the core middle class.

Additional analysis was conducted using one-year lags for each independent variable. None of the lagged variables achieved statistical significance (all $p > 0.1$). The current values of M2/GDP and the exchange rate better explain changes in the share of the core than their values from the previous year. R^2 increased to 0.77, but no individual lagged factor is statistically significant. The model with lags does not lead to fundamentally different conclusions from the main specification.

To ensure the robustness of these results, modelling was conducted using different definitions of the core middle class, specifically (Tables 2.3, 2.4): the super-core (90—110% of the median) and the fringes (the combined ranges of 75—90% and 110—120% of the median). The overall structure of the effects remains consistent across all specifications: the most important and statistically significant determinants are the M2/GDP ratio and the official UAH/USD exchange rate. The impacts of inflation and the main policy rate remain statistically insignificant within this short sample. This confirms the robustness of the main findings regarding the monetary determinants of the middle class in Ukraine. Diagnostic criteria were checked for all model specifications (core 75—120%, super-core 90—110%, fringes 75—90% + 110—120%). Multicollinearity is absent (VIF for all variables <5), no residual autocorrelation was detected (Durbin — Watson statistic ≈2), and the model residuals are close to a normal distribution.

Thus, empirical results show that the dynamics of the core middle class in Ukraine from 2007 to 2021 was mainly influenced by the growth of the M2/GDP ratio and hryvnia depreciation. Meanwhile, the effects of inflation and the NBU policy rate are statistically insignificant within the short sample. The robustness of these findings was confirmed using alternative intervals for the core — the main conclusions remain the same. Including lagged variables does not change the overall results: the M2/GDP ratio and UAH depreciation are the key factors affecting middle-class dynamics, even without considering delayed effects.

Conclusion. The analysis of the dynamics of household income heterogeneity indices and the composite PCA index for 2007—2021 in Ukraine suggests that the primary source of structural changes after 2016 is the growth of inequality in labour income and social benefits. Capital income does not become a driver of polarisation, remaining stable due to institutional inertia.

Findings from the OLS regression analysis of these indices for 2007—2021 demonstrate that the monetisation of the economy and the devaluation of the hryvnia contributed to an increase in structural heterogeneity in household labour income. The distribution of labour income in Ukraine is sensitive to monetary

and exchange rate changes. Capital income and social transfers do not show a statistically significant response to the primary macroeconomic factors, indicating their institutional inertia or the dominance of extra-economic distribution mechanisms. For instance, the lack of effect might be caused by reduced capital penetration into the economy, as evidenced by a decline in monetisation.

The results of the OLS regression analysis on the impact of monetary policy on the middle class in Ukraine in 2007—2021 align with international research: monetary expansion in stable economies fosters the expansion of the middle class, whereas high interest rates, inflation, and devaluations tend to contract its core.

2.3. Financial portfolio of Ukrainian households

Monetary policy creates incentives for savings and lending, but the outcome of its impact always depends on the initial structure of the investment portfolio. When this structure is highly uneven (as in 2023), any policy stimulus will primarily benefit the top deciles, as they are the only groups with real money to invest. Although data is available (as of June 2025) only for 2023, the decile distribution of households that were able to save, use credit and carry debt demonstrates significant financial segmentation (Fig. 2.3). The proportion of households able to save is heavily concentrated at the upper end (30.6% in the 10th decile versus only 2.6% in the 1st decile), while the use of credit and debt remains relatively evenly distributed. Without factoring in dynamic factors, this cross-section substantiates the presence of systemic financial inequality, which is likely to respond to any monetary shocks.

Thus, in 2023, the UNICEF survey demonstrates that the top deciles have more savings and use credit more actively (i.e., have better access to the financial market). The lower deciles have almost no savings, but a certain proportion of them still take out loans, which increases their vulnerability to changes in monetary conditions (e.g., rising interest rates).

An analysis of the *dynamics of the deposit portfolio of Ukrainian households over 2006 — May 2025* reveals significant structural changes closely linked to fluctuations in yields on various savings instruments (Fig. 2.4). Previously, term deposits in hryvnia and foreign currency were the primary means of saving, as shown by their volumes: in 2012, the volume of hryvnia term deposits reached UAH 132.8 billion, and foreign currency deposits amounted to UAH 159.3 billion. The weighted average interest rates on hryvnia term deposits ranged from 15% to 21%, and on foreign currency deposits from 7% to 11%, offering substantial incentives to save in these forms. However, after 2016, household behaviour changed markedly: (i) the volume of demand deposits in hryvnia increased more than sixfold, from UAH 85.8 billion in 2016 to UAH 468.4 billion in 2022 and 520.1 billion in 2023; (ii) at the same time, the weighted average interest rate on hryvnia term deposits fell from 16.9% in 2016 to 8.0% in 2021, then increased to between 12.1% and 13.8% in 2022—2023, while remaining well be-

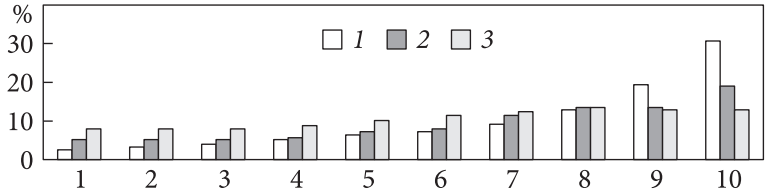

Fig. 2.3. Financial behaviour of households by decile groups in Ukraine, 2023, %: *1* — share of households that were able to save during the last three months; *2* — share of households that use loans; *3* — share of households with debt obligations on loans
Source: compiled by the author based on data (UNICEF, 2024).

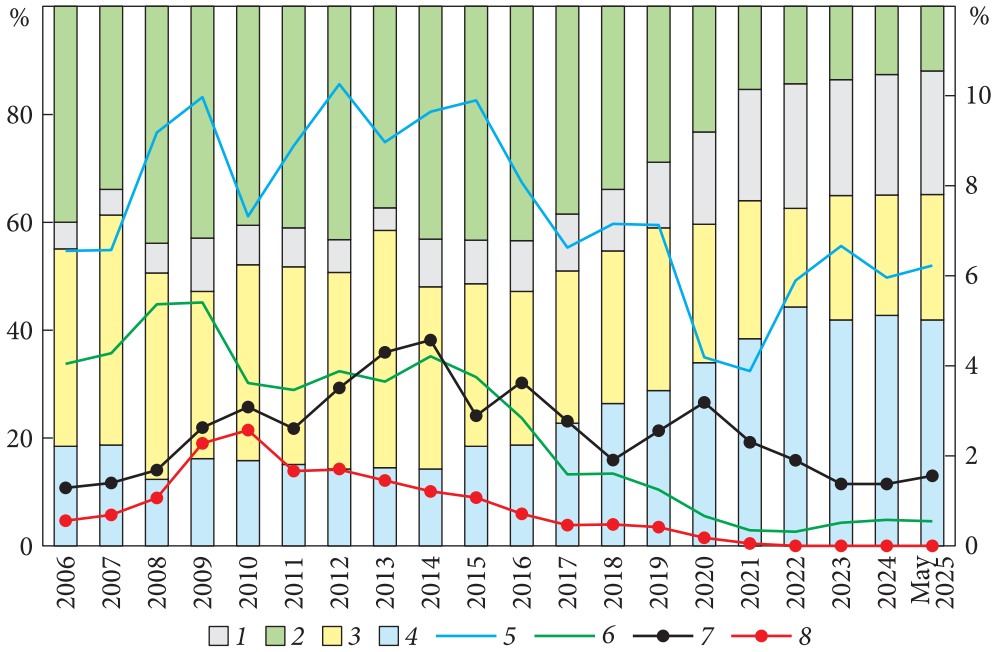

Fig. 2.4. Household deposit portfolio in Ukraine, 2006 — May 2025. *Left scale: 1* — term deposits in foreign currency of household; *2* — demand foreign currency deposits of households; *3* — term deposits in hryvnia of housseholds; *4* — demand hryvnia deposits of households; *right scale: 5* — average interest rate of term deposits in national currency; *6* — average interest rate of term deposits in foreign currency; *7* — average interest rate of new demand household deposits in national currency; *8* — average interest rate of new demand household deposits in foreign currency
Source: compiled by the author based on data (NBU, n. d.).

low the NBU's key rate; (iii) foreign currency term deposits, though still substantial in volume (UAH 148.9 billion in 2022, UAH 164.5 billion in 2023), are gradually losing attraction as the weighted average rate declines to 0.6—1.2%.

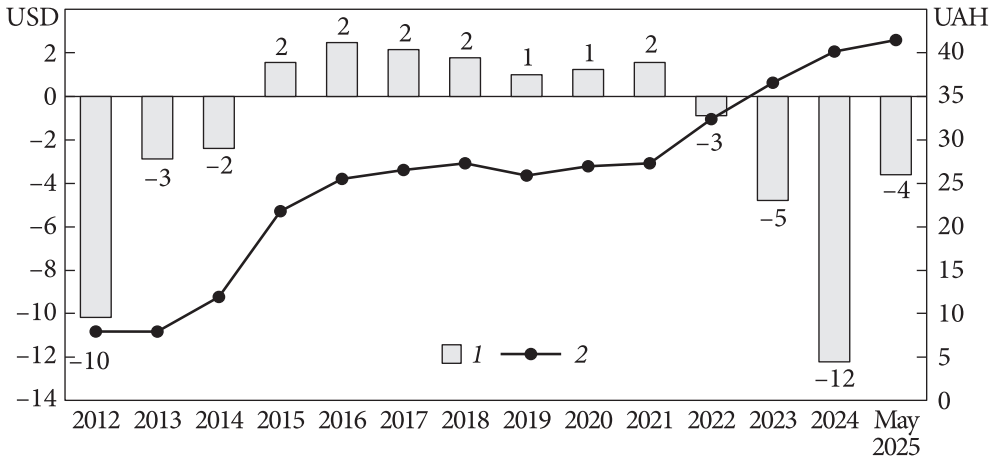

Fig. 2.5. Net cash foreign currency flows of individuals and official UAH/USD rate in Ukraine, 2012 — May 2025. *Left scale: 1* — net cash foreign exchange flows of individuals (balance of purchases and sales through banking institutions); *right scale: 2* — official exchange rate of the hryvnia to the US dollar (average for the period)
Source: compiled by the author based on data (NBU, n. d.).

Hence, structural shifts in the household deposit portfolio after 2016—2017 are directly linked to interest rate movements: households avoid long-term hryvnia instruments due to low real yields, and foreign currency term deposits have lost their appeal as a savings option for the mass market. Specifically, demand for term deposits is declining amid a substantial drop in real yields. Hryvnia current accounts are becoming the primary instrument for maintaining liquid balances, despite offering very low yields (2.9% in 2023—2024). Foreign currency term deposits are becoming a conservative choice for a small segment of the wealthy, as their attractiveness for the general public has diminished significantly.

The *dynamics of net foreign currency cash flows among individuals* in Ukraine from 2012 to May 2025 confirms the cyclical nature of households' foreign exchange behaviour, which closely correlates with the phases of macroeconomic turbulence in Ukraine (Fig. 2.5). In 2012—2013, the net outflow of foreign currency from households reached record levels (–USD 10.2 billion and –USD 2.9 billion, respectively) against the backdrop of a stable but artificially supported exchange rate (UAH 7.99 per dollar). This reflected the high demand for the dollar as a means of saving, compensating for the lack of confidence in hryvnia assets in the pre-crisis period. Since 2014, amid the devaluation of the hryvnia (the exchange rate rose from 11.89 to 21.84 in 2015), the scale of outflows has decreased. In 2015—2021, there was a positive balance — the households sold more foreign currency than they bought (net sales of USD 1.5—2.6 billion per year). This coincided with the relative stabilisation of the exchange rate, increased

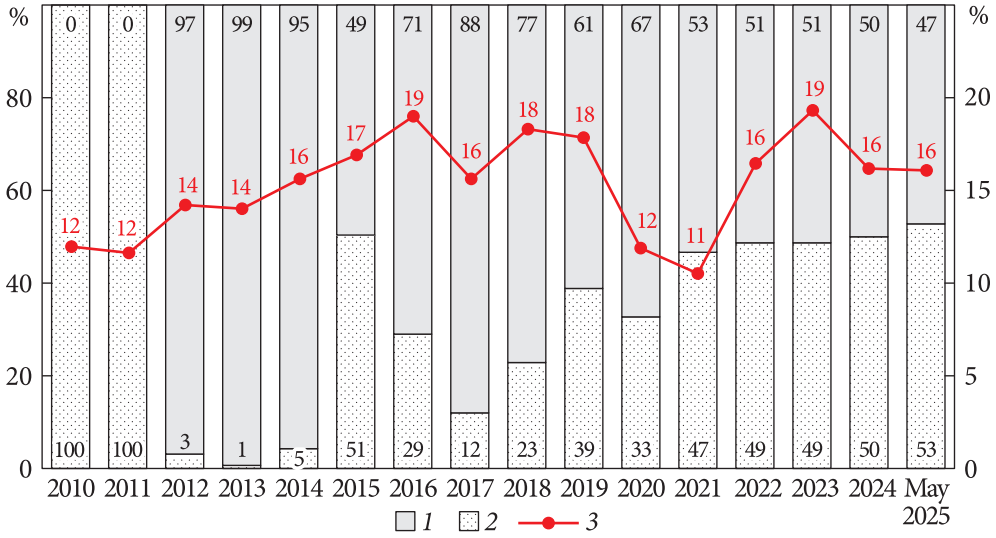

Fig. 2.6. Government bonds held by individuals in Ukraine, 2010 — May 2025, %. *Left scale: 1* — share of hryvnia domestic government bonds in the portfolio of individuals; *2* — share of foreign currency domestic government bonds in the portfolio of individuals; *right scale: 3* — average yield of hryvnia domestic government bonds on the secondary market
Source: author's calculations based on data (NBU, n. d.).

confidence in banks and the outflow of foreign currency savings accumulated during the crisis back into the hryvnia or for current needs.

Therefore, from 2015 to 2019, individuals' net foreign currency sales were accompanied by an increase in hryvnia deposits, mainly current accounts, which meant that shadow foreign currency savings were converted into banking instruments and liquidity was returned to the banking system. At the same time, in 2022—2024, amid the hryvnia's devaluation, the opposite trend intensified due to massive purchases of foreign currency by households and a decrease in hryvnia term deposits. This caused a redistribution of financial resources: groups that could convert their savings into foreign currency or withdraw them from the banking sector could partly preserve the real value of their assets. Conversely, households forced to stay in hryvnia banking products with low yields experienced a significant loss of purchasing power.

An analysis of *the structure of the portfolio of domestic government bonds held by Ukrainian individuals* over 2010 — May 2025 reveals significant fluctuations between the hryvnia and foreign currency components. These changes reflect shifts in savings strategies and responses to macroeconomic shocks (Fig. 2.6). In 2010—2011, households' portfolios consisted entirely of hryvnia-denominated domestic government bonds (100%). However, since 2012, the foreign currency component has become predominant: during 2012—2014, over 95%

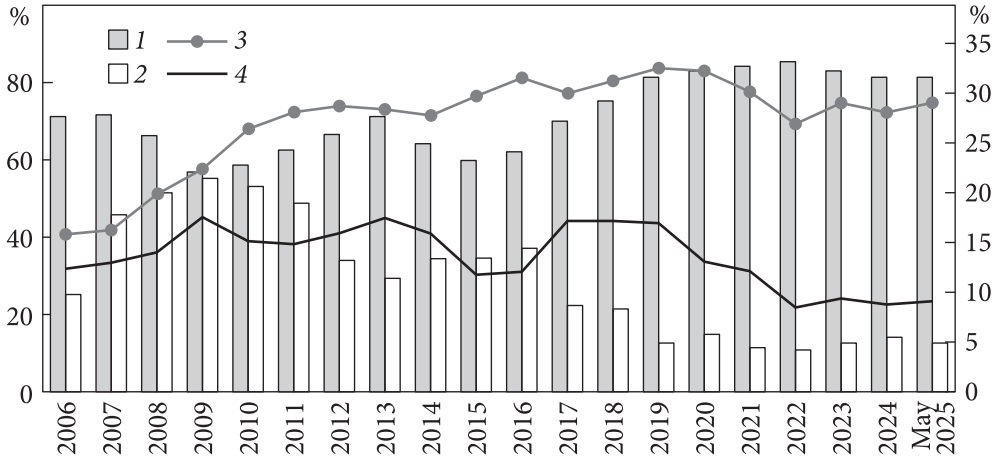

Fig. 2.7. Household loan portfolio in Ukraine, 2006 — May 2025, %. *Left scale: 1* — share of consumer loans to households; *2* — share of mortgage loans to households; *right scale: 3* — average interest rate of new consumer loans to households; *4* — average interest rate of new mortgage loans to households
Source: author's calculations based on data (NBU, n. d.).

of all domestic government bonds held by individuals were denominated in foreign currency. This trend is driven by high devaluation risks, low confidence in the hryvnia, and a desire to preserve the real value of savings during crisis years. In 2015, a structural shift occurred: the share of hryvnia-denominated bonds increased sharply, reaching 50.5%, with fluctuations between foreign currency and hryvnia instruments reflecting changes in inflation and exchange rate expectations. By 2016, the preference shifted back in favour of foreign currency securities (70.6%), but during 2018—2025, there was a gradual stabilisation, with both components comprising about 50% of the portfolio. The increased attractiveness of hryvnia bonds after 2015 is supported by rising weighted average yields, from 15.6% in 2014 to a peak of 19.3% in 2016 and again in 2023, while during periods of lower rates (e.g., 2020—2021), the hryvnia component decreases slightly. Despite challenging military and macroeconomic conditions over 2022 — May 2025, the share of hryvnia and foreign currency bonds in individual portfolios again level around 49% each, indicating that individuals seek an optimal balance between inflation protection and exchange rate risks.

Thus, in addition to the dynamics of deposit instruments and purchases of cash foreign currency, government securities, particularly domestic government bonds, have begun to play a significant role in the structure of household financial savings over the past decade. According to data, from 2010 to 2014, the portfolio of domestic government bonds held by individuals was almost entirely in hryvnia or, during times of crisis, mostly in foreign currency. This reflects house-

holds' desire to protect their savings from exchange rate risks. Between 2015 and 2021, there was a fluctuation between the hryvnia and foreign currency components, but the share of hryvnia domestic government bonds gradually increased (to 47% in 2021) amidst rising yields and declining bank deposit rates.

The *dynamics of the household loan portfolio in 2006 — May 2025 reflects the deep financial vulnerability of the households* (Fig. 2.7). The period of 2006—2008 was characterised by rapid growth in lending, mainly due to consumer and mortgage loans, which together made up over 80% of the portfolio, with foreign currency mortgages accounting for up to 60% of new loans in this segment. After the financial crisis of 2009—2010, lending activity slowed considerably. In 2011—2013, there was stagnation as banks reduced their non-performing loans, shifted focus to hryvnia lending, and mortgages gradually became less affordable for households. The currency crisis of 2014—2015 and the regulatory restrictions imposed eliminated new mortgages in foreign currency; the main increase in lending came from short-term consumer loans in hryvnia, including microloans. In 2016—2019, amid macroeconomic stabilisation, the household portfolio gradually recovered, but its structure was almost entirely composed of consumer loans (up to 80% of new loans). Mortgage lending remained unobtainable due to high interest rates, risks, and low household solvency. In 2022—2024, despite martial law, high risks, and macroeconomic uncertainty, household lending did not decline but continued to grow steadily: the principal contribution to this growth was from the consumer loan segment (82% as of May 2025), while the share of mortgage lending (13% as of May 2025) also showed a gradual upward trend.

Conclusion. Monetary policy is not neutral across households when the financial market is segmented in Ukraine. Firstly, as of 2023, there is varying ability to benefit from changes in monetary policy: wealthy groups gain more from liquidity expansion, while poorer groups are more vulnerable to inflationary shocks. This indicates that the channels through which monetary policy affects investment and lending remain unequal. Secondly, during the crisis, the most financially inclusive segments of the individuals are increasing the diversification of savings between hryvnia and foreign currency domestic government bonds, while the broader individuals are compelled to keep current accounts or cash. This amplifies the redistribution channel, which involves the redistribution of benefits and losses from changes in monetary policy and the financial environment in favour of those with greater access to financial markets and higher levels of financial literacy. Thirdly, during 2022—2024, despite increased currency risks and rising demand for cash, the proportion of hryvnia domestic government bonds in individual portfolios remains at 49—53%, while foreign currency bonds account for 47—51%. This diversification suggests that specific household' segments are becoming more financially aware and are utilising government securities to safeguard savings. Simultaneously, the continued

high share of foreign currency bonds, even with elevated interest rates on hryvnia bonds, reflects enduring distrust in the national currency amid military risks. When confidence in the national currency is fragile, even favourable monetary conditions may not lead to higher demand for domestic assets. Fourthly, the household loan portfolio dynamics reflects that most people are forced to depend on costly short-term loans, increasing their financial vulnerability. This reinforces inequality by increasing the vulnerability of disadvantaged groups. Overall, these findings confirm that channels of monetary transmission operate asymmetrically, reinforcing existing inequalities unless accompanied by targeted financial inclusion.

Conclusions

According to the international evidence, monetary policy influences economic inequality mainly through its impact on asset prices and the diverse asset and debt holdings across the population. Expansionary policies generally raise asset values, primarily benefiting wealthier households with large portfolios, while restrictive policies may lower asset prices and increase debt levels, affecting both asset owners and indebted households. Therefore, the distributional effects of monetary policy depend on the structure of household balance sheets and the direction of policy shifts.

Based on OLS regression analysis of household monetary income heterogeneity and a composite PCA index for Ukraine from 2007—2021, the monetisation of the economy exhibits a dual effect. Specifically, higher monetisation of the economy is associated with increased labour income inequality across deciles, indicating that additional liquidity can amplify differences in wage distribution. Conversely, the impact on the composite PCA index of income heterogeneity is negative, suggesting that increased monetisation may help create a more balanced overall income structure. This implies that increased monetary resources do not automatically lessen social polarisation; their distributional effects depend on the underlying composition of household incomes. Furthermore, hryvnia depreciation is linked to significant structural shifts and greater heterogeneity of labour income, likely due to the uneven impact of currency shocks and inflationary pressures across different household' groups. By contrast, capital income and social transfers do not show significant statistical relationships with the macroeconomic variables analysed. This may reflect the structural inertia of these income sources or the dominant influence of government policy. Notably, the models for labour income and the PCA index show high explanatory power, emphasising a strong and statistically significant link between macroeconomic policy variables and the structure of income distribution across deciles. Conversely, models for capital income and social transfers lack such associations. Therefore, addressing structural income inequality requires recognising mone-

tary policy's dual and sometimes opposing effects: it can both promote the equalisation of income distribution and increase labour income disparity, depending on the transmission channels. It is also vital to consider the particular vulnerability of certain groups to currency shocks and inflation, as these can deepen disparities.

Under the OLS regression analysis of the impact of monetary policy on the middle class in Ukraine from 2007 to 2021, the positive influence of the M2 to GDP ratio highlights the importance of developing the financial sector to promote economic inclusion. While the depreciation of the hryvnia can temporarily benefit the middle class through currency-linked incomes, this effect is unlikely to be sustained in the long run. Additionally, inflation and the NBU's key rate alone do not fully define the boundaries of the middle class.

Most households concentrate their savings in hryvnia current accounts, which offer high liquidity but minimal returns. Term deposits, particularly in foreign currency, remain popular among wealthier groups with higher financial literacy and a propensity to diversify. During periods of economic stability, confidence in hryvnia deposits increases. However, in times of crisis and devaluation, many households shift their savings into foreign currency or cash, exacerbating inequality in access to reliable value preservation methods. The trends in the household loan portfolio also reveal financial segmentation. Long-term lending, including mortgages, is only accessible to households with high solvency and stable employment. After the 2014—2015 currency crisis and regulatory restrictions, most new loans are now short-term consumer loans, often at high interest rates, predominantly used by lower-income households. This heightens their financial vulnerability and creates additional risks of falling into debt traps. The movement of net foreign currency cash flows by individuals indicates that during crisis periods, wealthier, more financially literate households convert substantial amounts of hryvnia savings into foreign currency, maintaining the purchasing power of their assets. Conversely, most of the population, lacking extra funds to buy foreign currency or access banking services, is subjected to an inflation tax. In recent years, the structure of domestic government bonds held by individuals has become more balanced between hryvnia and foreign currency instruments. Nevertheless, most people remain outside this market due to informational, institutional and financial barriers.

The revealed trends indicate that the financial segmentation of Ukrainian households is deteriorating: more financially literate groups utilise diverse portfolios (deposits, foreign currency, and domestic government bonds), while most households have to rely on low-yielding and risky products such as current accounts and short-term loans. This intensifies the distributional effects of monetary policy, with benefits accruing to segments with more advantageous starting positions.

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CHAPTER 3

FISCAL POLICY & ECONOMIC INEQUALITY

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Studying the impact of fiscal policy on income inequality is essential for designing effective measures to promote economic equity and social cohesion. In order to facilitate this goal, an approach to assess the impact of fiscal policy on economic inequality was outlined. Based on an extensive review of the literature, the theoretical foundations of such implications have been established, and the main indicators for measuring this impact have been characterised. Ukrainian and international practices of reducing economic inequality through fiscal policy instruments were analysed. The primary fiscal policy instruments were characterised according to their expected influence on economic inequality. The most theoretically effective fiscal measures for reducing income inequality were identified as various types of social transfers. It was observed that international practices mainly focus social payments on a limited group of vulnerable populations (pensioners, the disabled), employing highly targeted approaches to social transfer allocation and minimising cash payments. Therefore, state social transfers are considered the primary method for income equalisation in Ukraine, while the tax system should aim to maximise budget revenue to support this aim.

Introduction

Measuring the impact of fiscal policy on economic inequality is crucial to ensure that government spending and taxation promote inclusive growth and do not inadvertently widen income and wealth gaps. It is a complex topic requiring a country-specific approach and statistical substantiation. Therefore, in order to assess such an impact for a given country, a review of current methodology for such analysis has to be undertaken. This Chapter is dedicated to the analysis of fiscal policy impact on economic inequality in a general context. Existing theoretical approaches to measuring this impact were itemised, the main indices used for it were characterised, and an extensive literature review was conducted to establish what approaches are currently used in the assessments of the interrelation between fiscal policy and economic inequality as well as to outline the current consensus on the impact of fiscal policy on economic inequality. Finally, the impact of the fiscal policy instruments on economic inequality was presented.

3.1. Fiscal policy and economic inequality: theoretical approaches

The impact of state social transfers on economic inequality is a widely researched topic, which preserves its relevance due to the chronic character of the problem it is aimed to alleviate. There are three main stages in understanding interconnection between economic growth, income inequality and fiscal policy (Muinelo-Gallo & Roca-Sagalés, 2011):

• *Traditional approach*, which is seen in works by Lewis (1954), Kuznets (1955) and Kaldor (1956), defines income inequality as a product of the level of economic development based on the Solow model (Solow, 1956). Inequality grows on the starting stages, then the income equalises as the capital is accumulated, and income from investing equalises with income from salary. By the standard neoclassical assumptions (all individuals are capable of equal amounts of labour, which is compensated according to its marginal productivity; relationship between consumption and saving is exogenous and a linear function of income; capital productivity decreases as it accumulates), and income distribution does not have any impact on economic growth. In this paradigm, any effect of fiscal policy instruments is short-termed and has no long-term relevance.

• *Endogenous growth paradigm.* The gist of this approach is in the statement that economic growth depends on collective actions of all economic subjects, which are, in turn, affected by economic policy. Fiscal policy can affect not only short-term production volumes but also long-term economic growth perspective. Specifically, Barro (1990) and Barro and Sala-I-Martin (1992) include state services paid by taxes in the production function. These researchers classified state expenses into productive and non-productive ones and taxes — into disruptive and non-disruptive ones according to their impact on private investment decisions on physical and human capital and therefore on economic growth.

• *New theories of economic growth*. These theories concentrate on such economic growth factors as technological progress, international trade and emergence of new organisational forms.

The impact of technological progress is explained based on Krusell's et al. (2000) theory of skills and capital mutual complementarity. As productivity grows, the price of equipment drops, and thus the qualified workforce becomes a new bottleneck that facilitates income redistribution towards sellers of such workforce, i.e. specialists. This causes an increase in income disparity between such specialists and regular workers.

The impact of international trade is based on the Heckscher — Ohlin model. Income from international trade usually originates from the most abundant production factor in the country, and therefore in developing countries this income originates from low-qualified labour, which pushes their wages up at the expense of more highly-qualified workers, which ultimately results in income

equalisation. In developed countries, however, this dynamic is reversed, which causes an increase in income inequality.

The impact of new organisational forms also stems from the qualification-caused gap in wages. Technological development increased the importance of horizontal ties within companies, which opened up new exclusive possibilities for qualified workforce, which exacerbated income inequality. Only the exogenous growth paradigm and new theories of economic growth justify the impact of fiscal policy on economic growth, via increase in human capital and R&D spending, which in turn has an effect on income inequality.

A necessary prerequisite for establishing the relationship between fiscal policy and economic inequality is the endogeneity of economic growth and thus the importance of economic agents' decisions. Fiscal policy instruments can influence these decisions, ensuring the desired effect, and it is within this approach that most practical studies of this relationship are carried out.

There are three main aspects that an indicator for measuring economic inequality should contain: an economic indicator, a demographic unit, and the time to which it refers. As a rule, variables related to household income are used as an indicator: household income and consumer spending. Household income is reported in most countries as an aggregate amount that is reduced by taxes, social and private transfers to obtain a measure of net household income suitable for further estimates. Consumption is measured as net income minus savings. The problems with this measure are poor data availability and representativeness, in particular the difficulty of including non-monetary income (subsistence farming, public education and health care and self-employment) (Van Kerm & Jenkins, 2009).

The period over which economic inequality is measured is important because the longer it is, the less economic inequality is due to the ability of economic agents to equalise their incomes. The standard measurement period is one year, as it coincides with the reporting period for many types of income, but other periods may be more representative of, for example, poorer segments of the households (with much more limited ability to equalise their incomes) and cases of structural changes in the social unit being measured.

The demographic units for which income inequality is assessed can be households, families, or individuals. Individuals provide the most representative data, but such data is usually not available. Therefore, household income is tracked and assumed to be equally distributed within the household.

Thus, the indicator of economic inequality is a compromise between the above principles, available data, and the objectives of the study. For econometric modelling, however, only one of the indices tends to be used. Indices are generally a way to summarise the dispersion of income in a comparable way, and there are four main types of such indices (Van Kerm & Jenkins, 2009):

- Percentile ratios, such as the ratio of percentile 90 in terms of profitability to percentile 10 (P90:P10 ratio); other variants are P90:P50 and P50:P10 ratios.

Among their advantages is that they avoid the need to truncate the sample, but by their nature, these ratios ignore the distribution of income outside the quartiles used in the calculation.

• Indices based on the Lorenz curve. Examples of such indices are the Pietro ratio (Ricci — Schultz index, Robin Hood index) — the largest difference between the Lorenz curve and the line of perfect equality, i.e. the proportion of total income that needs to be redistributed to achieve income equality. Another example is the Gini coefficient (the area of the figure formed by the Lorenz curve and the line of perfect equality); variations of this index are generalised Gini indices.

• Generalised entropy indices, including the Theil index and standard deviation. These indices reflect the redundancy of the data, i.e. the difference between their maximum possible entropy and the observed entropy. The advantages of such indices are the ability to disaggregate data by subgroups of households.

• Indices such as the Atkinson index, which can be used to determine which income group is the most affected by inequality.

Practical studies are usually region-specific, and it is uncertain whether or not their findings are universal, yet they provide a valuable context for practical applications of such indices. For instance, a study of the causal relationship between fiscal policy, economic growth and income inequality on a sample of 26 countries in Southern Saharan Africa during 1995—2016 found no causal relationship between fiscal policy (the actual proxy used was public spending as a share of GDP), economic growth and income inequality, which the authors explained by the lack of effective fiscal policy in most of the countries examined (Aremo and Sule (2020). The authors pointed to the lack of coordination between the branches of government due to weak institutions as the reason for the low efficiency of fiscal policy. The only causal relationship identified in this study was a link between economic growth and income inequality in the higher income segment of countries, i.e., as income in a country grows, so does its inequality.

Other authors came to the opposite conclusions. For instance, a study by Messy (2020) on the significance of fiscal policy instruments for reducing income inequality in Southern Saharan Africa on a panel of 34 countries over 1992—2014 determined that the only variable to be significant for reducing income inequality is tax revenues to GDP, i.e., an increase in the share of tax revenues in GDP leads to a decrease in income inequality within the country. The author attributes this to the fact that this indicator serves as the basis for public spending aimed at overcoming economic inequality (which, however, is contradicted by the fact that the indicator of public spending itself, which is also present in the model, is not significant). The structure of taxation in this model is also not significant, i.e., income inequality does not depend on the shares of direct and indirect taxes in tax revenues. An additional finding was that trade openness (exports + imports to GDP), credit to the private sector

(i.e. financial depth) and GDP per capita have a directly proportional impact on economic inequality, i.e., an increase in these indicators leads to a widening of the income gap.

Another study on the interaction between fiscal policy, economic inequality and economic growth, focused on India, indicates an inversely proportional relationship between subsidies and economic inequality (Gini coefficient) in the long run, while the relationship between direct and indirect taxes and economic inequality is directly proportional (although significant only within the 90% confidence interval), with the causal link running from tax revenues and expenditures to economic inequality, but not vice versa (Bansod, Mohapatra, & Giri, 2017). In the short run, the direction of the impact remains the same, but the direct tax indicator loses significance. This means that government spending reduces inequality in short and long runs, while taxation increases it, and indirect taxes have a more powerful effect than direct taxes.

Income inequality increases the negative effects of fiscal consolidation (i.e., reduced government spending and increased government revenues), according to the level of savings in the country (Brinca, Ferreira, Franco, Holter, & Malafry, 2021). The higher the savings rate (and, as a result, the ability of the households to level consumption from their own resources), the weaker the negative effects of fiscal consolidation (reduction of labour supply), while a higher level of household debt increases them.

Some studies indicate that specific structural problems of an economy may make income inequality unsolvable. For instance, in the case of Guatemala, these problems include a small tax base and, as a result, low tax revenues, as well as regressive indirect taxation (Cabrera, Lustig, & Morán, 2015). It is particularly apparent for the gap between the income of the aborigines and other categories of the population, which more than doubles.

Based on the Spanish experience, fiscal decentralisation (i.e., the empowerment of local governments to collect and distribute taxes) leads to higher income inequality to an extent that local governments do not cooperate, and taxation is not harmonised (Carreras, 2016). The author cites Spain as a negative example (where cooperation is weak) and Germany as a positive one.

The impact of fiscal policy on income inequality tends to be less immediate than the impact of monetary policy. For instance, zero and negative interest rates, which were used in Japan in 2002—2017, led to a deepening of income inequality due to the rise in the price of financial assets, which benefited only the upper-middle income groups, and in the short term, income inequality tended to self-reinforcing (Taghizadeh-Hesary, Yoshino, & Shimizu, 2020). The increase in income inequality caused by monetary policy was higher than the reduction in inequality provided by fiscal policy, and while monetary policy had a short- and long-term impacts on economic inequality, the impact of fiscal policy (progressive taxation) was recorded only in the long run. An additional

conclusion is that in the long run, technological progress can reduce income inequality by increasing marginal labour productivity and associated wages.

China's case proves that over-reliance on regressive taxes and also decentralisation and lack of equalisation transfers lead to increased inequality (Douglass, 2009). While the impact of regressive taxes is self-evident, the decentralisation creates an incentive for local officials to concentrate public spending only in places with potentially the highest return on investment, i.e., large cities, and the lack of equalisation transfers between regions means that poor regions remain poor.

Thus, the relationship between fiscal policy and economic inequality is numerically estimated based on the endogenous economic growth framework and modelled using a wide range of indicators. The most common proxies used for economic inequality are the Gini coefficient and its derivatives, as well as percentile ratios, generalised entropy indices and the Atkinson index.

Government revenues and government expenditures are used as proxies for fiscal policy, modified according to the objectives of the study and disaggregated based on available data. Some studies also take into account the structure of government revenues and expenditures, dividing the former into direct and indirect taxes and the latter into transfers according to their intended use, although as a rule, the more specialised the indicator, the less likely it is to be meaningful. There is a wide range of country-specific indicators that are included in the analysis at the stage of model interpretation, such as the level of centralisation of the tax system, to explain unexpected results.

Economic inequality is assessed in a more standardised way, using the Gini coefficient, despite the wide range of alternative indicators. The reason for this is the availability of information and its comparability between countries (which makes this indicator more attractive than just household income and consumer spending, which are indicators published by statistical bureaus in most countries and denominated in local currencies). As an additional factor, the modelling usually takes into account trade openness, financial depth, GDP per capita, technological development (R&D expenditures), and the structure of the trade balance.

Interconnections between fiscal policy and economic inequality

The impact of fiscal policy on economic inequality is recorded in terms of taxation and budget transfers, with the former forming the basis for the latter. As noted earlier, the relationship between taxation, fiscal transfers and economic inequality is not universal and depends on the country under consideration and the period of study. Moreover, depending on the methodological approach, even if the period and geographical base of the research coincide, it is possible to obtain mutually exclusive results, which makes this issue complex and ambiguous.

For instance, the study by Auten and Splinter (2024), focused on the dynamics of economic inequality in the United States in 1962—2019 based on pre- and post-tax income of Americans, shows that the growth of economic inequality during this period was overestimated in other studies due to the failure to take into account a number of demographic (increase in the number of taxable persons due to the splitting of families) and administrative (numerous tax reforms) factors. The reason for this was that other researchers of economic inequality in the United States used narrower definitions of economic agents' income that did not include social transfers. Thus, the growth of pre-tax income inequality (namely, the share of pre-tax income of the richest 1% of Americans) in the United States in 1962—2019 was not 100%, but only 3%, and after-tax income — only 0.2%. The main patterns of this relationship are as follows:

1. *The universality of the impact of transfers and taxation on economic inequality.* Regardless of whether any policy to counteract economic inequality is implemented or not, both taxation and social transfers have an impact on economic inequality. The instruments used can be interchangeable, as Davies and Hoy (2002) prove, and there is a difference in the effects of progressive and standard taxation. The authors point out that a universal tax rate can have a more equalising effect on incomes when it falls within the range of less than the weighed average progressive tax rate, or, in other words, for any progressive tax scale, there is a universal tax rate that would provide the same income equalisation effect. The impact of taxes and transfers on economic inequality may, however, be mutually offsetting (as demonstrated by the above-mentioned study by Avi-Yonah (2014)), particularly when increases in social transfers are financed through the expansion of regressive taxation. Therefore, to achieve the desired outcome, coordination between taxation and social transfers is necessary.

2. *Multidirectionality of taxation and budget expenditures as instruments of influence on the economy.* As a rule, the primary objective of fiscal policy is not to overcome economic inequality — this objective is secondary and often approached on a residual basis; in particular, measures aimed at stimulating economic activity usually have a negative impact on economic inequality through the creation of legal mechanisms to minimise taxation (e.g., the simplified taxation system), and their effectiveness in achieving these goals is not related to this effect. Thus, the study of the relationship between economic inequality, taxation and economic growth conducted by Biswas, Chakraborty and Hai (2017) indicates the asymmetry of the impact of taxation on the behaviour of economic entities depending on their income level. Thus, an increase in the redistribution of wealth through taxation (reduction of the gap between household incomes due to a progressive taxation scale) is a positive incentive to economic activity for households with incomes less than or equal to the median income. Reducing the income gap between the median and higher-than-median income, however, leads to a slowdown in GDP growth. The authors point to changes in the beha-

viour of business entities, namely a reduction in the supply of labour from women and the closure of small businesses, as reasons for this; that is, the conclusion is consistent with Avi-Yonah (2014) that as taxation increases, wealthier citizens prefer to reduce their working hours and increase the time for leisure.

3. *The unpredictable impact of fiscal policy instruments on economic inequality.* In practice, the same approach can have the opposite effect depending on a wide range of factors, which usually become known after the fact. For example, Martorano (2018) in a study of taxation and economic inequality in Latin America, concluded that there is a causal relationship between increased taxation and reduced economic inequality. The effect is somewhat country-specific but overall universal. In Latin America, the reduction of economic inequality was primarily influenced by an increase in direct taxes (on profits and income including capital gains), and the reduction of inequality was due to a narrowing of the gap between the upper and middle classes. Meantime, the study of historical data on the United States, conducted by Troiano (2018), in contrast to the generally accepted notion that reforming the tax system in the direction of expanding taxation should reduce economic inequality, the author proves the opposite results. Thus, he examines three cases related to personal income taxation, namely: (i) the introduction of personal income taxation; (ii) the introduction of the practice of withholding personal income tax by employers on behalf of the state, together with the introduction of tax reporting by third parties; (iii) the signing of agreements between the federal and local governments to coordinate audits and prevent tax evasion. Each of these reforms increased economic inequality, regardless of the metric used to measure it (namely, the Gini, Atkinson, Theil, and relative median deviation (RMD) indices), by 3—7%. The author does not provide a universal explanation for this phenomenon, because explanations that work for one reform do not work for another. For example, the introduction of the personal income tax led to economic migration, but its subsequent expansion did not. Third-party tax reporting disproportionately affects the middle class, but this does not explain the widening of inequality before it occurred. The hypothesis that personal income tax reforms led to a change in the reporting of income, shifting it from personal income to corporate income where possible, does not explain economic migration when the personal income tax was introduced.

Thus, fiscal policy has an impact on economic inequality regardless of whether or not a country has a policy on economic inequality, but if it does, the result is usually unexpected. The impact of certain fiscal policy instruments on economic inequality can be more predictable, particularly when drawing upon empirical data from countries with comparable economic structures and institutional contexts. From this viewpoint, the EU countries that coordinate their fiscal policies and can benefit from their common experience are in the best position.

Features of the impact of fiscal policy on economic inequality

A significant number of studies on the impact of fiscal policy on economic inequality are not limited to half of it, and consider the impact of both taxes and social transfers. In particular, the study by Avi-Yonah (2014) examines the impact of taxes and social transfers on economic inequality in the United States, and the author points out the limited impact of progressive taxation on income inequality (i.e., the Gini coefficient) in the United States. According to his estimates, from 1979 the impact of taxes and social transfers on income inequality was declining, although the system as a whole still achieved a 17% reduction in the Gini for both taxes and transfers, but the latter was more effective. Since 1986, the impact of taxes on income equality has been almost zero, despite constant changes in this area. The author sees the reasons for this in the fact that the American tax system is primarily focused on the taxation of individual income, which in turn creates problems of tax evasion, the cessation of entrepreneurial activity in favour of more free time and even emigration to less progressive jurisdictions.

As a progressive tax system tries to shift the burden of taxation to the wealthier segments of the population, these problems are exacerbated, as wealthier individuals have more opportunities for tax evasion. Or, in other words, in today's globalised world, it is impossible to set an effective tax rate of 70% (as it was in the 1980s) or 94% (as it was in the 1950s) for the rich, because they will emigrate. Corporations are even more mobile than individuals in this regard. Thus, the limit of raising income tax rates has already been reached in the United States, and further equalisation of income is possible only through the expansion of social benefits. Expanding benefits, however, requires expanding budget revenues, which can no longer be achieved by increasing income taxes. As a solution to this problem, the author proposes the introduction of a federal value-added tax, which is regressive (i.e., has a stronger impact on poorer segments of the population), but can provide funding for social programs that, in the author's opinion, will compensate for the negative impact of such a tax.

This study formulates some important conclusions that are typical for this kind of research in different countries, in particular, about the relatively higher impact of social transfers on overcoming economic inequality and about the limited effectiveness of progressive taxation by the increased mobility of households' groups, it is aimed at the richest strata, since they have the most tools to minimise their own taxation. Instead, the author recommends additional taxation of segments of the households that already bear the brunt of the tax burden — those who depend on wages and social transfers to finance the increase in social transfers — with a rather optimistic assessment of the role of regressive taxes (VAT) in this regard. Based on the Ukrainian experience, VAT does indeed generate most tax revenues (and on imported goods), so on paper, this conclusion seems to work.

However, in practice, social transfers often do not keep pace with the price increases, and their increases at best compensate for inflation, let alone tax increases.

A study of the change in the impact of taxes and social transfers on economic inequality during 1982—2013 over a sample of 15 countries showed that despite an 11% increase in the average income inequality over this period, taxes and social transfers compensated for 63% of this increase (Caminada, Goudswaard, Wang, & Wang, 2019). Thus, the authors argue that the efficiency of the redistribution mechanism through taxes and transfers has generally improved since 1982. The main trends were the reorientation of transfers to less poor segments of households — instead, the largest group of beneficiaries became old-aged and disable pensioners (the share of funds redistributed through such programs increased from 47% in 1985 to 56% in 2013); and the preservation of the share of funds redistributed through income and profit taxes (decreased from 25% in 1985 to 24% in 2013). The impact of the instruments was measured as the difference in income inequality (Gini coefficient) before and after taxes and transfers in each country for the respective year. Although this goal was not specifically set, the authors noted a slight reduction in the impact of taxes on income equalisation. Thus, they state that the distributional effect of social payments increases with income inequality, as such regulation is built into a progressive tax system (which was present in most of the countries they studied).

So far, most studies reviewed have pointed to a higher efficiency of budget transfers in overcoming economic inequality, but this conclusion is contested. For example, Guillaud, Olckers and Zemmour (2020), based on the analysis of income redistribution in OECD countries in 1999—2016 in four main areas (average tax rate, tax progressivity, average share of transfers and their targeting), concluded that tax rates and tax progressivity predominate in their impact on economic inequality. An interesting clarification is that this conclusion is valid when pensions are excluded from the analysis, i.e., when the focus is on income inequality of the working population. For this group of people, the impact of taxes and transfers on economic inequality is roughly the same. Differences in the targeting of transfers across countries hardly explain the variation in the reduction of economic inequality, which means that the findings of these authors also contradict the conclusions about the importance of targeting social transfers in reducing economic inequality. Instead, both tax rates and the presence of progressive taxation are significant factors in reducing economic inequality, which contradicts the findings that progressive taxation is becoming irrelevant due to its saturation. The authors also document interesting patterns, in particular, that progressive tax systems do not contain very high average tax rates. Several important factors contribute to the difference in the conclusions of this study: first, it was conducted with the exclusion of pensioners from the sample, i.e., it focuses on working households; second, this study primarily concerns European countries, and thus its conclusions will not be the same as those for the United States.

Thus, when studying household income without differentiating it into groups, the main factor influencing economic inequality is budget transfers, but in the case of excluding pensioners from the sample, budget transfers cease to be a significant factor in economic inequality, and the level and progressiveness of taxation become more important. This, in turn, indicates that in European countries, overcoming economic inequality relies to a greater extent on equalising the income between working households and pensioners.

Conclusion. The assumption of an exogenous growth is necessary for any assessment of the impact of fiscal policy on economic inequality. The Gini coefficient is the most common proxy for economic inequality, due to its universal availability, although other indexes (Atkinson index, Theil index, percentile ratios, etc.) are also used. Studies of wealth inequality are rare due to a lack of data, and the heightened requirements for time series' length. Studies based on econometric modelling indicate that while the specifics of the impact of fiscal policy on economic inequality is not universal, it is safe to conclude that such an impact exists, whether or not a specifically tailored fiscal policy is being conducted, and any and all fiscal measures have often an unpredictable impact on economic inequality.

The impact of fiscal policy on economic inequality can be summarised as follows: studies focused on the United States point to the decline in the effectiveness of taxes in reducing economic inequality and an increase in the importance of transfers. The expansion of transfers, however, requires the expansion of taxation, the prospects of which some researchers see in regressive taxes. The underlying reason is that progressive income taxation is viewed as less feasible in the United States due to the heightened mobility of high-income earners. Meanwhile, studies of European countries have revealed a trend comparable to that in the United States: rising significance of transfers and diminishing impact of taxes in shaping economic inequality. Excluding pensioners from the sample, however, results in a more balanced distribution between the two factors. Nevertheless, in contrast to the United States, the effects of both taxation and transfers on economic inequality in European countries have improved relative to the 1960s and 1980s and have not stagnated in recent years. Consequently, European countries have achieved greater success in mitigating economic inequality.

3.2. Fiscal instruments and their effectiveness in reducing economic inequality

The role of fiscal policy in reducing economic inequality

The instruments of fiscal policy used to reduce economic inequality may be divided into fiscal expenditure reduction instruments and government revenue enhancement instruments (Cournède, Goujard, Pina, & de Serres, 2013). Their

short- and long-term impact on income inequality, economic growth and trade balance is presented in Table 3.1. The hierarchy is somewhat blurred because different instruments have had different effects on different groups of countries considered by the authors, but the general conclusion is that the most effective fiscal consolidation instruments (in terms of maximising economic growth in line with the secondary objective of minimising economic inequality) are cuts in subsidies, unemployment benefits and pensions, and increases in taxation of movable property, income and profits.

Thus, the question of the impact of fiscal policy instruments on economic inequality makes sense only within the framework of endogenous growth theories and their derivatives, i.e., it requires a premise about the significance of the actions and decisions of economic agents. Under this approach, the mechanism of influence of fiscal policy instruments on economic inequality is associated with the creation of a system of incentives and disincentives for economic agents, aimed at the reproduction of productive and human capital, as well as mechanisms of income redistribution aimed at their equalisation.

Such instruments can be divided into public revenues (tax instruments) and public expenditures (subsidies), which have their own functions and trade-offs. In particular, tax instruments allow controlling the activity of economic entities and directing it to certain sectors, which contributes to economic growth; they can also be used to equalise incomes through progressive taxation. On the other hand, tax instruments have poorly predictable consequences due to the

Table 3.1. **Hierarchy of fiscal consolidation instruments**

Instrument	Overall rating	Long-term rating	Instrument	Overall rating	Long-term rating
Subsidies	1	1	Preferential sale of goods and services	9—10	7—9
Pensions	2—3	2	Sickness and disability benefits	10—12	1—9
Other wealth taxes	2—3	3—6	Consumption taxes (except for environmental tax)	11—12	10—12
Unemployment benefits	4—8	3—6	State investments	13	13—14
Income tax	4—8	10—12	State medical services	14—15	15—16
Profit tax	4—8	10—12	Social security	14—15	15—16
Environmental tax	4—8	3—6	Support for families	16	15—16
Estate tax	4—8	7—9	Education	17	17
Other free state services	9—10	3—6			

Source: compiled by the author based on data (Cournède, Goujard, Pina, & de Serres, 2013).

dependence of the reaction of economic entities on mostly unpredictable non-economic factors (corporate culture, work ethics, historical methods of business organisation).

Subsidies are more predictable and easier to evaluate (and therefore are usually considered the most effective), but the use of them depends primarily on the competence of the tax authorities (since public expenditures must be in line with public revenues).

In addition, both tax instruments and subsidies are used in tandem to achieve current economic policy goals, whether expansionary or contractionary fiscal policy, and to be consistent with monetary policy; here, as a rule, there are necessary trade-offs, since, for example, contractionary fiscal policy (fiscal consolidation) reduces inflation and promotes economic growth, but also contributes to the growth of economic inequality due to uneven income growth and reduced public spending aimed at equalising the income distribution. There is a belief that properly selected fiscal and monetary policy instruments can help to avoid negative consequences for economic growth and economic inequality, but no one has ever achieved this in practice.

Opportunities and constraints of reducing inequality through fiscal policy

As already defined, the approach to reducing economic inequality through fiscal policy instruments is to modify all major taxes and transfers to an extent that the current situation allows, with the clear goal to minimise economic inequality. For example, to maximise the equalising effect of the personal income tax, it is necessary to introduce a progressive taxation scale. The rates themselves, as well as the number of tax groups, should be determined based on the level of income in a country, and the development of differentiation of personal income tax rates depending on income level and source should be the subject of a separate study. The minimum tax rate should be above the poverty level, but not so high as to significantly reduce the tax base. The maximum level, based on international experience, can be set at an effective level of up to 50%, but this does not bring fiscal gains, as individuals subject to such taxation have a much greater opportunity to evade it. In addition, tax exemptions and preferential tax regimes related to education, childcare, and pensions should be replaced by tax credits, where possible, to level the playing field. It is also advisable to equalise the taxation of income from all sources, including wages and income from various forms of capital. It is also necessary to ensure a high level of responsibility of taxpayers, in particular in terms of declaring income and paying taxes. As evidenced by the analysis, optimisation of taxation to minimise economic inequality includes measures that are detrimental to other public policy goals, in particular, tax benefits related to the birth and upbringing of children are usually

introduced for demographic reasons, and tax benefits related to education are introduced for reasons of building human capital in the country.

To make corporate income tax more progressive, international cooperation is needed to globally equalise corporate income taxation so that it cannot be avoided by changing tax jurisdictions. In addition, it is necessary to align corporate income tax rates with personal income tax rates to ensure that lower corporate income tax rates do not encourage the transformation of individual income into corporate profits through, for example, money laundering. To increase the progressiveness of real estate taxation, it is necessary to optimise the administration of such taxes, taking into account the need to create benefits for the poorer segments of households based on the principle of ability to pay (those who earn more pay more taxes). Among other wealth taxes, an inheritance tax and a one-time tax on the total amount of an individual's property when it exceeds a certain amount are promising. These taxes may serve not so much to equalise income as to equalise previously accumulated income, i.e. wealth.

Approaches to optimising regressive indirect taxes in order to adapt them to reduce economic inequality are usually based not on turning them into progressive taxes (which would weaken them as a source of tax revenues), but on increasing their efficiency by broadening the tax base (by raising and unifying rates, as well as eliminating any exemptions from such taxes) and making them more difficult to evade. This approach effectively makes them even more regressive, but the increase in tax revenues is postulated as a justification for expanding transfers, which are considered a more effective mechanism for equalising incomes.

Approaches to optimising transfers to reduce economic inequality include expanding them in line with the available tax base (i.e., the more tax revenues, the more transfers) and improving their targeting. Indirect transfers should be replaced by direct transfers whenever possible. Public social services such as education, healthcare, and transportation should also be expanded based on available resources and optimised to maximise access (access is more important for the lower income level of the recipient), efficiency and regionalisation (local governments should be responsible for providing services at the local level, where possible).

One of the main limitations of reducing economic inequality through fiscal policy instruments is the problem of tax evasion, in particular, by the wealthier segments of the population. This reduces the resources available to the government that could be used to address economic inequality and leads to the ineffectiveness of taxes as a disincentive to undesirable economic activity. This topic has been extensively documented.

For instance, a study by Alm (2021) on the impact of modern technologies on taxation outlines two mutually antagonistic trends: the same technological breakthroughs (blockchain technologies, P2P economy, rejection of physical money) simultaneously create difficulties in tax evasion (automation of the processes of confirming transactions and informing tax authorities about such transactions

and the resulting elimination of any privacy of personal and commercial information, improvement of algorithms and capacities for processing massive amounts of data) and facilitate tax evasion (pseudo-anonymity in the blockchain, easier transactions abroad, including by removing the need for physical presence, access to the same algorithms and capacities for processing massive amounts of data). And while the final outcome of the struggle between these two trends is uncertain and depends on which side will be the first to fully master new technologies, the author considers the impact of new technologies on economic inequality as unequivocally negative. The reason for this is that the use of new technologies for tax evasion is much more accessible to the wealthy (those who can afford tax optimisation through offshoring and transferring income to less regulated jurisdictions) and to highly educated individuals with access to unique skills (who can sell them through P2P mechanisms); for the rest of the population, tax optimisation will be impossible.

Similar conclusions can be drawn from a study of tax evasion practices in the Nordic countries (Sweden, Norway, Denmark). In particular, the authors calculated that 0.01% of the richest taxpayers evade approximately 25% of the taxes they would have to pay, which is an order of magnitude higher than the estimated value for the rest of the taxpayers (calculated based on random audits of taxpayers), which was 5% (Alstadsæter, Johannesen, & Zucman, 2019). The reason for this is that the vast majority of people have only three types of income — wages, income from investments in financial institutions within the country, and pensions, all of which are reported to the tax authorities by third parties (usually banks). The richest taxpayers are able to generate income from existing wealth and thus can hide both wealth and income derived from it, which is why the richest 0.01% of the households are 13 times more likely to evade taxes than the richest 1%. In absolute terms, the spike occurs between USD 2 million in net worth and USD 3 million in net worth. Based on the specifics of the materials studied, this relates to tax evasion through offshore accounts and shell companies, but the authors recognise this pattern as universal for all three samples studied. This pattern calls into question the progressive taxation system (since the rich are able to reduce the effective tax rate on their property from 45% prescribed by law to 35% or lower) and reflects the tendency of economic inequality to be self-sustaining.

Thus, almost all major fiscal policy instruments have the potential to be used to reduce economic inequality. However, optimising the tax system and the system of state social transfers to minimise economic inequality potentially harms other goals, including economic growth. Currently, the consensus is that direct social transfers are the most effective in addressing economic inequality, which in turn requires an expansion of taxation, including through regressive taxes such as VAT and excise taxes. Taxes themselves can also be made more progressive, but currently the only universally recognised progressive tax is the per-

sonal income tax, while the corporate income tax requires international cooperation to make it more progressive. The difficulty in transforming direct taxes into more progressive ones lies primarily in the increased opportunities for tax evasion by the wealthier segments of the population, which are only increasing with the development of technology.

International experience with tax policy and social transfers to reduce inequality: lessons for Ukraine

The impact of individual fiscal policy instruments on economic inequality is a simpler question than the general patterns of the fiscal policy impact on economic inequality, as it can be standardised. Although, as mentioned above, the impact of fiscal policy instruments on economic inequality is unpredictable, certain general trends can be identified by aggregating previous experience. For instance, Skalamera and Rubinic (2016), who studied the taxation system in Croatia, concluded that it is aimed at maintaining economic inequality. The reasons for this are the gap between personal income taxation and the much lower taxation of corporate profits and capital gains, the increased share of regressive taxes (in particular, VAT) in tax revenues, and the possibility of legitimate tax cuts through the use of schemes offered by the state to stimulate entrepreneurial activity. This contributes to the violation of the principles of horizontal equality (entities with the same income should pay the same amount of taxes) and vertical equality (entities with different incomes should pay taxes proportional to their income).

Therefore, fiscal policy instruments have an expected impact associated with each of them; the current consensus on the impact of the main direct taxes can be summarised as follows (Table 3.2). The personal income tax is considered the most effective in overcoming economic inequality because of its universal relevance for most households and the progressive taxation scale, which is made possible by the lower mobility of citizens compared to corporations. The corporate income tax is the second most important direct tax, but its impact on economic inequality is limited by the inability to effectively implement a progressive tax scale due to the increased cross-border mobility of corporations. In addition to the need to keep corporate income tax rates relatively low to retain domestic corporations within the national borders and attract foreign corporations, the introduction of progressive corporate income taxation is limited by the need to harmonise tax rates on personal income and corporate profits due to the possibility of transforming corporate profits into personal income and vice versa. Thus, an increase in corporate tax rates would require international coordination, as well as an increased control over the transformation of corporate profits into personal income through mechanisms such as dividend payments or insider trading, or even the declaration of zero profits through overstated expenses or the use of benefits (e.g., charity expenses).

Wealth taxes, including land taxes, although considered by some economists as a promising way to address economic inequality, in practice have a questionable impact on both inequality and economic growth due to the mismatch between revenues and administration costs, difficulties in targeting, and the relatively greater ability of the wealthier segments of households to avoid them.

The existing consensus on the impact of indirect taxes on economic inequality and economic development can be summarised as follows (Table 3.3). Indirect taxes are generally regressive and the largest sources of tax revenue. Their regressiveness stems from the impossibility of their targeted application, as they are paid by each consumer separately and equally, while it is possible to reduce the amount of taxation for less well-off citizens only through the use of

Table 3.2. **Impact of direct taxes on economic inequality**

Instrument	Impact on inequality	Impact on the economy
Personal income tax	It has the potential to be progressive, and in most countries, it is levied on a progressive scale. The impact on incomes is direct, but its strength depends on the terms of taxation (rates, exemptions, collection efficiency)	Usually, a significant but not the primary source of tax revenues. Potentially affects labour supply, innovation and employment
Corporate profit tax	The impact on income equalisation is questionable due to increased capital mobility. Harmonising rates with personal income taxation may make it more difficult for the wealthiest segments of households to avoid taxation	Usually, a significant but not the primary source of tax revenues. There is an insufficient level of differentiation depending on the source of income. Despite the global trend toward lowering rates to attract mobile international capital, the impact on economic development is questionable
Real estate tax	It can be progressive or regressive, depending on the tax base's definition and the property distribution by income	Generally, an important but small source of tax revenue. It can stimulate more productive use of real estate or contribute to diverting investments into real estate speculation
Other wealth taxes	The impact on economic inequality is questionable. Restricting the ability to make money from existing real estate could potentially tax the richest segments of the population, increasing the overall progressiveness of the tax system	The impact on economic development is questionable due to the low ratio of tax revenues to administration costs, disruption of savings generation and incentives for tax evasion through the transfer of assets abroad

Source: compiled by the author based on (Granger, Abramovsky, & Pudussery, 2022).

exemptions, and such exemptions tend to multiply the costs of administration, which in turn violate the main function of these taxes as a source of tax revenues to the budget.

Additionally, excise tax exemptions violate one of the functions of this type of tax, namely to control consumer behaviour by increasing the consumption of goods and services, which is the purpose of excise taxes. Currently, customs duties can be a significant source of tax revenues only in theory, as membership in most trade unions deprives a country of the ability to pursue its own customs policy. The regressive impact of indirect taxes on economic inequality is compensated by redirecting part of their tax revenues to implement expenditure programs of economic equalisation, i.e., transfers.

The impact of transfers on economic inequality can be summarised as follows (Table 3.4). Transfers are currently considered the main mechanism for equalising income and wealth. Direct cash transfers and public services provided in kind, such as free education and health care, are the most effective.

Indirect subsidies, like privileges for excisable goods, stimulate consumption distortions by creating excessive demand for subsidised goods and services. The weakness of direct cash transfers, apart from their apparent dependence on available tax revenues (hence, and regressive taxes as their source) is that they create distorted incentives that may limit labour supply or promote unofficial employment to receive unemployment benefits combined with income from unofficial work. Complex mechanisms for compensating for such distortions

Table 3.3. **Impact of indirect taxes on economic inequality**

Instrument	Impact on inequality	Impact on the economy
VAT	Mostly a regressive tax. Exemptions and preferential rates for income equalisation are less effective than alternative instruments, such as transfers	A significant source of tax revenues. It is considered more effective for economic growth if the rate is universally high enough with a minimum of exemptions
Excise tax	The impact is mainly regressive, depending on the consumption structure according to income	It is usually used to shape consumption, but it can be a significant source of tax revenue if it is levied on goods with inelastic demand (tobacco, fuel, alcohol)
Customs	The impact on economic inequality is questionable, depending on the structure of consumption (short-term) and changes in the structure of production (long-term)	A significant source of tax revenue for low-income countries. Significant pressure from international trade organisations to reduce rates to stimulate international trade

Source: compiled by the author based on (Granger, Abramovsky, & Pudussery, 2022).

Table 3.4. **Impact of transfers on economic inequality**

Instrument	Impact on inequality	Impact on the economy
Money transfers	Usually, this is the main mechanism of income equalisation. The strength of the impact in the short run depends on the amount of funding, targeting and initial income distribution. Almost all transfers are targeted to the poor or disadvantaged (pensioners, the disabled)	If the informal economy is extensive, promote unofficial employment. With a high level of benefits, they contribute to a reduction in labour supply
Indirect subsidies	The impact on economic inequality is questionable. The effectiveness depends on the distribution of income	Stimulate excessive consumption of subsidised products
State services	Generally, they contribute to income equalisation. The impact depends on the type and availability of publicly funded services (education, health care)	Have the potential to equalise incomes and stimulate the economy simultaneously

Source: compiled by the author based on (Granger, Abramovsky, & Pudussery, 2022).

increase the cost of administering transfers; this is also partly why most transfers are targeted to pensioners and disabled people, i.e., the segments of the households with the least opportunity for informal employment.

Conclusion. The current consensus on the impact of fiscal policy instruments on economic inequality is as follows. Firstly, direct cash transfers in the form of targeted payments and pensions are considered the main instrument for reducing economic inequality. Direct subsidies are considered more effective than indirect subsidies (e.g., reducing the price of fuel by compensating for the difference to sellers using budget funds). Secondly, progressive personal income taxation is the second most important tool for reducing economic inequality. Corporate income taxes (due to increased mobility of corporations) and wealth taxes (including land and real estate taxes) are less effective. Thirdly, indirect taxes, such as excise duties and VAT, are considered regressive, and their main function is fiscal. Lastly, there are methods to make all of these instruments more progressive, but they are not always justified, as they usually increase administration costs, which can often outweigh any positive effect achieved.

Conclusions

The impact of fiscal policy on economic inequality can only be estimated within a theoretical framework which has an endogenous economic growth as a background assumption, since the theories based on exogenous economic growth assumptions render actions of economic subjects inconsequential and therefore

do not allow for their reactions to changes in taxation or social policy to influence economic growth. Such an impact is mostly calculated using econometric modelling. For economic inequality, the Gini coefficient is the most commonly used proxy, with Atkinson and Theil indices, as well as percentile ratios, being less common. Wealth inequality is almost universally ignored due to data constraints. The data used to calculate inequality indices is most often yearly (to match the most common accounting period, i.e. financial year), and the reporting unit is a household. As proxies for fiscal policy, government revenues and expenditures are generally used, disaggregated based on available data and the aims of the study (e.g. tax revenue, revenue from VAT, tax revenue by region, etc.), even though, as a general rule, the more specialized index, the less likely it is to be statistically significant. There is also a wide nomenclature of factors used as control variables (macroeconomic, demographic, structural and institutional factors). The impact of fiscal policy as a whole on economic inequality is largely unpredictable, and while it is relatively easy to speculate what impact an instrument of fiscal policy would have, it is impossible to predict instruments' joint compound impact.

The approach to minimising economic inequality is based on modifying the taxation system and the social security network to serve this purpose. The trade-off between using taxes and transfers is that increase in transfers requires increase in taxation, and therefore the equalisation goals can be achieved either by implementing progressive taxation scale in all income taxes, minimising the regressive taxation (such as VAT and excises), with appropriate reduction in social transfers (which then require robust targeting to remain relevant), or increasing both regressive taxation and social transfers in hope that increase in welfare can compensate for the adverse effect of regressive taxation. While the current consensus in the first-world countries is to use the former approach, Ukraine was historically locked on the latter one. According to European and American sources, the current consensus is that direct social transfers are the most effective in overcoming economic inequality. General trends in their international application are the focus of social payments on vulnerable groups (pensioners, disabled), active attempts at targeting (a long list of prerequisites for receiving assistance), which increase administration costs, and minimisation of cash payments (use of non-cash funds, electronic vouchers, etc.). However, some scholars in the United States argue that the redistributive capacity of progressive taxation has largely been exhausted. Consequently, any further significant reduction in wealth inequality would necessitate either an expansion of regressive forms of taxation to finance additional social transfers or the development of alternative mechanisms for funding redistribution.

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CHAPTER 4

SOCIAL TRANSFERS & ECONOMIC INEQUALITY

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Assessing the impact of social transfers on economic inequality is vital to ensure prudent budgetary spending and achieving social policy goals. However, the absence of universal success receipts necessitates an individual approach for each country. Therefore, this Chapter analyses the impact of social transfers on economic inequality both theoretically and practically. In particular, it has been determined that the social benefits system in Ukraine is characterised by an excessive number of social obligations of the state to a wide nomenclature of social service beneficiaries, and the state does not have enough income sources to fulfil such obligations. Despite relatively high social spending (around 10% of planned budgetary expenditures in 2025; this quantity decreased due to the war and change in financing priorities from 21% in 2021 and over 50% in 2014), around 40% of households who had 30% and more of their monthly income being social benefits, still live for less than subsistence minimum per person. The impact of state expenses on income inequality in Ukraine during 2010—2021 was estimated. It was concluded that the social expenses in this period decreased economic inequality in Ukraine, following the theoretically expected impact.

Introduction

Measuring the impact of social transfers on income inequality is important to assess how effectively government policies reduce disparities and promote inclusive economic growth. Therefore, this Chapter is dedicated to the role of social transfers in tackling economic inequality. The approaches to estimating the nexus between social transfers and economic inequality were reviewed, focusing on the indicators used and their expected interconnection. The structure of social benefits in Ukraine is analysed. Using a historical retrospective, the root causes of current problems (overabundance of social payment beneficiaries and insufficient income to cover the social transfers) and persistent failure to address them are discussed. The estimation of the impact of state social transfers and other relevant factors on economic inequality in Ukraine is presented. Some possible solutions are recommended, such as providing local authorities with increased rights to borrow financial resources, decentralisation of budgetary income, facilitation of inclusion of non-state social service providers, etc.

4.1. Social transfers in shaping inequality: theory and international evidence

Practices of addressing economic inequality with public expenditures

Increasing public spending is a well-established approach to addressing economic inequality, particularly in middle- and high-income countries. Public spending is a broad concept, as it includes the costs of providing public services and goods and targeted assistance to certain segments of households through social transfers. Social transfers are a component of any government policy, including those aimed at fighting inflation, smoothing the effect of unemployment, and stimulating business activity. The specific instruments (i.e., the actual types of payments) are highly country-specific, depending on the tax legislation and traditions of state aid, as in order to provide, for example, a one-time compensation for the payment of a certain tax, the corresponding tax must exist in the country. Approaches to public expenditures are based on the respective economic models, in particular, the Nordic, Continental/Conservative, Anglo-Saxon and Southern/Mediterranean models (Joumard, Pisu, & Bloch, 2012; Clemente, Marcuello, & Montañes, 2012).

All public spending is aimed at minimising economic inequality at least for the application, but its actual impact is usually ambiguous. The current consensus on the effectiveness of public spending is as follows (Cyrek, 2019): public spending is effective in reducing income inequality, but its effectiveness is significantly higher in OECD countries due to better targeting, as the right choice of recipients is as important as the amount of aid. In addition, the level of public spending varies over time, decreasing during periods of economic growth and increasing during crises, although the structure of spending changes significantly. In other words, the total amount of public spending is growing, while certain types of state aid present during economic growth may be reduced or eliminated. There is no consensus on the effectiveness of public spending as a mechanism to compensate for the adverse effects of economic crises due to the specificity of each country's decisions and their results. No direct link was found between the effectiveness of social policies to reduce poverty and reduce social inequality (Cyrek, 2019), indicating that these policies need different priorities, and, accordingly, there are at least two models of state social assistance — one with a priority of poverty reduction (Scandinavian countries) and the other with a priority of reducing income inequality (Mediterranean countries, as well as the new EU members Poland, Latvia, Lithuania).

Based on US data on the impact of social benefits on the health care, education and social security during 1956—1998, any social benefit increases long-term household income, and government spending, even of a non-social nature, has the same effect (Mayer & Groves, 2016). The effect of government spending is maximised for households with below-average incomes and almost non-existent for households with above-average incomes.

Similar conclusions were achieved by Granger et al. (2022). In particular, pre-tax income inequality is higher in lower-income countries, but there is a global trend of rising economic inequality regardless of the level of income in a country. At the same time, there is also a tendency for social benefits to increase with tax revenues. The effectiveness of fiscal policy in reducing economic inequality directly depends on the tax base, with high-income countries averaging a 40% reduction in economic inequality, while low-income countries have a 3% reduction; in addition, the existing mechanisms of income redistribution in richer countries have ensured a better course of the crisis caused by the Covid-19 epidemic and a faster overcoming of its consequences without worsening economic inequality. The authors point to the highest efficiency of benefits related to direct taxation, as well as direct cash transfers and free public services (including education and health care). The effectiveness of indirect subsidies (e.g., partial compensation for goods and services) is questionable due to the inability of the poorest to use them.

Therefore, social transfers with properly targeted recipients are highly efficient regarding the ratio of public expenditures to the results obtained, although they are difficult to administer and carry the risk of creating distorted incentives in the economy (Granger, Abramovsky, & Pudussery, 2022). Universal social transfers can also be effective, but require a broad tax base. Practice evidences that there is a wide range of instruments between these two approaches to social transfers, and therefore most countries use a combination of them based on their tactical and strategic goals, as well as budgetary and administrative capacities.

The concrete forms of state aid are country-specific but can be summarised and grouped into categories. For instance, in 2022 the EU public spending was expanded to compensate for rising income inequality due to inflation (Amores, et al., 2023). Considering the effect of two types of fiscal measures to compensate for inflation — those aimed at maintaining consumer prices and those aimed at increasing household income — the gap between the richest and poorest could have increased by 0.7 percentage points (in the absence of any inflation compensation measures), while the fiscal measures considered here halved this gap (Amores, et al., 2023, p. 3—4). Measures to support consumer prices were the most expensive, while measures to equalise incomes by increasing the incomes of the poorest segments of the households had the greatest effect on reducing inequality. In particular:

- Germany used lump-sum payments for electricity for workers, pensioners, and students, as well as payments to the unemployed and recipients of social benefits. Families received social payments for each child. On the income side, wage supplements were increased, and bonuses were introduced to compensate for inflation. Price-containment measures included a temporary reduction in VAT on gas and fuel and a one-time reimbursement of gas bills for households.
- Greece used one-time payments to the long-term unemployed, low-income pensioners, and other vulnerable groups, a temporary increase in the minimum income (for 2 months), child support payments (for 3 months), and temporary

discounts on heating. Price control measures included a reduction in VAT on fertilisers and animal feed for farmers, a refund of excise duty on diesel for farmers, subsidies to households for gas, electricity, fuel oil and diesel, social assistance for fuel purchases in the form of debit cards or bank account credits for certain categories of people, and a 60% compensation for the increase in electricity prices.

- Spain used one-time payments to vulnerable populations, a temporary reduction in VAT on gas and electricity, a temporary reduction in excise tax on electricity, a subsidy for fuel purchases, and partial compensation for the cost of electricity through subsidies to its producers (Iberian price cap).
- In France, low-income households received additional vouchers to pay for electricity, bonus funds for child support, assistance with heating and income tax benefits. On the price control side, restrictions were imposed on the prices of electricity, gas, and fuel.
- Italy increased subsidies for gas and electricity costs for households, paid a one-time bonus to minimum income recipients, increased social premiums, and recalculated pensions. The social security tax exemption for employers was increased. VAT on gas and excise duty on fuel were also reduced.
- In Portugal, a one-time payment was made to pensioners, low-income families and families with children, per child. VAT on the first 100 kW of electricity consumed was temporarily reduced, taxation of fuel for transport was reduced, and partial compensation for the price of fuel was introduced.

Thus, the most often-used measures include tax benefits, direct payments, preferential provision of public services and partial or full compensation for certain types of expenses (Amores, et al., 2023).

Tax privileges may take the form of changes in the tax rate, partial refunds of taxes already paid, inclusion of certain expenses in taxable income (with a corresponding subsequent increase in the tax credit), exclusion of certain expenses from the list of taxable expenses and tax holidays. Such privileges may be discriminatory (for certain segments of the population) or non-discriminatory, and may be one-time, temporary or permanent. Direct payments can include a wide range of state social benefits, such as unemployment benefits, childbirth benefits, minimum guaranteed income, one-time payments during the heating season for utility bills and additional payments to pensioners and people below the poverty line. Preferential provision of public services may include the provision of medical, educational, utility and other services at a reduced price or free of charge to certain categories of the population. Partial or full cost reimbursement usually involves compensating fuel, heating and electricity suppliers for the difference in market and preferential prices for certain segments of the households (who receive vouchers).

The most influential types of state aid for fiscal consolidation (i.e., policies to reduce public spending in non-crisis periods), in descending order of effectiveness, are subsidies, pensions, property taxes, unemployment benefits, personal income tax, corporate income tax, environmental tax, preferential sales of

goods and services, sickness and disability benefits, consumption taxes, public investment, public health services, social insurance, family support, and education expenditures (Cournède, Goujard, Pina, & de Serres, 2013).

Conclusion. Public expenditures and social transfers in particular are the most common tools for overcoming income inequality and poverty. The effectiveness of public spending depends primarily on the available tax base, as well as on the correct targeting of transfers and the availability of administrative resources to ensure that the transfers reach their recipients and are used for their purposes. Thus, universal social transfers (even income-tiered transfers for certain segments of the population) are effective in reducing economic inequality but require a large tax base, while targeted assistance requires less monetary but more administrative resources. Specific instruments, i.e. types of public expenditures, are chosen by countries according to these parameters and the prevailing economic model, and therefore attempts to form an exhaustive list of them are pointless. General trends in the use of such instruments can be outlined, however, and include the focus of social benefits on vulnerable groups (pensioners, disabled people), active attempts at targeting (a long list of prerequisites for receiving benefits), which increase administration costs, and minimisation of cash payments (use of non-cash funds, electronic vouchers). As a result, a significant share of social transfers can be spent only for the purposes specified in the respective program under which they are provided. International practice proves that the state fiscal policy in relation to economic inequality and poverty cannot be omnidirectional, and therefore it is necessary to choose a priority direction (i.e. either poverty reduction or income equalisation).

4.2. Social transfers in Ukraine and their impact on economic inequality

The issue of social benefits in Ukraine has always been popular in the domestic scientific literature. However, the research depth has usually remained superficial, and the recommendations have been general. Analysis of the literature proves that the majority of articles related to the budget financing of social benefits in Ukraine appeared during the crisis years of 2008, 2014—2015 and 2022—2023 and were limited to registering the emergence of new problems without solving existing ones.

As far back as 2008, the Ukrainian social security system was plagued by the unclear division of functions between central and local authorities, a discrepancy between allocated budgetary resources and the amount of obligations, an imperfect methodology for forecasting the amount of social protection funding, and a lack of targeting in the provision of aid, which lead to inefficient use of funds (Bubenko, Snisarenko, & Rotaru, 2008), and none of those problems have been solved so far. The authors noted an upward trend in the share of social security expenditures in the state budget (from 21% in 2005 to 24% in 2008), while social

spending as a share of GDP remained low (7% in 2008); they also noted the low share of spending on healthcare (3,3% of GDP against 6%, recommended by WHO). For context, the share of the social spending in GDP increased in later years, reaching up to 22% of GDP in 2013, and remaining at that level until at least 2015, with over half of it always being pension pay-outs. It drastically decreased after the beginning of the full-scale war and is projected to be around 5% of GDP in 2025. To solve the identified problems, the authors proposed to revise the system of social expenditures existing in 2008 through the harmonisation of social benefits (elimination of benefits that apply to exceedingly narrow categories of the households and, if necessary, replacement of them with more general ones; transition from allocating funding to institutions towards allocating funding for specific social services) and modification of the criteria for provision of social services and evaluation of their effectiveness (introduction of minimum social standards, in particular consumption standards, acceptable poverty levels, minimum social guarantees and the use of an integrated indicator based on them to plan the required amount of funding). While the first solution was mostly accomplished (due to financing cuts because of the increase in war spending), the second and the third ones are still not implemented.

The other set of problems often cited in studies of that period are imperfect legal regulation, inconsistent social policy and high levels of official and unofficial unemployment, coupled with ineffective state employment promotion programs (Balashov, 2010). The lag in the development of the legal framework and the formalistic approach to reforming the social security system were postulated as the reasons for the weakness of social protection in Ukraine. The author believed that the solution to this problem could be pension reform (namely, the creation of three levels of the pension system: solidarity state pension system, funded, voluntary) and stimulating the development of the middle class; in other words, to create opportunities for people to earn money and to put the responsibility for ensuring decent living conditions on themselves. The reduction in social benefits was supposed to be offset by a reduction in the tax burden on businesses and job creation. As of 2025, the pension reform is only set to be started in July.

The regulatory frameworks of social guarantees in Ukraine are in a state of a constant overhaul. For instance, Fesenko and Bondarets (2012) listed examples of inconsistencies in the legal framework, including the absence of a list of paid social services in the state classifier of social standards and regulations that should have been included in the Law of Ukraine "On Social Services", which, in turn, lacked implementation mechanisms for the regulations specified therein. In addition, the subsistence minimum was calculated less frequently than it had been stipulated in the Law of Ukraine "On the Subsistence Minimum" and did not include rental/housing costs, as well as the costs for education, healthcare, transport, etc. Currently, all of the abovementioned regulations have been replaced by newer ones, which, however, have not yet solved the underlying issues,

since the unified standard for social services, which could allow non-state providers to equally participate in the process, is still non-existent.

Limited available budgetary resources, centralised financing of social costs, which led to regional imbalances: lack of clear social standards and, as a result, lack of effective mechanisms for evaluation of the effectiveness of social support programs were all listed as glaring issues of the Ukrainian social support system in 2013 (Gerasymenko, 2013). At the same time, the author stated the growth of expenditures on social support for the households in 1996—2011, and the growth rate of such expenditures exceeded the GDP growth rate. Local budgets accounted for 80% of social expenditures, but they did not have adequate sources of revenues, which had to be compensated by subventions from the state budget for social protection (which amounted to 38% of intergovernmental transfers in 2011). Thus, the author logically pointed out the need to decentralise the budget system by expanding the powers of local budgets in the distribution of social expenditures and their optimisation (the author sees it in the transition to targeted social aid and the creation of a unified database of recipients of such aid for monitoring, evaluation and social audit of such assistance programs). Despite the identified significant disproportions in local budget revenues and social expenditures (the share of transfers in local budget revenues amounted to 52% in 2011), the author did not raise the issue of expanding the revenue base of local budgets, limiting his conclusion to a general statement of the existing high centralisation of financial flows management.

Disparity between social expenditures and budget revenues was the go-to problem mentioned throughout every Ukrainian research on this matter, but in 2014 it became painfully apparent with social spending reaching 22% of GDP, or 40% of total budgetary spending (Nadraga, 2014). This created deficit, which was covered by external borrowing, which in turn increased the national debt. The author considered the results of social protection programs questionable, as budget expenditures did not correlate with improvements in the quality of social services, and the predominance of the public sector in this area limited competition and reduced the quality of services. In addition, the rise in social costs increased inflationary pressure, particularly under the conditions of a weak economy. The author also pointed to a significant share of budgetary expenditures on social services (about 40% in 2014), which exceeded the corresponding values in the EU (25—27%); at the same time, he acknowledged a significant gap in social expenditures per capita, which in turn raise doubts concerning the validity of his criticism of excessive social expenditures in Ukraine. In particular, the author criticised the increase in minimum wages and pensions, which led to a corresponding reduction in economic development expenditures. The author reasoned for the need to reduce the consumption of certain social services together with the restriction of social expenditures because of the necessity to balance the budget and advocated for optimising social expenditures (in particular, the transition from allocating funding to institutions towards allocating funding

for specific social services), outsourcing part of social expenditures to private agents (in particular, private funds), as well as reducing administrative costs.

Other issues during that period included chaotic financing of social expenditures due to the considerable number of categories of beneficiaries and overlapping competencies of different state institutions in the field of social services; insufficient control and accounting of beneficiaries, as well as duplication of their categories; unbalanced distribution of funds, allocated for social aid (72.6% for pensioners, labour veterans and children of war); excessive share of social expenditures in the budget (Kutsenko & Bondar, 2014). Note that the problem of overabundance of social payments beneficiaries, mentioned in the 2008 study, was still present in 2014. The authors, referring to a study conducted in 2002—2011, claim that most of the social privileges acting then in Ukraine were not aimed at protection of the most vulnerable categories of the population, but at the creation of additional privileges for certain groups of the working households (deputies and state employees) for services to the state (labour veterans, catastrophe liquidators, children of war, etc.), and not all recipients of benefits even had the relevant merits. The authors provide the following statistics: in 2011, there were 46 legal acts in Ukraine regulating 156 types of social benefits for 230 categories of the population, that is 43% of the total population, and 70% of this segment of households cannot be considered impoverished. Thus, the authors advocated for the reduction of non-poverty related benefits, the transition from the categorical benefits to targeted social aid, the implementation of electronic monitoring of the benefits consumption, and the expansion of the tax benefits usage to ensure social development.

Another often mentioned problem, which is still pending, was the necessity of social protection decentralisation (Kravchenko, 2014). The author mentioned the state monopoly in the provision of social services, failing coordination of interagency relations in this area, funding the institutions that provide services instead of funding the targeted social aid, low level of non-state resources involvement and lack of a full-fledged monitoring system as arguments. He offered to expand the powers of local authorities in the areas of setting priorities for social development, the use of local infrastructure, as well as planning and managing budget resources; to develop and implement quality standards for social services to improve their efficiency and facilitate their accounting; to transfer from funding the institutions that provide social services to funding the provision of home-based services to those in need; to introduce a social order mechanism for non-governmental organisations to attract non-governmental social service providers. Thus, this study overlaps with the study by Gerasymenko (2013) to a great extent.

Researching the issues of social protection financing in Ukraine, Kudinova and Varuk (2015) concluded that the amount of available funding is insufficient due to the high level of dependence of social payments on the state budget, inefficient use of funds due to the lack of clear social standards and criteria for the distribution of funds, as well as limited autonomy of local budgets in determining

the areas of using budget funds for social payments and the unavailability of sources of funding that would meet their obligations. The authors recommended cooperation of local authorities by means of the introduction of interregional social projects and the creation of mechanisms for social expenditures co-financing; optimisation of social expenditures by reducing inefficient programs and decentralisation of the social expenditure system in Ukraine.

Similar conclusions were drawn by Iafinovych (2015). Studying the peculiarities of social protection financing in Ukraine, he pointed out the low efficiency of the centralised model of social expenditure financing with limited powers for local authorities and a high share of social payments assigned to local budgets with insufficient financial support, which should be compensated through intergovernmental transfers. He also noted that the social support system was overburdened with unjustified benefits (in particular, the author indicated that as of 2015, there were 120 types of benefits and 60 types of social and compensation payments in Ukraine, covering 130 categories of beneficiaries) and the instability of funding, including chronic underfunding of social programs. The author recommended expanding the powers of local authorities along with assigning them additional sources of funding (that is, the decentralisation of the social benefits system) to reduce their dependence on intergovernmental transfers, expanding the horizons of financial planning, and optimisation of social programs (that is, reducing economically unjustified benefits and introducing targeted social assistance).

Decentralisation of social policy, strengthening the role of civil society and improving the social programs control were also pointed out as the necessary steps in the fight against poverty and social inequality in Ukraine by Prokopenko (2015). The author cited a wide range of examples from international practice to support his opinion, but did not provide specific steps for its implementation.

Over 2013—2022, the lack of a unified state strategy contributed to the dissipation of budget funds (Liutii, Rozhko, & Liutii, 2022). Together with an underestimation of the military threat, it resulted in critical underfunding of the military sphere, which in turn entailed a significant increase in the share of military budget expenditures from 8.56% in 2021 to 42.24% in 2022. This shift in priorities made Ukraine heavily dependent on international financial aid. Given that this source is an outright emergency and therefore temporary, further financing of military expenditures requires optimisation of other types of budgetary payments (including the social sphere), increased control over the use of budgetary funds, as well as the establishment of war economy and post-war recovery planning.

Reorientation of funds towards the war effort caused a decrease in purchasing power, an increase in social inequality and worsened the existing predominance of consumer spending in Ukrainian households' budget (Andreitseva, 2023). The author concluded that social benefits in the state were not sufficient to solve the problem. Despite the growth of nominal wages, the purchasing power of the households was declining (in 2022, the average salary allowed to buy 4.48 con-

sumer baskets, and in 2018 — 4.98), the main sources of income remained wages (59.8%) and welfare payments (20.2%), and the decline in the share of food expenses was only 2.7% (from 52.8% in 2018 to 50.1% in 2021). At the same time, a significant gap in living standards between different regions was noted. To address these issues, the author recommended raising social standards (minimum wages, pensions, state aid), reforming the social security system into targeted assistance to the most vulnerable, reducing inflation, supporting employment, and optimising tax policy (reducing taxation to stimulate business). Such measures could be an increase in public spending without the corresponding increase in public revenues, and therefore cannot be implemented.

Exploring the problems and prospects of public administration of social protection budget financing in Ukraine, Budeianskyi (2023) concluded that the main problems in this area were inefficient use of budget funds, duplication of functions of different administrative structures, limited financial support for local budgets, lack of an effective system for monitoring social benefits, and low transparency of budget allocations, particularly at the local level. The author believes that the main areas of public administration of budget financing of social protection improvement in Ukraine strengthen the responsibility of local authorities along with expanding their powers and assigning them sources of income corresponding to expenditures, optimising budget programs for social support, monitoring them and increasing the transparency of the budget process in part of publishing detailed information on the use of funds. In addition, the author recommended transition from a categorical to targeted approach to the provision of social services.

The sharp reduction of social costs funding over 2022—2023 from 34% to 26.8% due to prioritisation of defence against Russia's armed aggression expenditures was also stated by Syvulska and Slavkova (2024). It resulted in reduced access to medical and educational services, increased social inequality and impoverishment. As a result of the growing scale of hostilities, the situation with IDPs deteriorated. As of 2022, 4.9 million of IDPs were officially registered, with UAH 52.8 billion allocated to aid them. As recommendations, the authors named the same decentralisation of the social aid system and the empowerment of local authorities, together with appropriate sources of funding, the transition from categorical principle of providing state aid to targeted assistance, the introduction of automated systems for registration of the aid recipients and the attraction of alternative resources of funding at the expense of increasing participation of charitable funds and public organisations.

To conclude, the literature review revealed that the problem of social benefits in Ukraine remained persistent to a great extent throughout the entire period of its existence. Ukraine inherited a centralised, inflexible social security system from the USSR, which functioned on the basis of low living standards and lack of alternatives, was financed due a significant predominance of the number of young working-age households over the number of pensioners, and was designed primarily

to reward services to the state and compensate for damages caused by such services (this is where from the wide range of beneficiaries who are not necessarily needy — war children, labour veterans, mothers of many children, retired investigators, police and SBU officers, their relatives in case of their death, people who participated in the liquidation of Chornobyl disaster or suffered from it, rehabilitated victims of political repression, etc. — appeared). The extremely high number of categories of beneficiaries meant that a significant part of the households could claim them, and the practice of granting the status of, for example, Chornobyl liquidators or labour veterans to the Verkhovna Rada deputies blurred the main function of the state social transfers, namely, to help needy categories of the population. At the same time, difficulties in the procedure for obtaining benefits deprived of such opportunity some of the people who really needed them.

The overburdening of the social security system with a large number of benefits meant that they were chronically underfunded, while the centralised financial system meant that budget revenues first had to go to the state budget and then return as intergovernmental transfers to local budgets, which actually were used to address social benefits at the local level. This, in its turn, added to the problem of lack of funds the problem of their irregular receipt and write-off during the year, when institutions that were supposed to make social payments or provide social services received funds, say, a month before the end of the fiscal year, which meant that they had to return the funds that were not used during that month back to the state budget.

Most of social services in Ukraine are provided by the state or municipal public communal enterprises with budgetary funding (territorial social service centres, comprehensive rehabilitation centres for children with disabilities, etc.), which means that they are completely dependent on budgetary funding and cannot attract any other funding, as local authorities usually do not have the authority to attract, for example, credit funds (maybe, except for local administrations of large cities, such as Kyiv).

This also means that there is no competition in the provision of social services, which makes it necessary to micromanage their quality, which is carried out by relevant orders of the Ministry of Social Policy of Ukraine for each type of service. However, not all the types of social services specified in the relevant Classifier have a corresponding State Standard of Social Services. Such a system creates the necessity to constantly update the existing State Standards of Social Services as new laws are adopted, which is not carried out in practice, and thus there are conflicts between the non-updated standards and new legislation. In addition, changes in the demand for social services caused by a crisis (in the current situation, the war) have not yet been reflected in the Classifier of Social Services, let alone in the new State Standards of Social Services, which have to be adopted yet (e.g., social services for veterans, military personnel and their families, etc.).

The effect of state social transfers on economic inequality in Ukraine

To ensure comparability of results, economic inequality in Ukraine was measured by the Gini coefficient. This is a standard metric, as it is not tied to the local currency, and is therefore internationally comparable, and is universally calculated by both international organisations and local governments. According to this metric (as of 2021), Ukraine ranks 5th in the world in terms of income equality**,** between Moldova and Belarus, while, for example, Japan ranks 55th and the United States ranks 113th (World Bank, 2024). The Gini coefficient is one of the best indicators in the world, which means that Ukrainians' incomes are as equal as possible. At the same time, historical Gini values range from 0.25 to 0.39 (Fig. 4.1), which indicates mostly equal income distribution throughout the entire assessed period. It is worth noting that the increase in raw income numbers coincides with an increase in the Gini coefficient, indicating the relatively common pattern of inequality growing alongside the population's income.

The evident conclusion, supported by observations from neighbouring countries in the ranking, is that the phenomenon in question reflects a pattern of relatively uniform poverty, which is characteristic of small open economies with substantial social spending (similar to other ex-Soviet states or South American socialist countries). To confirm this thesis, the structure of monthly household income and expenses can be used (SSSU, 2021). As seen from Fig. 4.2, the increase in monthly household resources (which include wages, pensions, other social transfers, as well as profits from entrepreneurship and subsistence farming) in 2010—2013 and 2015—2021, while being nominally significant, was barely keeping up with the increase in cost of living, which can be seen in the growth of subsistence minimum, albeit with a lag.

While a more detailed review of Ukrainian households' income is contained in Chapter 6, it is worth noting that not only the percentage of an average household's monthly income that is directly or indirectly provided by the state (notably, pensions, scholarships and state-provided services) is rather high (it accounted on average for 21% of median household income, and up to 45% of income of the first two deciles by income), but also the higher income brackets correspond solely to higher wages, rather than income from entrepreneurship or property. Thus, judging from the available statistics, Ukraine does not have an opulent stratum, or even the middle class (or, alternatively, the richest stratum is so few in number and/or have such a high profit that they are excluded from the survey as outliers). Compared to other countries (31.6% for EU) on average 21% of income from social transfers is not high, however 45% is (Antošová & Stávková, 2019).

The structure of household expenditures also indicates poverty, as the highest share of expenditures is for food (49.5% of total expenditures on average over

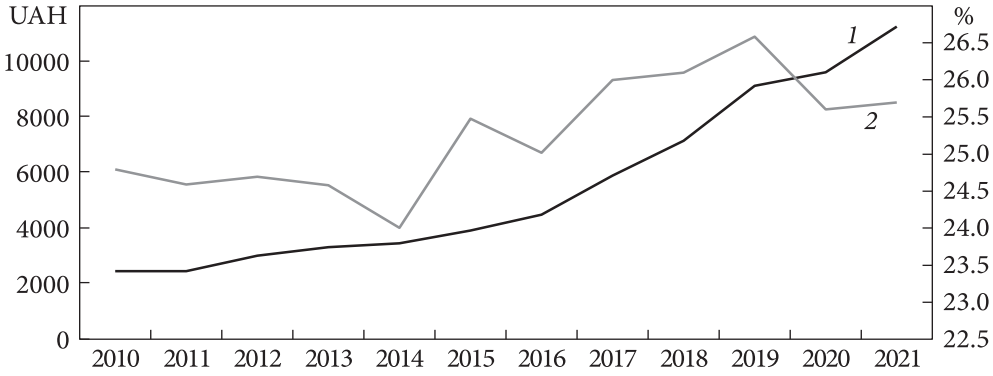

Fig. 4.1. Gini and median monthly monetary income per household in Ukraine, 1992—2021. *Left scale: 1* — median monthly income per household, UAH; *right scale: 2* — Gini coefficient, %
Source: compiled by the author based on data (World Bank, 2024).

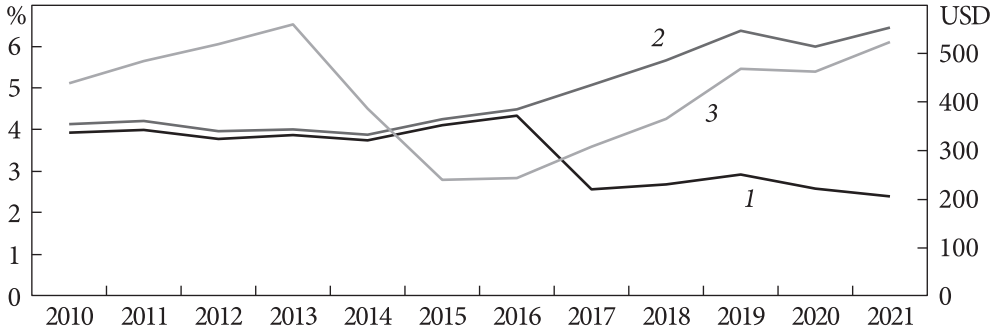

Fig. 4.2. Total average monthly resources per household in Ukraine, 2010—2021. *Left scale: 1* — total monthly income per household relative to minimum wage, %; *2* — total monthly income per household relative to subsitence minimum, %; *right scale: 3* — total monthly income per household, USD
Source: compiled by the author based on data (SSSU, 2021).

the period, with a downwards trend; in particular, in 2021 this share was 45.9%) and utilities (11.2% of total expenditures, with an upwards trend). About half of the monthly budget for food is an indicator typical for poor countries; in particular, in 2022, comparable values were recorded in Cameroon (45.2%), Uzbekistan (46.4%) and Uganda (44.2%) (Our World in Data, 2024).

Thus, the structure of household resources and expenditures, together with the Gini coefficient, indicates equality in poverty on average in Ukraine over 2010—2021. When the statistical data are examined in a regional context, a number of administrative units will indicate better results in terms of accumulated wealth and income (for example, Kyiv has three times the average income); the income of migrant workers abroad and workers living in villages but working in

large cities, is the reason why cash assistance from relatives is a significant share of available household resources.

Modelling the relationship between the Gini coefficient and its key determinants produces expected results. Specifically, the correlation matrix indicates that increases in total social transfers, income, and expenditures are associated with higher income inequality, whereas a greater share of social transfers in income and higher employment growth are linked to reduced inequality.

To build a regression (standard linear regression with HAC standard errors), the following indicators were used (Table 4.1). For economic inequality, the Gini coefficient provided by the World Bank (2024) was used. For social transfers, the amount of social transfers in households' income, provided by the SSSU (2021) was used; for poverty — the share of households living under the subsistence minimum calculated based on the World Bank (2024); for employment — the share of permanently employed population based on SSSU (2021).

The indicators of household income and social transfers were transformed into one indicator (the share of social transfers in income) to avoid multicollinearity. R^2 of the resulting model indicates that the variability of the model factors explains 74% of the variability of the outcome variable, which is a fairly high value within the social sciences, but the value of R^2 indicates the presence of omitted factors. The only variable that is significant within the 95% confidence interval is the share of social payments in the population's income, and the direction of the effect is negative and proportional. Given that the Gini coefficient is an indicator whose higher value indicates higher economic inequality, and the goal of social transfers is to minimise income inequality, an inverse relationship between these indicators is the only theoretically correct one. In other words, an increase in social transfers leads to a decrease in income inequality. The share of the households with incomes below the national median (which is used as a proxy for poverty) and the share of the employed households are not significant in this model.

Thus, the impact of social transfers on economic inequality in Ukraine is in line with standard theoretical predictions of such an impact, namely, an increase in the share of social transfers in the population's income reduces the inequality

Table 4.1. **Dependence of inequality on income sources in Ukraine, 2010—2021**

Variable	Ratio	Standard error	T-statistic	P-value
Social Transfers	–0.1291	0.0462	–2.792	0.0235 *
Poverty	0.3434	0.1102	3.114	0.0143 *
Employment	–0.1015	0.0313	–3.238	0.0119 *

* Variable is significant within the 95% confidence interval.
Source: the author's calculations.

of this income. An increase in the absolute value of social transfers, like any other income growth, increases economic inequality, as income usually grows unevenly. Other indicators included in the modelling, such as the share of households with incomes below the median (which was used as a proxy for poverty) and employment, were not significant in the model. In addition, the R^2 values indicate the potential presence of omitted variables, the selection of which is a promising issue for future research.

In general, Ukraine is characterised by an extremely low Gini coefficient, i.e., an extremely high indicator of income equality. This, however, is a reflection of the widespread poverty of the population, which is reflected in the structure of expenditures (in particular, a significant share of food expenditures in the monthly budget — up to 49.5%) and income (in particular, the share of monetary income in the monthly budget is only 50%). At the same time, regional income inequality is markedly uneven, with Kyiv and Kyiv region having about three times the incomes of other regions. Given that a significant share of the country's business is concentrated in these territorial units, and that it is common for people to work in large cities and live elsewhere (as reflected, for example, in the relatively high share of "from relatives" in monthly household income), this may smooth out inequality indicators for the country as a whole. However, this situation could also potentially indicate that income equality in Ukraine is overstated due to the failure to account for grey income.

Conclusion. It is substantiated that the impact of social transfers on the economic inequality in Ukraine is in line with standard theoretical predictions, namely, an increase in the share of social transfers in the population's income helps to reduce the inequality of these incomes. An increase in the absolute value of social transfers, like any other income growth, increases economic inequality, since incomes usually grow unevenly. Other indicators included in the modelling, such as the share of the households with incomes below the median (used as a proxy for poverty) and employment, were not significant in the model. In addition, the R^2 values indicate the potential presence of omitted variables, the selection of which is a promising issue for future research.

Conclusions

Analysing the structure of social transfers in Ukraine, it has been concluded that the Ukrainian social security system is plagued with hereditary problems stemming from the soviet social security system, which was designed primarily to incentivize service to the state (hence, a bloated list of beneficiaries who are not necessarily poor), and financed with the taxes on workforce. Since Ukraine's demography is worse than the Soviet Union's, and pensioners outnumber workers who could create an adequate tax base for social benefits, this system had been reluctantly reformed (mostly by decreasing the nomenclature of beneficia-

ries). The war and the recalibration of the budget impacted the situation in a few different ways: in particular, the social security stopped being a priority with the brunt of financing going to the defence. The number of people with need for social security grew, however, while the number of tax payers kept shrinking. For 2025, the system is mostly supported by international financial aid, and this situation cannot last.

The social protection system in Ukraine is cumbersome and overburdened with social benefits with barely measurable impact. After each major crisis (the financial crisis of 2008, the annexation of Crimea in 2014 and the start of a full-scale invasion in 2022), the issue of its reforming and reducing the unjustified benefits was raised, but the share of social spending in the budget grew steadily until 2022 (21% in 2005, 34% in 2022, 26,8% in 2023), when the need to increase military expenditures forced a radical review of public spending. At the same time, the number of people in need of state aid has increased due to the full-scale war. Currently, starting from 2022 and until now (2025), social expenditures from the state budget are largely supported by international financial aid, which in turn means an increase in public debt servicing amounts in the future (a problem that is exacerbated by its currency structure). Thus, in the nearest future, Ukraine will be forced to minimise social expenditures due to the limited available funding. Such minimisation will be done — and is already being done — by a haphazard restriction of social benefits funding for certain categories of beneficiaries in the form of residual-based funding. Such an approach, however, will not be able to ensure either the state's performance of its social functions or achieve the necessary level of budget spending reduction.

This means urgent need to solve the problem of financing institutions that provide social services instead of financing social services directly, and the problem of attracting non-state funds to finance social services and non-state social service providers, which have been discussed since 2008. To solve the first problem, it is necessary to ensure the autonomy of state providers of social services so that they could have the opportunity to independently plan and use funds to ensure the performance of their functions, and make decisions regarding the provision of such services. A possible implementation mechanism for this decision could be the reorganisation of their legal and financial status by transforming them into municipal non-profit enterprises. To solve the second problem, it is necessary to unify social service standards for all types of social service providers and simplify the mechanism for social service procurement (Agency for Legislative Initiatives, 2024).

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CHAPTER 5

TAX POLICY & ECONOMIC INEQUALITY

Pavlo Kerimov

Understanding the impact of the tax policy on income inequality is vital for understanding the redistributive role of the state. Modern consensus indicates progressive taxation as the main mechanism for equalising income through tax policy. However, the Ukrainian taxation system, which heavily relies on regressive taxes to generate enough income to support existing social obligations (and since 2021 — the war effort), is not designed to be progressive. Moreover, it is risky to try and make it more progressive in the existing circumstances, as this could widen the gap between income and expenses. Calculations suggest that current taxes are neutral regarding income inequality in Ukraine and, when combined with social transfers, assist in reducing it. The impact of the shadow economy, though theoretically negative, has not been empirically verified. Because the shadow economy's effect is non-linear, it can be assumed that it has not yet exceeded the point at which it would start to increase income inequality negatively.

Introduction

Assessing the impact of tax policy on economic inequality is essential for understanding how taxation can be used as a tool to reduce disparities and promote a more equitable distribution of income. This Chapter is dedicated to studying the impact of tax policy on economic inequality in Ukraine via a review of theoretical aspects of the interconnection between economic inequality and tax policy, the itemisation of available instruments and estimation of their expected impact. The progressiveness of the Ukrainian taxation system is analysed, including official and effective tax rates, the structure of tax income and the impact of taxes on economic inequality. It is substantiated that current flat tax rates are neutral towards income inequality. Then the shadow economy and its impact on income inequality are analysed, and it is concluded that there is no visible negative impact, which is in line with other research papers indicating non-linearity of this relationship. Finally, the possibility of legalisation of the existing P2P economy is considered in order to increase a tax income.

5.1. Tax policy and economic inequality: theory and international evidence

Methodological approaches to measuring tax policy's impact on economic inequality: international experience

There are two main approaches to assessing the impact of taxation. They can be divided into analyses based on numerical and structural indicators. The former is based on indices of economic inequality, pre- and post-tax income by income group, and the volume and distribution of transfers, while the latter is based on the specifics of the taxation system, including nominal and effective tax rates, the share of progressive and regressive taxes in tax revenues and the presence or absence of certain taxes.

Analysis of international studies indicates that the first approach allows for estimating the difference between the selected index of economic inequality (Gini, Theil, Atkinson) calculated before and after taking into account taxation and budget transfers. This approach makes it possible to include the overall level of taxation in the country, as well as to highlight the impact of individual taxes and transfers on changes in economic inequality. On the other hand, this approach requires manual calculation of economic inequality indices that are likely to be inconsistent with data available from other sources, which requires separate explanations. This approach was used by Avi-Yonah (2014) and Caminada et al. (2019).

A variation of this approach is the use of pre- and post-tax incomes to analyse economic inequality. In particular, Auten and Splinter (2024) presented separately: income before tax, income including taxes, income including transfers and the resulting income (i.e., including both taxes and transfers) by income group. This approach circumvents the problem of comparability of taxation systems in different countries, as the concept of pre- and post-tax income is universal and does not depend on specific rates and tax regimes. This allows for broad international comparisons, but usually such broad studies do not cover enough local specifics to explain the reasons for the patterns identified.

Furthermore, some authors added an econometric analysis with a chosen index of economic inequality (as a rule, the Gini coefficient) and factors that are usually relevant to the subject of a particular study. For instance, Markina (2022) used the shares of personal income paid as a personal income tax, consumption taxes (VAT and excise), GDP growth per capita, and public spending on education and health care as factors. Obviously, the last two points relate specifically to the issues considered by Markina (2022) and are not universal metrics for assessing economic inequality, although her study substantiates the idea that a reduction in these expenditures leads to an increase in economic inequality in the medium and long term. This approach proves the direction and strength of the relationship between the dependent and independent variables, but it does not provide an explanation either, which must be constructed separately.

The other approach is to analyse the architecture of the taxation system, in particular, the analysis of tax rates (Skalamera & Rubinic, 2016), including a progressive and proportional approach to taxation (Davies & Hoy, 2002). A variation of this approach is a historical analysis, which looks at changes in tax revenues and economic inequality as a result of specific tax reforms (Troiano, 2018). This approach allows one to describe the impact of certain changes in the taxation system on economic inequality and outlines the mechanisms for realising this impact, but, for example, Troiano concluded that it is impossible to universalise his findings, because the factors that were relevant for one tax reform were not relevant for another. International comparisons within this approach are also widely conducted, but comparing, for example, tax rates between different countries does not provide an understanding of how the system functions. In particular, the personal income tax rate in Ukraine can be 0%, 5%, 9% and 18%, reflecting different preferential tax regimes under separate programs to stimulate entrepreneurship, and thus is not progressive taxation, which provides different rates for different levels of income. At the same time, de facto, all of these rates (except for the zero rate) are now 1.5% higher, as the war tax is now also deducted from personal income tax. Knowledge and understanding of the context, however, is at best limited to one's own taxation system, which makes it necessary to quote conditional aggregated sources (e.g. Deloitte (2024)), where this context may be incomplete or distorted. In other words, international comparisons of the structural elements of tax systems, while providing a broader perspective on the impact of taxation on economic inequality, require expertise in the tax systems of different countries.

The indicators used to assess changes in economic inequality as a result of taxation were:

- marginal or effective tax rate on profits (Biswas, Chakraborty, & Hai, 2017) or income (Troiano, 2018);
- difference in household income pre- and post-tax (Markina, 2022), (Auten & Splinter, 2024; Biswas, Chakraborty, & Hai, 2017);
- difference in the Gini coefficient calculated on pre- and post-tax income (Avi-Yonah, 2014; Caminada, Goudswaard, Wang, & Wang, 2019).

A numerical analysis of the relationship between economic inequality and taxation allows for a better level of comparability across countries and requires less expertise, particularly when using econometric modelling. The latter allows capturing relationships between indicators with little or no-need-to-understand context, which, however, makes the interpretation of the results more difficult and less representative, as the patterns identified in this way are usually not universal. While analysing the structural elements of the tax system provides a better understanding of the context, it is less able to capture the impact of the factors under consideration on economic inequality. Thus, both approaches should be used in parallel.

Hence, the impact of taxation on economic inequality is quantified as:

1. Based on the dynamics of economic inequality indicators, either unmodified (in this case, an element of econometric modelling is often added) or calculated with an adjustment for taxation (sometimes also for transfers) in the country. As an indicator of economic inequality, standard indices (Gini, Theil, Atkinson indices) or a household's income can directly be used.

2. Based on the tax system structure — tax rates, existing taxes and their progressivity/regressivity, specifics of tax collection mechanisms (in cases they are unique enough to affect economic inequality).

So, the first approach is characterised by a relatively low entry threshold, proves the relationships between indicators (but does not allow for interpretation) and allows for large-scale comparisons across countries, while the second approach requires expertise in different tax systems, needs a larger data set that often cannot be unified and produces results with limited comparability, but potentially provides more grounds for substantiating the patterns identified. Both approaches can be used simultaneously — the first one for the analysis, and the second one — for the interpretation of the result.

Methodological approaches to measuring tax policy's impact on economic inequality: Ukrainian experience

The analysis of Ukrainian studies reveals a scarcity of quantitative approaches to evaluating the effects of taxation on economic inequality. For example, Pysmennyi (2010) supports the introduction of a real estate tax as a means of taxing excessive wealth (alongside vehicle taxes, value added tax and excise duties) primarily through a single diagram illustrating trends in minimum and average wages and the subsistence minimum from 2000 to 2009, as well as a reference to media coverage of the rising number of millionaires in Ukraine during 2008. Even accepting this limited use of statistical evidence, the categorisation of value added tax and excise duties as components of a "system of taxes on excessive wealth" appears debatable, considering the regressive character of these taxes; that is, consumption taxes are typically borne disproportionately by lower-income groups, since they are levied in proportion to the number of taxpayers rather than income levels. Moreover, the luxury tax proposed as a solution to economic inequality is interpreted by the author primarily as a "real estate tax" and "vehicle tax", reflecting the inherent challenges in defining what constitutes a luxury good item. The necessity of wealth tax is also substantiated by Sverdan (2015), although his arguments also include extensive quotations from ancient philosophers and an illustrative example of wealth taxation in the Netherlands, which prov**es** that the Ukrainian studies on the impact of tax policy on economic inequality were quite superficial, at the least until 2020s.

The lack of proper data analysis in studies on tax policy implications is certainly not unique to Ukraine. For example, a similar monograph was published in the Philippines by Tadem (2022); however, this author supported his argument for a luxury tax with a detailed analysis of similar taxes in other countries (tax rates and conditions, tax revenues), the level and distribution of income in the Philippines, as well as a comparison of economic inequality indicators (Gini coefficients), and outlined a project for taxing wealth in the Philippines depending on the total value of individuals' assets. In other words, Tadem's monograph had much more statistical justification, even if the questions of lobbying against such a tax and tax evasion by the richest strata of the population (to which it is directed) did not receive convincing answers. Thus, Ukrainian sources generally allow for a much lower level of statistical substantiation in the relationship between economic inequality and taxation.

Available sources from 2014—2017 statistics-wise usually fare not much better. For instance, Zhebchuk (2014) illustrates his position on reforming the country's taxation model (which he sees primarily in changes in social spending and the introduction of a progressive tax scale) by the dynamics of the decile coefficient and Gini coefficient for different countries, which, however, cannot be considered a quantitative assessment of the impact of taxation on social inequality in a country. For context, in 2011—2015 in Ukraine indeed existed a two-tier progressive tax rate on personal impact, however, it failed to exact any meaningful impact on economic inequality due to the infinitesimal number of taxpayers actually eligible to paying the elevated personal income tax rate (since in the Households Living Conditions Survey for that period even the highest income bracket was nowhere near the threshold income, and the elevated tax rate was only 2% higher than the normal one, i.e. 17%). And while econometric modelling still was scarce, some sources did provide some decent structural analysis of tax policy and economic inequality nexus in Ukraine. For instance, Fomina and Trokhymchuk (2016) in their study of social inequality and development, assesses social inequality in Ukraine using the share of the poor (including international comparisons), the average annual subsistence minimum, the quintile coefficient of income differentiation, as well as in the form of final household consumption expenditures and their shares in total consumer expenditures and GDP in 2010—2015.

Thus, the authors used a structural analysis that allowed them to draw reasonable conclusions about the existence of social inequality in Ukraine, which, however, is not evident from official statistics (both Ukrainian and international) due to the failure of standard indices of economic inequality to take into account the incomes of the richest and poorest segments of the population, as well as the prevalence of grey incomes. This conclusion is repeated in a large number of Ukrainian sources, but no one has estimated grey incomes.

Application of a proper mathematical apparatus to Ukrainian studies on the topic of the interconnection between taxation and economic inequality tends to be

rare. One of the available examples is a study by Merkulova and Yatsevich (2017), who conducted a mathematical modelling of the Gini coefficient depending on the parameters of the lognormal distribution of households' income, which allowed them to formulate the mathematical dependence of the Gini coefficient in Ukraine on the progressive taxation according to specified parameters. The authors concluded that, under the assumption that income follows a lognormal distribution, the application of a power function form of progressive taxation results in the Gini coefficient depending exclusively on the parameter σ of the original lognormal distribution. This means that the inequality index grows nonlinearly with a slowdown as it increases. The identified pattern allowed the authors to calculate the Gini coefficient for 2014, which coincided with the corresponding World Bank estimate for this period; therefore, their theoretical conclusion about the non-significance of the tax-free minimum and the linearity of the relationship between the Gini coefficient and the spread between the level of taxation and income (tax progression) at small values of σ can be used to calculate the level of taxation to target the desired level of the Gini coefficient.

Starting from 2020th, Ukrainian studies, conducted to a more modern standard, have become more widespread. For instance, a study by Markina (2022) is one of the few Ukrainian studies of the relationship between economic inequality and taxation, which was conducted using econometric modelling methods. Having studied the taxation of economic inequality and poverty in Ukraine, the author concluded that poverty is uniform, which is reflected in one of the best values of the Gini coefficient in the EU, but also in the lowest values of indicators such as the happiness index. The reason for this is the high level of shadow economy, while official statistics usually includes only the income of the poor, and it proves that all the poor have equal incomes. This conclusion was further reinforced by the presence of uneven taxation within the country (the largest share of tax revenues is VAT and personal income tax) and the prospects for further reduction of human capital in the country due to cuts in public spending on education and health care.

Thus, Ukrainian sources usually use a minimum of statistical data to analyse the relationship between economic inequality and taxation; at best, it can be characterised as an analysis of the structural components of the taxation system and limited international comparisons. Exceptions are papers written for international journals or devoted to mathematical modelling of a theoretical nature.

Conclusion. In general, Ukrainian sources do not contain a numerical assessment of the relationship between economic inequality and taxation. Therefore, one cannot describe any unique methodological approach to measuring tax policy impact on economic inequality in the Ukrainian scientific literature. Instead, limited time series are used to illustrate certain arguments by providing the dynamics of certain indicators (Gini coefficient, personal income) and/or stylised facts about the taxation systems of other countries (akin to the Deloitte

Tax Guide). This leads to conclusions that often do not correspond to the research, such as the need to introduce a luxury tax without sufficient elaboration or substantiation. Partly, this is due to data available — for instance, harmonisation of legacy soviet statistic reporting with ISIC rendered older data, incomparable to its newer iterations, and certain tectonic shifts in geopolitical situation also worsen the quality of available data, if one attempts to use it to construct a long-term data series. Partly, this is due to a different science tradition: concentration on theory over practice.

5.2. Structure of taxation in Ukraine and its distributional effects

As the literature review showed, the impact of taxation is assessed either by analysing the tax structure in the country (list of taxes, tax rates, progressive rates, if any, share of revenues from progressive and regressive taxes in the overall structure of tax proceeds), or based on the difference between pre- and post-tax incomes across households' groups. The first method is typical for Ukrainian studies, while the second is typical for international ones, and there are reasons for that.

Statistics on pre-tax and post-tax incomes in Ukraine are not available in open sources. Instead, the already calculated Gini coefficient is available, which provides data on personal income by major income groups. This information is limited to 2021 and published by the SSSU (2021), which allows for estimating the Gini coefficient graphically, i.e., by the integral area between the line of equal income distribution and the Taylor curve. The standard assessment of tax progressivity in such a case consists in adjusting the income of the households used to construct the Taylor curve for the Gini coefficient in accordance with the effective tax rate, calculated as a ratio of total taxes imposed on households to their total income for a comparable period. Ideally, the effective tax rate should be estimated for each income group, but such data are not available in open sources. Theoretically, it is possible to adjust these values to the statutory income tax rate, but such an approach would yield unusable results due to the following:

• Profit in Ukraine is taxed at the standard rate regardless of income level, meaning that if you adjust the total level of income to the theoretical tax rate, the distribution of income will not change, except for its level, — and the same for everyone at that.

• This approach fails to take into account the impact of other taxes, in particular indirect ones, such as excise taxes and VAT, which are not only the largest tax revenues in the country but also affect people with different income levels disproportionately. In other words, a lower income level means a higher effective tax rate due to consumption taxes, as they are paid by everyone without exception.

Thus, given the lack of data required to calculate the effective tax rate across different income groups, any assertion regarding the impact of taxation on income

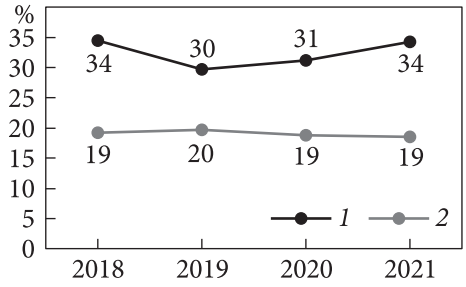

Fig. 5.1. Effective monthly tax rate in Ukraine, 2018—2021, %: *1* — effective total tax rate; *2* — effective income tax rate
Source: author's calculations based on data (Open Budget, n. d.; SSSU, 2021).

distribution remains purely theoretical and cannot be substantiated empirically, in other words, in the absence of a progressive taxation scale in the country. De facto, this is not the case, as even a supposedly equal income tax for everybody has preferential rates (which, however, are not connected with the level of income but with its source, for example, dividends are taxed at a rate of 5—9%), and the effective consumption tax rate depends on the level of consumption, which differs between different groups by income level. To demonstrate the difference between the statutory and effective (actual) tax rates, it is possible to calculate the effective household tax rate over 2018—2021 (since more recent data on income and the number of households are not currently available in open sources). Taxation volumes can be taken from the Open Budget (n.d.) project, while the number and monthly income of households can be taken from the SSSU (2021) database. The total amount of taxes paid by households includes tax revenues from personal income tax, domestic consumption taxes (excise taxes and VAT) and customs duties and fees; the total monthly effective tax rate for 2018—2021 was about 34% (Fig. 5.1).

In particular, in 2021 (the most recent period for which all the necessary data are available), the effective tax rate amounted to 34.37%, which is roughly in line with the taxation levels in Poland, Ireland and the Netherlands (OECD, 2025). This is the basis for comparison, however**,** it is not entirely comparable, as the OECD calculations are based on a progressive personal income tax and social security contributions. If the effective tax rate for Ukraine were recalculated on this basis, it would be expected to be around 19% (that is, the standard rate plus 1.5% of military tax), which would place it closer to that for New Zealand and Mexico.

In light of these constraints, only a structural approach remains available for analysing the impact of taxation on economic inequality in Ukraine; specifically, this involves examining the composition of tax revenues and the range of existing taxes, from which theoretical conclusions about the progressiveness of taxation in the country can be drawn. The structure of tax revenues is available from the Open Budget (n.d.) project (Fig 5.2). The bulk of tax revenues in 2018—2024 comes from VAT (from 44.59% to 49.68% of total tax revenues), followed by excise taxes (from 12.7% to 16.25%), and personal income tax (12.17—19.8%). Corporate income tax ranks fourth in the structure of tax revenues, followed by

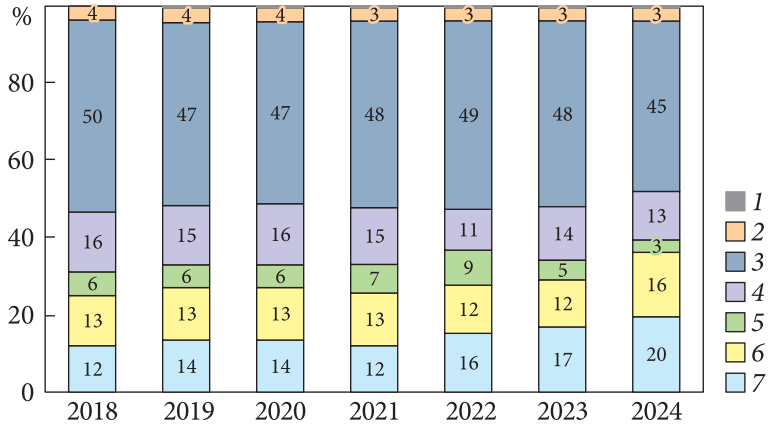

Fig. 5.2. Structure of tax revenues in Ukraine, 2018—2024, %: *1* — other; *2* — customs; *3* — VAT; *4* — excise tax; *5* — resource rent; *6* — profit tax; *7* — income tax
Source: compiled by the author based on data (Open Budget, n. d.), (SSSU, 2021).

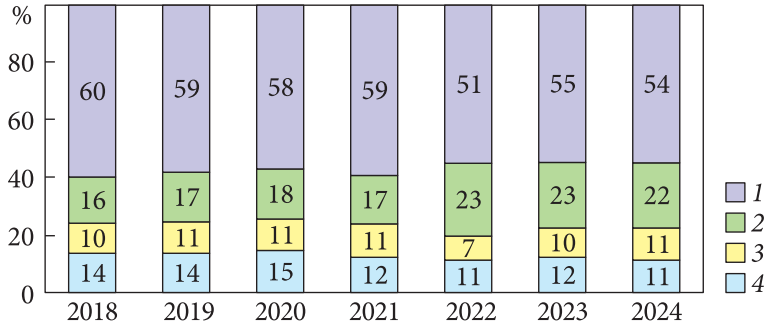

Fig. 5.3. Structure of tax revenues from domestic taxes on goods and services in Ukraine, 2018—2024, %: *1* — VAT on import; *2* — domestic VAT; *3* — excise tax on import; *4* — domestic excise tax
Source: compiled by the author based on data (Open Budget, n. d.), (SSSU, 2021).

the rent for the subsoil use, customs duties and other taxes and fees. The last account for less than 0.5% and almost entirely consist of environmental tax.

The dynamics of personal income tax in Ukraine shows a gradual increase in revenues from all the categories of taxpayers. It is worth mentioning that in 2024, personal income tax on remunerations and disbursed money accounted for more than personal income tax on wages, which can be associated with the increase in the military personnel share in the country population. In 2024, this component accounted for twice as much as in 2023, and five times as much as

in 2018. Additionally, there is an upwards trend in the number of categories included in the total amount of personal income tax due to the addition of, for example, personal income tax to the income of the Diia City resident specialists and the military tax splitting into new subcategories. Thus, in 2024, personal income tax was divided into 15 subcategories, and in 2023 — into 11.

The dynamics of corporate income tax revenues indicates a large-scale reduction in the activities of non-state-owned enterprises, as the largest payers of corporate income tax in 2024 were state-owned enterprises and banking institutions. At the same time, tax revenues from banking institutions increased 7-fold in 2023—2024, and from the state-owned enterprises — 3-fold.

The vast majority of tax revenues in this category comes from VAT on imported goods. VAT on locally produced goods comes the second (Fig. 5.3). The volumes of excise taxes on imported and local goods are roughly equal as of 2024, but the preceding period was characterised by equalisation dynamics, — the reduction of tax revenues from excise taxes on Ukrainian goods and the increase in tax revenues from imported goods, which also indicates a decline in Ukrainian industry.

The impact of taxation on economic inequality in Ukraine can be roughly estimated using the Reynolds — Smolensky index (Table 5.1). Unlike the Kakwani index, which is calculated based on the amount of the taxes paid and transfers received by income groups (corresponding data is not tracked), the Reynolds — Smolensky index is the difference between the Gini indices before and after tax, which can be roughly calculated. Since the tax rates for all categories of taxpayers are the same, the difference between the Gini indices before and after tax lies in the non-taxable part of household income, i.e., the more household income after tax falls, the less taxable income households have. Thus, poorer categories of the

Table 5.1. **Reynolds — Smolensky index for Ukraine, 2007—2021**

Year / Index	Gini coefficient before tax	Gini coefficient after tax	Reynolds — Smolensky index	Year / Index	Gini coefficient before tax	Gini coefficient after tax	Reynolds — Smolensky index
2007	21.27	19.55	1.72	2015	21.22	19.08	2.14
2008	21.38	19.76	1.62	2016	21.98	19.41	2.56
2009	20.39	18.69	1.7	2017	23.99	21.22	2.76
2010	19.54	17.56	1.98	2018	24.87	22.4	2.48
2011	19.36	17.75	1.61	2019	25.78	22.98	2.8
2012	22.51	20.71	1.8	2020	24.34	21.8	2.54
2013	22.14	20.19	1.96	2021	24.59	22.03	2.57
2014	20.24	17.93	2.31				

Source: the author's calculations based on data (SSSU, 2021).

households pay less in taxes, and thus the overall effect of taxation on economic inequality is recorded as positive — although fixed-rate taxes are considered neutral at best for income equalisation, if not regressive. It is caused by the system of income equalisation via the state budget.

Conclusion. Ukraine's tax system is not progressive either in design or implementation. The existing taxes do not provide for a progressive taxation scale, and thus are at least neutral for economic equalisation. The prevalence of consumption taxes, particularly excise taxes and VAT, in the structure of tax revenues, however, indicates their regressive nature, at least in theory, as VAT is almost universally considered a regressive tax. An obvious way to overcome economic inequality is to introduce progressive taxation scales for personal income tax and corporate income tax, as well as to introduce some form of wealth tax. However, the overall effect of such actions would be questionable at least in the short-term due to a number of reasons. Firstly, these taxes are not the main source of tax revenues, and their share demonstrates a downward trend as the Ukrainian industry shrinks because of the war. Secondly, their introduction is likely to entail further reduction in revenues, which is undesirable in a war economy. For the same reason, reducing, replacing or abolishing VAT (at least for certain goods and/or for certain categories of the population) is out of the question, as though it has a significant increase in potential for the progressiveness of Ukraine's tax system, it will also lead to a significant decrease in tax revenues. The impact of taxation on economic inequality in Ukraine in 2007—2021 was neutral due to fixed tax rates and a considerable non-taxed share in the population's income (i.e., social payments from the budget).

5.3. Economic inequality in the context of shadow and P2P economies

The shadow economy as an explanation for divergent income and wealth inequality

The impact of the shadow economy on income inequality is a relatively well-researched topic. As a rule, the amount of money in circulation (MO) in a country's economy, or money supply, is used as an indicator of the shadow economy volume, regarding cash as the main means of payment for informal transactions. Such an approach loses much of its explanatory power in economies, where electronic payments are rare (e.g., for Ukraine before 2010). Another approach involves identifying unclear discrepancies in, for example, electricity consumption in the regions with no official manufacturing facilities, which is, however, a rather unsatisfactory indicator for service economies. Therefore most researchers choose a combination of indicators based on the available data, with the share of cash being the most popular, as it is the easiest to track down, or they use the third-party data.

The reigning hypothesis appears to be that the increase in volume of shadow economy increases economic inequality. For instance, Rosser et al. (2000), researching the impact of the informal economy on 16 transition economies during 1987—1994, came to the conclusion that there was a significant positive correlation between economic inequality and the volume of the shadow economy (defined by electricity consumption data). The authors put forward the following hypothesis: a large shadow sector reduces tax revenues, which weakens the public sector and contributes to the growth of economic inequality, while high economic inequality undermines social trust and promotes the involvement of households in the informal (shadow) economy.

Some studies, however, indicate that shadow economy can actually decrease economic inequality in a country. For instance, the article by Huynh and Nguyen (2019), dedicated to the interrelation between economic inequality and the shadow economy, is based on a study of 19 Asian countries over the period of 1990—2015, suggested that a 1% increase in the shadow economy volume led to 0.02% income increase for the poorest groups of the households and 0.079% income decrease for the richest groups of the population. The authors connected it with the ability of the shadow sector to create employment for the poor, who, for one reason or another, could not work in the formal economy, at the same time distorting competition, which resulted in a disproportionately greater negative impact on honest businesses and reduced their revenues. The tax burden was considered in the study as one of the drivers of the shadow economy expansion, and the authors' conclusions were twofold: on the one hand, the expansion of tax evasion weakened the redistributive power of taxation, and on the other hand, strict compliance with tax legislation reduced the income of the poor employed in the shadow sector.

Other studies indicate non-linearity in the interrelation between shadow economy volume and income inequality. For instance, research work by Krstić and Sanfey (2011) focused on a point-in-time study (2002 and 2007) of the shadow economy impact on income inequality in Serbia. Authors concluded that while in 2002 volume of shadow economy did not have any impact on the income inequality, but by 2007, with the increase in the level of informal employment, the income inequality in informal sector was significantly higher than in the official sector: in 2007, employees with informal employment earned on average by 22% less than employees with official employment. The negative impact of economic inequality began after a period of economic growth: while in 2002 the shadow sector volume had no impact on income inequality, but in 2007 it became the third most significant variable. This suggests that the impact of informal employment increases with economic growth. In Serbia, the tax system also contributed to this phenomenon: high labour taxes and a higher tax burden for the poorer groups of households encouraged tax evasion by switching to informal employment; also, the tax reform carried out in 2007 did not have an immediate effect.

Fig. 5.4. Dynamics of the shadow economy share, Gini and GDP in Ukraine, 2007—2021. *Left scale:1* — gini coefficient, %; *2* — shadow economy (M0/M2), %; *right scale: 3* — GDP, bln UAH
Source: compiled by the author based on data (SSSU, 2021).

Another study, which found out a non-linearity in the interconnection between income inequality and volume of shadow economy, was a study by Yap et al. (2018). Based on the investigation of the informal economy impact on economic inequality in 154 countries over 2000—2007, the authors concluded that as the informal economy grows, the economic inequality first decreases, then rises, and finally decreases again. The breakpoints of the trend come to approximately 18% and 65% of the shadow sector's share in the economy. For OECD countries, these thresholds are 17.2% and 31.8%. For the developing countries with the highest shadow economy share (top 25%), the trend is different: economic inequality increases until the share of the shadow economy reaches 65%, after which it begins to decline. Thus, a decrease in the informal economy can lead to an increase in economic inequality, if the level of the informal economy is high.

Thereby, it can be concluded that the impact of the shadow economy on income inequality is non-linear: neutral under the low and high levels of the informal economy, and negative within the range of 18—65%. It explains some of the contradictions in the findings of the studies reviewed, in particular, between the conclusions of Huynh and Nguyen (2019), who stated the impact of the informal economy on economic inequality to be positive, and the findings of Rosser et al. (2000), who found a positive correlation between the shadow economy growth and economic inequality. This also explains the change in the impact from neutral to negative recorded by Krstić and Sanfey (2011).

The interrelation between economic inequality, the share of the shadow economy and economic growth in Ukraine (Fig. 5.4) demonstrates that the dynamics

of economic inequality and the share of the shadow economy in the total economy are similar, but not connected, while GDP growth is stable. Formally, the shadow economy volume in Ukraine falls within the limits within which it could have a negative impact on economic inequality, but none of the tested models confirmed it. Given that such thresholds are usually approximate, and individual thresholds differ from country to country, this can be attributed to local specifics.

Thus, based on the standard indicator of the shadow economy share in the total economy (namely, the ratio of cash to money supply), it can be concluded that the size of the shadow sector in Ukraine decreased from 32% in 2009 to 28% in 2021. Over the first months of 2025, this indicator declined even more — to 21%. Over the periods of 2009—2013 and 2015—2019, there was a parallel decline in economic inequality and the shadow economy share, however, the shadow economy share declined throughout the entire period (except for the spikes in 2008 and 2014), and the Gini coefficient had several periods of growth (2014—2016, 2019, and ongoing). Modelling this interrelation proves its absence, in other words, the shadow economy share is not a significant variable; therefore, it may be concluded either that the shadow sector has a weak negative impact on economic inequality, or that it does not exist, which is confirmed by other researchers' data on the non-linearity of such an impact.

P2P and economic inequality: the role of fiscal policy

The advancement of technology is transforming traditional business models, often placing them outside the scope of standard taxation. For instance, the growth of the peer-to-peer (P2P) economy offers a chance to convert informal economic activities into small businesses, potentially broadening the nation's tax base by tapping into previously untaxed resources. However, unlocking this potential will demand a careful and deliberate approach from the government, including a coordinated tax policy tailored to this emerging economy and updated legislation to acknowledge and regulate the tools involved.

The P2P economy is a type of economic activity that is enabled by the existence of appropriate technical means to quickly and efficiently connect sellers of goods and services with potential customers and consists in the provision of these goods and services by the seller to the buyer with minimal intermediation. The functionality of the P2P-economy is maintained by postal service providers, banks and various digital platforms, for example, Etsy, eBay, BlaBlaCar, Booking.com etc. There is ongoing debate about whether individuals who sell or provide services on these platforms should be considered employees (and thus subject to personal income tax) or independent entrepreneurs (responsible for business income tax). As a result of this uncertainty, the platforms themselves, along with users who voluntarily declare their earnings and pay taxes, are currently the

ones being taxed. The P2P economy thrives largely due to reduced transaction costs, such as lower expenses for advertising, finding and connecting with counterparties, the erosion of geographical barriers through the elimination of physical presence and the availability of global delivery services. For users, one of the key benefits of the P2P model is its minimal bureaucracy and oversight, as getting started often requires nothing more than registering on a platform. This makes standard methods of monitoring and control inadequate, as they eliminate one of the main advantages of this type of economic activity. Part of the monitoring and control can be carried out through banks that service participants' transactions, but at present, the participation of Ukrainian banks in the P2P economy is constrained by their generally conservative strategy**,** while the creation of non-bank institutions' own payment systems (e.g. Nova Pay) and the existence of alternative payment methods (including cryptocurrencies), coupled with the globalisation of financial services, creates a potential opportunity for informal economy participants to continue their activities without the participation of Ukrainian banks.

The true size of the P2P economy is difficult to quantify, largely because reliable statistics are lacking. Consumer numbers and transaction volumes are often protected by commercial confidentiality, making accurate measurement challenging. Indirect estimates indicate a turnover of EUR 4 billion on 5 largest P2P platforms in the EU in 2013—2015, which translated into transactions totalling EUR 28 billion, making such platforms very profitable. However, the impact on the platforms themselves is limited, as they are typically based on foreign jurisdictions and can relocate their operations if the local business environment becomes unfavourable.

The impact of the P2P economy is difficult to evaluate for similar reasons. Buyers often turn to these platforms for alternative access to goods or services that are otherwise unavailable, whether due to a lack of official distribution in their region, limited production (such as handmade items), or participation in unregulated markets (like cashing out crypto assets). Most sellers on these platforms are likely engaged in offering low-margin, high-turnover and/or labour-intensive goods or services. For many, this activity is supplementary, serving primarily to offset the insufficient profitability of their main occupation or business.

In other words, the P2P economy is a form of self-organisation of the population that stimulates the reduction of economic inequality through income equalisation. This particular nature of the P2P economy significantly limits the effectiveness of taxing such activities separately — especially when based on turnover, as is currently the case through monthly turnover thresholds. Such an approach often renders these supplementary activities unprofitable, discouraging participation or driving them further into the informal economy through tax evasion. Another problem with taxing such activities using standard methods is that it violates the principle of tax efficiency, i.e., the administration of such

taxation will cost more than the potential tax revenues generated by it. Thus, the P2P economy is a relatively new type of economic activity made possible by modern technologies, and is currently not fully defined, taxed and regulated. Potentially, this phenomenon can contribute to the structuring and formalisation of the informal economy into small businesses with the corresponding reduction in economic inequality due to income equalisation, as well as a certain increase in tax revenues due to economies of scale.

Given the unique characteristics of the P2P economy, effective taxation requires a comprehensive approach grounded on a unified strategy. First, mechanisms must be developed to monitor informal employment among individuals who are either unwilling or unable to maintain conventional tax records and who may opt out of participating entirely rather than deal with quarterly or annual reporting obligations. Second, the tax burden must be calibrated carefully so that, when combined with platform service fees, it could not render most P2P activities financially unsustainable. Third, taxation policies must account for the wide variety of economic activities conducted through P2P platforms, including trade, tourism, property rental, and service provision. Lastly, efforts should be made to minimise tax evasion, particularly by preventing large and medium-sized businesses from exploiting P2P structures to disguise formal operations and avoid proper taxation.

Within the framework of this approach, and in accordance with the concept of changes in the tax system presented in the National Revenue Strategy until 2030, it is necessary to:

• Mandate transaction reporting by P2P platforms. The platforms should be required to automatically report user transaction data, categorised by user profiles. Reporting should be based on the flow of funds to and from users' bank cards. This will necessitate coordination between banks issuing these cards and platform's internal payment systems. Currently, users can obscure their total turnover by spreading transactions across multiple banks**,** as aggregate tracking is not in place.

• Introduce a special simplified taxation regime for P2P work. A separate version of the simplified tax system tailored for P2P employment, modelled after the existing 3rd group of income taxation, should be created. This could involve a flat tax of 3% on turnover or 5% on net income. Such a structure would encourage voluntary tax declarations since in many cases, 5% of the income is more favourable than 3% of the gross turnover and attracts primarily small businesses, as turnover-based taxes become less viable as transaction volume scales.

• Automate tax collection. It is beneficial to strive to fully automate the calculation and collection of taxes. Ideally, taxes should be deducted at the same time as platform service fees, minimising user involvement and improving compliance.

• Strengthen financial monitoring and data aggregation. Financial oversight of card-based transactions should be enhanced. This includes creating mechanisms

for coordinated data sharing between banks and P2P payment systems, enabling the aggregation of financial data for individual users across institutions.

• Establish a legal framework for crypto-assets. A comprehensive legislation to regulate the circulation of crypto-assets must be developed. The goal is to integrate these assets into the formal financial system and close a major loophole for untaxed or untraceable transactions.

To sum up, the P2P economy exists but, as of 2025, remains largely unmonitored, uncontrolled and untaxed in Ukraine. This form of economic activity has the potential to reduce income inequality, boost employment, and increase tax revenues, making continued disregard of its presence unjustifiable. Given the distinctive characteristics of the P2P economy, reliance on conventional regulatory and taxation approaches is likely to undermine its viability or drive its activities further into informality and non-compliance. Consequently, there is a critical need for innovative, technology-driven solutions that reduce transaction costs while ensuring effective oversight. Therefore, adopting modern technological solutions that minimise transaction costs is essential. Finally, implementing a specialised tax regime combined with automated tax calculation and collection, alongside enhanced monitoring of funds flowing through users' payment cards, could establish a straightforward and transparent taxation system, helping to transfer informal work into legitimate small businesses.

Conclusion. The shadow economy volume was found to be mostly neutral towards the income inequality in Ukraine. The reason behind this is likely due to the non-linear impact of the shadow economy on income inequality, since it hurts the rich more than the poor, and in some cases, it is able to provide additional income for the poor. Therefore, Ukraine may not have crossed the threshold after which the shadow economy started to increase income inequality, due to the populace being too poor on average. To expand the tax base to finance social transfers and public services (including education and healthcare), it is advisable to develop an approach to taxing the informal digital economy (P2P economy). Given the specifics of the P2P economy, its taxation requires a number of problems to be comprehensively addressed within the framework of a common vision. First, it is necessary to track the actual informal employment of people who are unwilling and unable to keep standard tax records and would rather stop their activities than fill out quarterly or annual reports. Secondly, it is necessary to set a level of taxation that, when combined with the payment for the platform's services, will not make most activities unprofitable. Thirdly, it is necessary to take into account a wide range of possible taxable activities, including trade, tourism, leasing of property and provision of services. Finally, it is necessary to minimise the possibility of tax avoidance, including the use of P2P mechanisms by large and medium-sized businesses.

Conclusions

It is established that the use of taxes as a tool for reducing economic inequality is carried out through their transformation into a more progressive form. Currently the only more or less universally recognised progressive tax is the personal income tax, while the corporate income tax requires international cooperation to increase its progressiveness. The difficulty in making direct taxes more progressive lies primarily in the increased opportunities for tax evasion by wealthier segments of the population, which are only growing with the development of technology. The transformation of indirect taxes into more progressive ones is not considered a promising direction, since they perform the main fiscal function in most tax systems, and any attempt to expand their progressivity interferes with the performance of this function (for example, VAT exemptions significantly increase administration costs, and excise tax exemptions stimulate excessive and uneven consumption of excisable products, in particular fuel).

Ukraine's taxation system is not progressive by design, due to its soviet heritage. While there were earlier attempts at making personal income tax progressive, they ultimately failed due to inability to actually locate the tax base from which an elevated tax rate could be levied. The reason for this is seen in both the structure of tax income (in which both personal and corporate incomes are a relatively small part), and the structure of households' income, in which even the highest income group does not have an average income for households to match the elevated taxation bracket.

Making the Ukrainian tax system more progressive requires inclusion of reducing consumption taxes, such as VAT, which is inadvisable, since those are the main sources of income for the budget. The taxation and social benefit systems were designed to work together, with a higher number of social benefits being financed by higher taxes, and therefore making consumption taxes more progressive is more likely to increase income inequality due to reduction of social support payments. Instead, it is advisable to concentrate on tailored social benefits for target groups of citizens, and maximise non-cash benefits like provision of state services and/or utility payments adjournment.

It is also advisable to try to formalise the existing P2P economy into taxpaying small businesses. To achieve this goal, P2P platforms must report on their clients' transactions. Such reporting should be automatic and cover the turnover of platform users' transactions by profile. The turnover should be recorded for the movement of funds on customers' cards, and coordination between the banks servicing the relevant cards and the platform's own payment system, if any**,** is required. At present, it is possible to conceal the turnover volume using cards of several banks simultaneously, since the total turnover is not calculated. A separate version of the simplified taxation system for P2P employment should be established, similar to the existing 3rd group, which provides for a single tax

of 3% of turnover or 5% of income. Such a tax burden should stimulate: (i) income reporting by platform users themselves (since, for example, 5% of income will be much less than 3% of turnover when conducting trading activities, while in P2P services business income come in form of service fees); and (ii) selection of small businesses for the system, since the turnover tax does not scale well with the growth of transactions. The automation of the process of charging and deducting tax should be maximised; ideally, it should be deducted together with the platform fee. It is necessary to strengthen the financial monitoring of card transactions and ensure mutual coordination between banks and P2P payment systems in terms of aggregating data on the same customer. Finally, a framework legislation on the circulation of crypto-assets in the country should be created to incorporate them into the formal financial sector and ensure control over their circulation.

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CHAPTER 6

ECONOMIC INEQUALITY & ECONOMIC GROWTH

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Chapter 6 explores the connection between economic growth and income inequality both worldwide and in Ukraine, emphasising the role of social transfers and income structure in shaping inequality patterns. Subchapter 6.1 discusses the key mechanisms through which inequality influences the economic growth, including effects on human capital, social stability, fiscal redistribution and investment incentives. It also investigates the drivers of wealth (such as liberalisation of financial markets, changes in pension systems, tax reforms, demographic shifts, and social policy variations across countries) and income inequality (including regional disparities, changing income distributions within nations, declining wage inequality in some regions, and challenges faced by women and informal sector workers). Subchapter 6.2 points out that, despite Ukraine's low official Gini coefficient and substantial redistribution via pensions and social benefits, average household incomes remain below subsistence levels, and genuine income equality primarily results from social benefits rather than earned income. The analysis shows that wages increasingly contribute to household income as it grows, while pensions form a significant proportion of the poorest. Additionally, entrepreneurship and self-employment have a limited impact across all deciles, indicating an underdeveloped middle class and restricted upward mobility. The rapid growth of minimum wages after 2014 has narrowed the wage gap between income groups, yet regional disparities endure. Statistical data reveal a near-perfect correlation between GDP and household income trends, although income has grown faster than GDP after 2016 due to policy-driven wage increases. The findings underline the importance of examining both qualitative and quantitative aspects of income distribution, warning against equating lower measured inequality with improved well-being, especially during economic downturns.

Introduction

Economic inequality undermines social cohesion and economic stability. In a globalised world driven by technology, demographic shifts, and changes in economic policy, understanding the causes of inequality is crucial. Current assessments often rely on average incomes and overlook regional differences, informal earnings, and wealth distribution disparities. This is evident in Ukraine, where reliance on broad aggregates and limited data hampers effective policymaking.

Understanding the origins of economic inequality is essential for developing effective socio-economic policies aimed at reducing well-being gaps. In theoretical economic debates, inequality is seen both as a distributional outcome and as a result of complex interactions among market forces, macroeconomic policies and institutional environments. Despite the development of various indicators and methods to measure income and wealth inequality quantitatively, selecting appropriate indicators and approaches remains a contentious issue. Critics argue that traditional methods are sensitive to sample specifics, income composition, and distributional characteristics, and often overlook socio-economic differences among individual countries.

This Chapter aims to clarify how economic growth is related to income inequality, focusing on the structural aspects of income distribution and the redistributive effects of social transfers. Subchapter 6.1 examines the association between economic growth and inequality, drawing on both theoretical perspectives and international evidence. It also generalises the drivers and trends of global economic inequality, highlighting disparities in wealth and income. Subchapter 6.2 analyses income inequality in Ukraine by examining household income structures across deciles, the role of social transfers, and implications for economic growth. Empirical models covering 2009—2021 indicate that: (i) GDP growth correlates with increased economic inequality, but higher inequality does not necessarily promote further economic growth; (ii) evidence of negative autocorrelation in GDP growth rates may point to economic cyclicality rather than a direct causal link; and (iii) the impact of the shadow economy on official GDP was not found to be statistically significant, possibly due to data limitations.

6.1. Economic growth and inequality: theory and international evidence

Economic inequality can either promote or hinder economic growth, depending on the economy's level of development and the specific mechanisms involved, including the extent of income distribution. Excessively high or low levels of inequality generally harm economic growth. While inequality among high-income individuals can favour growth within those groups, inequality among low-income individuals tends to obstruct broader economic development. Consequently, researchers explore how inequality affects economic development to design effective policies for promoting inclusive growth.

Among the first to hypothesise and empirically examine (despite limited data) the U-shaped pattern of income inequality during economic growth was Kuznets (1955). He proposed that in the early stages of economic growth, especially during the rapid shift from pre-industrial to industrial society (e.g., around 1780—1850 in England, 1840—1890 in the United States and Germany), income inequality tends to rise, then decrease from the 1920s onwards. Following Kuznets, Barro (2000) found a weak general relationship between income inequality and growth

and investment rates across a broad range of countries, which varies depending on the economic development stage. Higher inequality tends to hinder growth for poorer countries because limited access to credit prevents poor households from investing in human capital, which offers high returns. Therefore, redistributing assets and income from the rich to the poor can boost overall investment and productivity, thereby enhancing economic growth during the transition. In wealthier nations, higher inequality is often beneficial for economic growth.

In contrast to Kuznets (1955) and Barro (2000), later studies emphasise that reducing inequality is not an automatic consequence of economic growth, but rather the result of deliberate policy choices and responses to significant shocks. Deininger and Squire (1996) found no consistent link between economic growth and changes in overall inequality, attributing this to the fact that fluctuations in the Gini coefficient tend to be small, regardless of whether average incomes rise or fall.

Moving beyond the more simplistic earlier models, in the 2000s, the research began to recognise the importance of inequality and demographic change in shaping economic growth. For instance, in their growth model, Galor and Weil (2000) outlined the historical development of the relationships between population, technology and production. Thorbecke and Charumilind (2002) highlighted that the link between inequality and growth involves both economic (savings, investment, human capital) and political (stability, property rights, redistribution, democratisation) mechanisms. Therefore, economic inequality is closely connected to broader macroeconomic trends, and different channels through which economic inequality impacts growth should be considered depending on the context and level of economic development.

In turn, Milanovic (2005) did not reject the Kuznets hypothesis outright; instead, he offered empirical evidence. He demonstrated that the relationship between economic openness and inequality is nonlinear: in poorer countries, greater openness exacerbates the plight of the impoverished, whereas only after reaching a certain income level (approximately USD 7.5—8 thousand in PPP) does openness begin to contribute to an increase in the income share of both the poor and the middle class, which aligns with the later stages of the Kuznets hypothesis. Recent research by Vukovic and Damijan (2025) empirically confirms that trade openness, financial globalization, and technological progress are drivers of increasing market inequality. Specifically, a 10% rise in trade openness, financial globalization, and technological progress correlates with average increases in market inequality of 0.4%, 0.3%, and 0.9%, respectively. They also observe that countries with socialist and social democratic elements in their economic policies experience a smaller impact of financial globalization and technological progress on inequality.

The study of Galbraith (2009) confirms a connection between inequality and economic development, indicating that this relationship is more intricate than the traditional inverted U-shaped Kuznets curve. His analysis, covering data on 200 countries, shows that structural and regional disparities can lead to long-term

unemployment, especially in Europe, where regional inequality exceeds domestic inequality. Additionally, Galbraith (2009) found that in the United States from 1971 to 2004, income inequality was largely influenced by stock market fluctuations, while wage inequality was related to unemployment and other macroeconomic factors. Therefore, it is crucial to view inequality not only as an economic issue but also as an indicator of systemic problems affecting economic development.

Since the traditional viewpoint that inequality promotes economic growth through higher savings of the rich, contradicts with modern empirical evidence, which often shows a negative impact of inequality on growth, Obst (2013) highlights the role of the public sector in income redistribution. He considers three different regimes of the welfare state developed by Esping-Andersen (liberal, conservative/corporatist, and social democratic). The social democratic model (typical of countries such as Sweden or Denmark) demonstrates the strongest redistributive effects, as taxes in this model mainly finance a comprehensive redistribution system aimed at raising living standards. Thus, inequality not only determines the need for redistribution but can also impact its actual effectiveness due to structural constraints. Reducing inequality of opportunity can significantly contribute to economic growth. For example, Marrero and Rodriguez (2013), based on the US data from the 1970s to the 1990s, found that overall inequality has a twofold impact on economic growth. High inequality of opportunity has a negative impact on economic development, while inequality of effort has a positive impact on growth as it is associated with rewarding individual efforts.

Kuznets' hypothesis is also challenged by Piketty (2014), who argues that the sharp decline in income inequality across almost all rich countries between 1914 and 1945 was mainly the result of the world wars, particularly affecting the wealthy. He also contends that no natural force exists that inevitably diminishes the significance of capital and income from capital ownership throughout history. This contradicts the optimistic ideas that prevailed after World War II, which suggested that capitalism had evolved and that human capital had overcome traditional capital. However, Goes (2025) empirically challenges Piketty's key assumption that the gap is the primary driver of rising income inequality in developed countries. He proposes that the observed increase in inequality is probably due to other factors, such as the rising skill premium, innovation, changes in marriage behaviour, or improvements in the quality of institutions that limit the possibility of economic rent extraction.

As Thewissen (2014) observed, many earlier studies have relied on databases affected by measurement errors, limited cross-country comparability and heterogeneity in survey design. Specifically, these data often employ "top and bottom-coding," which tends to overlook income growth at the top of the distribution, an important aspect of inequality. Therefore, Thewissen (2014), drawing on information from three different sources, found no consistent link between overall income inequality (as measured by the Gini coefficient) and economic growth, nor between redistribution and growth for wealthy nations.

Inequality can negatively influence economic growth through human capital, while redistribution is generally not harmful to economic development if it remains moderate. This conclusion is based on the research of Berg et al. (2018), who found that: (i) lower net inequality (after redistribution) is strongly linked to faster and more stable economic growth; (ii) inequality hampers the growth partly because it negatively affects education, life expectancy and fertility; and (iii) although redistribution usually has a neutral effect on the growth, excessive redistribution can shorten the periods of economic expansion. The researchers explain the complex relationships between market inequality, income redistribution, net inequality and economic growth. Market inequality (measured by the Gini coefficient) tends to be more redistributive in countries with high inequality levels. Redistribution, defined as the difference between market and net inequality, can exert a negative impact on the motivation to work or invest, while reducing net inequality, which has a positive impact on economic growth. Net inequality (after taxes and transfers) hampers the growth by weakening human capital and increasing political instability. Therefore, to foster economic growth, it is crucial to decrease inequality while avoiding excessive fiscal redistribution that could undermine incentives to work and invest.

Economic growth does not always lead to lower inequality or better living standards for the majority. For instance, although Mexico's GDP per capita increased substantially from 1800 to 2015, real wages for unskilled urban workers and median incomes grew much less. While GDP per capita rose more than eightfold from the nineteenth century, real wages for unskilled urban workers only increased by 2.2 times, and median incomes were half as much (Bleynat, Challú, & Segal, 2021). To address inequality, policymakers focus on both market income (income before taxes and social transfers, i.e., before redistribution) and disposable income after redistribution. Amaglobeli and Thevenot (2022) have shown that fiscal policy impacts income inequality through two stages: pre-distribution and redistribution. Pre-distribution aims to lessen inequality before it appears, by investing in higher education, education services, healthcare, basic infrastructure (transport, housing), and active labour market policies. Redistribution reduces existing inequalities by redistributing income through progressive income tax, inheritance tax, social insurance, social assistance, and indirect taxes (regulation of consumer taxes). Fiscal tools used before redistribution mainly promote equal opportunities in the higher income groups, while redistribution focuses on supporting those with lower incomes (Amaglobeli & Thevenot, 2022). Therefore, reducing inequality requires a balance: ensuring equal opportunities before redistribution and delivering effective income redistribution through social transfers and tax policies.

Since most studies analyse average economic growth rates, which do not reflect the impact of inequality on different household groups, Baselgia and Foellmi (2022) highlight the importance of considering income distribution dynamics when examining the relationship between inequality and economic growth. Averages do not capture all aspects of this relationship, so future research should

focus on specific segments of income and wealth distribution. Therefore, the effect of inequality on economic growth depends on the stage of economic development and the nature and structure of inequality. The optimal mix of fiscal and monetary policies requires a balanced approach between stabilising the economy and reducing inequality, as inequality influences both the efficiency of redistribution and overall demand and inflation. Using an economic model that explores the interaction of fiscal and monetary policies in an environment with heterogeneous agents (with different access to financial markets) and nominal rigidities, Bilbier et al. (2024) show that inequality can both hinder and promote economic growth, depending on how policy instruments are configured. Fiscal transfers reduce inequality by reallocating income from wealthy agents to those with limited financial resources. This boosts consumption and can stimulate aggregate demand, potentially fostering economic growth. Progressive taxes help lower inequality, but they may also generate excessive demand that must be countered via monetary policy. Regressive taxes, on the other hand, increase inequality but can encourage economic activity depending on their effect on aggregate demand.

The fact that economic growth, being important for poverty reduction through job creation and increased productivity, affects inequality through dependence on the distribution of wealth and income in society, is grounded by Halili & Gonzalez (2025). They have found that the rise in inequality caused by GDP growth can be lessened by strong institutions. This shows that economic growth alone is not sufficient for equitable redistribution — effective institutions are also essential. In particular, stricter employment protection laws and greater gender equality in education reduce the inequality-increasing effects of GDP growth. Moreover, better rule of law institutions and improved anti-corruption measures, combined with GDP growth, also contribute to lowering income inequality.

Thus, the literature identifies two main approaches to the relationship between income redistribution and economic growth. The first emphasises the potential negative effects of redistribution, where tax-transfer mechanisms may diminish incentives to work and invest, thereby hindering economic development. This approach often advocates for scaling back public expenditure. The second recognises the positive impact of redistribution, highlighting its potential to promote economic growth by reducing inequality and fostering conditions favourable to the development of human capital, which leads to increased productivity.

The link between economic growth and inequality varies depending on the level of economic development, the structure of inequality and the mechanisms influencing it. In early stages of development, inequality can promote growth through capital accumulation and investment, but in later stages, high levels of inequality tend to impede progress by causing fiscal distortions. Inequality influences economic growth through several channels, including human capital and access to financial resources. A moderate amount of income redistribution aimed at reducing inequality can positively affect economic growth, especially

by enhancing the welfare of vulnerable groups and stimulating aggregate demand. However, excessive redistribution may produce negative effects, such as diminished incentives to work and invest. Conversely, the concentration of income at the top of society can have a stimulating effect through investment, but this impact is limited and often accompanied by a deepening of inequality. Therefore, economic growth and inequality are intricately linked through interactions among social, economic and political factors.

Global economic inequality: drivers and trends

Global economic inequality manifests itself in significant regional disparities and inequality within countries. In general, the 1980—2000s were characterised by an increase in overall wealth inequality and the development of specific national

Table 6.1. **Drivers of wealth inequality in OECD countries over 1980—2000s**

Driver	Description	Cases	Impact
Liberalisation of financial markets (1980s)	Financial market reforms led to rising prices of financial assets (stocks, real estate), concentrating wealth among the rich	US, UK, OECD countries	Increased wealth concentration among the wealthy
Housing price rise (1990—2000s)	Housing became the main asset of the middle class, reducing the wealth share of the richest	US, UK	Reduced share of wealth held by the richest
Pension system changes	The shift from defined benefit to funded pension plans increased financial risk and asset inequality	US, Canada, Australia	Increased inequality in asset accumulation
Tax reforms (1980s)	Cuts in income and capital tax rates facilitated wealth accumulation by the rich	US, UK	Deepened wealth inequality
Generous state social programs	Strong pensions and social benefits reduced saving incentives; inheritance played a key role at the top	Sweden, Finland, Norway	High wealth inequality despite strong social policies; inheritance sustained the top 1% wealth
Demographic changes (ageing population)	Older age groups accumulated more wealth, impacting overall inequality	OECD countries	Increased wealth inequality is linked to age
Risky financial investments (1980—2000s)	Greater investments in stocks and bonds among the wealthy	US, UK, Netherlands	Increased wealth concentration among high-income groups

Source: compiled by the authors based on data (Davies J. B., 2012).

characteristics in its dynamics, particularly under the influence of the following drivers (Table 6.1). The liberalisation of financial markets and rise of asset prices have contributed to the concentration of wealth among the wealthiest segments of society. At the same time, government policies, including reforms of pension systems and tax regulation, have reinforced these trends in most countries. Conversely, Scandinavian social programmes have demonstrated an alternative approach, changing incentives to save and transforming the structure of inequality.

While long-term trends in wealth inequality are shaped by economic, social, and political factors, short-term changes are primarily influenced by fluctuations in asset prices. For example, a study by Garbinti et al. (2021), who analysed the dynamics of wealth inequality in France in the period 1800—2014, demonstrated significant long-term changes in the distribution of wealth (the share of wealth in different percentiles: bottom 50%, middle 40%, top 10% and 1%), savings rates,

Table 6.2. **Drivers of global wealth inequality**

Driver	Description	Cases	Impact
Access to favourable global financial conditions	Developed countries benefit from privileged access to global capital at low interest rates, allowing them to earn higher returns despite negative external financial balances. BRICS countries accumulate substantial assets but face lower returns	United States and other G7 countries; BRICS (China, India)	Deepens global financial imbalances and wealth concentration in advanced economies
Tax havens as wealth concentration centres	Small, wealthy jurisdictions with favourable tax and legal conditions attract capital, inflating per capita income	Jurisdictions with <100,000 people, many with income ≥4 of global average; Singapore as exception	Concentrates wealth among a tiny global household (0.01%), driven by inflows of capital from other countries
Wealth flight in the poorest countries	Poor countries experience capital outflows due to debt servicing, limiting wealth accumulation and investment in public services	D.R. Congo, Ghana, Sri Lanka; 16 countries spend more on debt than on education and health combined	Reinforces poverty and underinvestment in human capital; widens global wealth gaps
Significant public spending in developed countries	Developed economies allocate substantial national income to social protection and health systems	Social protection was about 13% of national income in advanced countries vs. ≤1.5% in the poorest 40%	Enables more effective wealth redistribution and reduces inequality within wealthy nations

Source: compiled by the authors based on (World Inequality Database, 2024).

average asset returns, capital gains and asset portfolio structure). In particular, the share of wealth held by the top 10% of households declined significantly during the twentieth century, from 80—90% to 50—60% in the 1980s. This decline was accompanied by an increase in the middle class share, while the share of wealth held by the bottom 50% remained consistently low (less than 10%).

Table 6.3. **Drivers and trends of global income inequality**

Driver/Trend	Description	Examples	Implications
Disparities in regional income levels	Significant differences in average income across world regions	Global average income in 2023: EUR 12,800 per capita (PPP); North America/Oceania: EUR 3,500/month vs. Sub-Saharan Africa: EUR 240/month	Persistent regional inequalities exacerbate global income disparities
Uneven long-term growth of national income	Rapid income growth in some countries, stagnation in others; inequality within countries often rises	China and India narrowed international gaps; the real global income per capita growth rate accelerated from 1.1% (1980—2000) to 2.2% (2000—2023); the impact of Covid-19 was mostly offset, except in sub-Saharan Africa and Latin America	Reduces between-country inequality but increases intra-country inequality in many cases
High intra-country income inequality	The wealthiest 10% command a substantial share of income in most regions	The richest 10% in South Africa earn 65% of the national income; in Yemen, 59.5%; the top 1% in the US earn 21% of the income	Concentration of income among top earners deepens socioeconomic divides
Overall decline in labour remuneration inequality	Wage inequality has been declining globally since the early 2000s, faster in low-income countries	Average annual decrease in wage inequality: 0.5—1.7%; up to 3.2—9.6% annually in low-income countries; slower decrease (0.3—1.3%) in upper-middle income countries	Though uneven across income groups suggests modest wage convergence, particularly among low-income workers
Persistent high levels of inequality	The highest-paid 10% receive a large share of total wages; informal and self-employed workers face higher inequality	The bottom 10% earn 0.5% of total wages, while the top 10% earn 38%. One in three workers is self-employed, and women and informal workers are more often in the lowest-paid segment	Structural inequalities persist, particularly affecting vulnerable groups

Source: compiled by the authors based on (Gomez-Carrera, Moshrif, Nievas, & Piketty, 2024), (ILO, 2024).

After the 1980s, there was a return to an increase in wealth concentration, driven by rising inequality in savings and asset returns. The peculiarity of the French context is the absence of a significant increase in labour income inequality, which contrasts with similar trends in the United States. The analysis also highlighted that wealth inequality is significant even within age groups and largely depends on the differentiation in the types and returns on assets held by different social groups. Changes in wealth inequality were significantly influenced by: (i) inequality in savings rates between different social groups (wealthier households save a much larger share of their income, while lower social groups have either zero or even negative savings rates); (ii) significant differences in asset returns: Wealthier households invest in high-yielding financial assets such as stocks, while the middle class is focused on real estate, and lower groups mostly save in the form of low-yielding deposits; (iii) the impact of economic shocks such as depressions, wars, inflation and nationalisation, which hit the upper strata of society hardest in the first half of the twentieth century. Thus, the dynamics of wealth inequality depends on economic, social, and political factors, with savings, asset returns, and economic shocks heavily influencing long-term trends in wealth concentration.

Global wealth remains concentrated in highly developed countries, which benefit from low interest rates, favourable investment conditions and fiscal tools unavailable to most low-income nations (Table 6.2). While income growth in developing countries has reduced inequality between countries, many developed countries face rising internal income inequality. In high-income countries, wage inequality decreases much more slowly than in low-income ones. Despite the overall reduction in income inequality, women and informal sector workers continue to be the most vulnerable groups (Table 6.3).

Conclusion. While economic development can initially increase inequality, subsequent growth and targeted policies can reduce it. However, modern evidence indicates that persistently high inequality often hinders sustainable growth by limiting investments in human capital, destabilising social and political systems, and weakening the effectiveness of redistribution. The findings highlight persistent disparities in wealth and income, driven by financial globalisation, demographic trends, and institutional frameworks, and require balanced policy responses to ensure that the benefits of growth are broadly distributed.

6.2. Inequality in Ukraine and its potential implications on economic growth

Income inequality has already been partially considered earlier in terms of the correlation between the Gini coefficient and social benefits, which, as expected, appeared to be significant and inversely proportional (i.e., an increase in social transfers decreases income inequality). As the review of the Ukrainian sources

demonstrated, a significant amount of social spending has traditionally been postulated as not correlating with budget revenues. Together with the dynamics of the Gini coefficient, which indicates significant income equality in the country (despite the war and permanent crisis), it creates a picture of income equality based on a significant redistribution of national wealth via social support for the detriment of investments. The specific monetary framework of such income, provided by the SSSU, indicates low average income throughout the country — the average monthly income per household (i.e., 2.1 people) of decile 10 (highest) by income level amounted to UAH 18,812.83, or USD 691.65 in 2021; for decile 1 (lowest), it was UAH 1,839.62 and USD 67.63, respectively. At the same time, the average weighted total subsistence minimum per person for this period was about UAH 2,249.75. Given that the subsistence minimum is a monthly amount per person, as of 2021, the total household salary became higher than its total subsistence minimum starting from the fifth quartile.

The distribution of income by decile group proves interesting dynamics: as of 2021 (Table 6.4), the higher the income level, the higher the share of wages included. Moreover, while before 2014, the share of wages amounted to 50—60%, starting from 2014, and] the gap in the share of wages between the richest and the poorest became closer to 30—70% (Table. 1.5). In 2021, 30% of the income of the poorest groups comes to wages, while for the richest this share amounts to 70%. This indicates a rise in income inequality, which is offset by social benefits (first of all, by pensions), the share of which in income during the first two deciles in 2021 is roughly equal to the share of wages, diminishing to 20% in the income of decile 5. The trend was similar in the previous periods, but the share of pensions in the income of all but the highest decile was over 20% before 2015, and began to decline slowly afterwards. This is reflected by the increase in minimum wages that commenced in 2014; pensions grew more slowly, which was also reflected in the income gap. At the same time, the total household income level, as already mentioned, was low, and only the households with a share of pension in their income of less than 25% had an income exceeding the subsistence level.

As of 2021, low-income families received social benefits from income decile 1 to 7, and before 2018, this component was even present in income decile 8, which confirms the statement concerning the low average household income (Table 6.4). One of the criteria for providing such assistance is a total family income that is less than the subsistence level, which means that it is possible to be in the highest 30% of the households by income and still meet this criterion. In addition, as of 2021, subsidies for housing, utilities, electricity and fuel are included in the income of all household groups, regardless of income level, though before 2014, only the representatives of income deciles 1—4 were eligible for them. Such dynamics roughly corresponds to the growth of the Gini coefficient registered by the SSSU, starting from 2015, but does not correspond to the value of the Gini in 2007—2011, as the gap between the incomes of deciles 1 and 10 in

2008, for example, was 4 times as much, and in 2015 — 5 times as much. At the same time, the level of income inequality in 2008 was higher, based on the Gini.

Particularly, the consistently low (up to 10%) was the level of income from entrepreneurial activities and self-employment over 2007—2021, as well as the presence of "income from the sale of agricultural production" in each income decile during 2007—2021. This, together with the observations above, suggests that the available statistics does not even register the middle class, which may be either due to its absence or problematic track it down.

Low income and its extreme dependence on wages should theoretically create a labour force that is willing to take on any job with above-subsistence-level wage, which is a favourable factor for economic growth. In practice, however, high-risk jobs do not attract a sufficient number of employees, even if wages are high (particularly by regional standards). Instead, the share of working pensioners and people with shadow incomes is growing. Therefore, the statistically observed relationship between income inequality and economic growth is as follows: the higher the economic growth, the higher the level of income (Fig. 6.1). The dynamics of GDP growth almost coincided with the dynamics of household income growth (these two indicators have a correlation of 0.99), while the growth rate of household income significantly outpaced the GDP growth rate in the period of 2016—2019 (the correlation between these two indicators makes up 0.71). The increase in house-

Table 6.4. **Structure of household monetary income in Ukraine, 2021, %**

Component	Total	By income decile group									
		1	2	3	4	5	6	7	8	9	10
Wages	63.5	34.9	39.7	48.6	51.1	54.5	66.7	71.8	73.1	71.9	71.3
Income from entrepreneurship and self-employment	6	5.4	2.7	2.1	4.9	6.9	3.5	3.9	5.8	9.5	8.7
Income from the sale of agricultural production	2.7	3.5	3.4	2.4	3.8	4.4	1.9	2.2	1.5	1	3.8
Property income	1.3	2.2	2.3	1.8	2.1	2	1.3	1.2	1.2	0.6	0.7
Pensions	18.4	37.5	39.2	31.4	27.1	21.3	18	15.3	12.6	11.5	10.7
Scholarships	0.3	0.7	0.5	0.5	0.2	0.2	0.3	0.4	0.2	0.1	0.1
Aid, benefits, subsidies	2.6	6	6	6.4	3.9	3.5	2.5	1.6	1.5	1.4	0.7
Financial aid from other individuals	3.4	7.3	4.9	4.6	5.6	5.2	3.5	2.5	2.6	2.3	2.1
Alimony/maintenance	0.2	0.2	0.2	0.5	0.2	0.6	0.2	0.2	0	0.1	0
Other monetary income	1.6	2.3	1.1	1.7	1.1	1.4	2.1	0.9	1.5	1.6	1.9

Source: compiled by the authors based on data (SSSU, 2021).

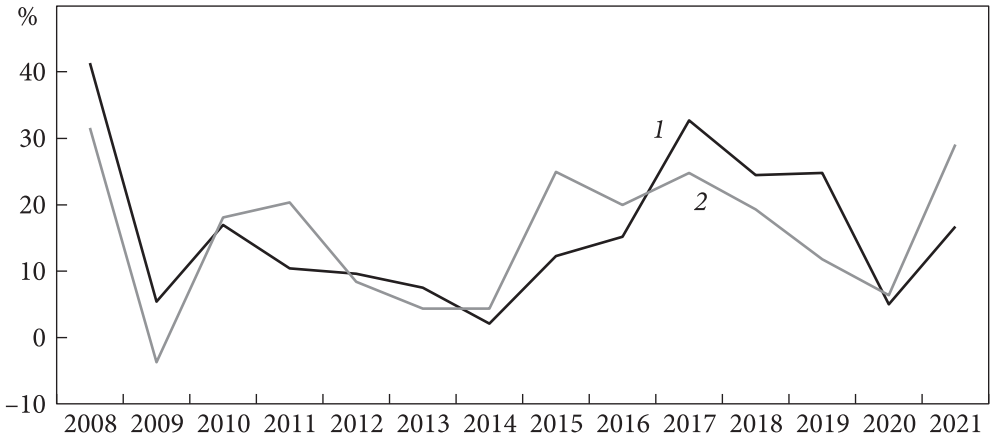

Fig. 6.1. GDP and household income growth rates in Ukraine, 2007—2021, %: *1* — household income growth rate; *2* — GDP growth rate
Source: compiled by the authors based on data (SSSU, 2021).

hold income is a reflection of the increase in the minimum wage, which was intended to bring household income closer to the steadily increasing cost of living.

Economic growth appears to be firmly associated with an increase in income inequality, while the increase in household income reduces GDP growth with a lag of one year. As a proxy for economic growth and dependent variable, the logarithm of GDP growth in Ukraine in 2009—2021 is used. This was necessitated by the scale mismatch between the GDP and the other variables in the model. The factors of the model are:

• Gini coefficient, which represents the impact of income inequality. For the model, the index calculated manually, based on the household income survey, was used because the standard one, provided by SSSU and the World Bank, had anomalies in 2007—2011, as mentioned above.

• Household income growth rate, lagged one year to represent the connection between income growth and growth in the economy as a whole. Adding lag drastically improved model quality.

• Cash's impact as a percentage of the total money supply (MO/M2 ratio) is represented by the shadow economy.

The functional form of the regression is linear, which was confirmed by Ramsey's RESET test, and it was thoroughly tested for multicollinearity, heteroskedasticity and autocorrelation, the latter being corrected using HAC robust standard errors. The resulting model explains 76.9% of the variation of the dependent variable, and adheres to all of the necessary regression assumptions. The results of the model can be presented as follows (Table 6.5).

As apparent from Table 6.5, both income inequality and household income growth rate are significant factors in economic growth, with the connection being

Table 6.5. **Dependence of economic growth on macroeconomic factors in Ukraine, 2009—2021**

Variable	Ratio	Standard error	T-statistics	P-value
Income inequality	0.262	0.046	5.670	0.0003 **
Lagged household income growth rate	−0.011	0.005	−2.340	0.0440 *
Cash as a percentage of the money supply	0.040	0.066	0.6081	0.5581

* Variable is significant within the 95% confidence interval; ** variable is significant within the 99% confidence interval.
Source: authors' calculations.

stronger for income inequality. A one-point increase in the Gini coefficient corresponds to a 26% increase in log (GDP), i.e., around 30.1% in GDP; a one-point increase in household income growth rate last year (since the variable is lagged) corresponds to a 1.16% decrease in log (GDP) that year, i.e., around 1.15% decrease in GDP. Lastly, the impact of the shadow economy is non-existent over 2009—2021.

Though these findings seem paradoxical, they correspond to the available data. An increase in income inequality corresponds with an increase in GDP because of the high percentage of people dependent on social transfers and state salaries in the available survey sample, and thus, with an increase in GDP, the increase in income is highly uneven. Those with more volatile sources of income, i.e., private sector salaries and capital, have their income increased (and decreased, in case of the economic downturn) to a greater extent, compared to those whose income is state-dependent (those living off welfare and state employees). The decrease in economic growth caused by an increase in household income the year before is due to the same reason: a relatively high percentage of people dependent on the state for their income are in the sample. In other words, the increase in household income during the crisis events was achieved by a manual increase in minimum wage, which reduced the investments and stunted further GDP growth. As for the crisis events themselves, they are not directly involved in the model, but their impact on the reduction in GDP is likely to be noticeably stronger.

Conclusion. Household income statistics indicates poverty equality in Ukraine, with the poorest groups of households requiring welfare payments (the vast majority of which are pensions) to maintain income levels approximately equal to the subsistence level. The income levels increase mainly due to the increase in wages, as income from entrepreneurship and self-employment is only auxiliary. However, the distribution and dynamics of income provided by the SSSU are at odds with observations in the large cities (Kyiv, Kharkiv, Odesa), and the level of consumption observed empirically in such cities cannot be exp-

lained empirically. Modelling the relationship between economic inequality and economic growth in Ukraine during 2009—2021 reveals that a 1-point rise in the Gini coefficient corresponds to a 30.1% increase in GDP, due to unequal income distribution across different households' segments. Conversely, a 1-point increase in household income is associated with a 1.5% decrease in GDP in the following period, reflecting both the over-representation of individuals reliant on the state in the survey and reduced state investment driven by high social spending burdens.

Conclusions

To achieve a sustainable economic growth, the complex interplay between monetary policy, economic inequality, and economic growth needs to be taken into account. Economic inequality has a dual impact on economic growth: it can be a stimulus for development if it is moderate, but excessive inequality hinders economic progress. The effective interaction of monetary and fiscal instruments can reduce inequality while maintaining labour, investment, and consumption incentives. At the global level, coordinated efforts should be undertaken to narrow disparities between developed and developing economies by facilitating fairer access to favourable financing conditions and strengthening international tax and financial transparency cooperation.

Ukraine's war-torn economy should prioritise balanced economic growth and inequality reduction via targeted redistribution policies. Emphasis should be on transparent social transfers and the reconstruction of essential public services, particularly in healthcare and education, to enhance human capital. To achieve sustainable recovery and minimise fiscal distortions, redistribution efforts must remain moderate to prevent disincentives to work and invest. Establishing special economic and investment incentives in war-affected regions can mitigate regional disparities and foster inclusive growth. Policy frameworks should draw from successful international models, such as Scandinavian social policies, adapting incentives to promote savings and investment across diverse societal groups. Improving financial access for SMEs, women, and informal sector workers is crucial to address vulnerabilities and support equitable economic recovery.

Ukraine's household income structure indicates consistently low income across the board throughout 2007—2021. Lower income deciles have up to 45% of their income provided by the state via social transfers (mainly pensions), with wages being around 30% of their income. The higher income deciles have higher percentages of wages in their income structure (up to 70%), while an increase in income from entrepreneurship and property is negligible. If calculated per person and not per household (assuming that income distribution within the household is equal), households in the first four deciles live below the currently set subsistence minimum by income. This situation is relatively new (2018 and onward)

and likely linked to the onset of the Russia's full-scale war. Also, households as high as in decile 7 still receive state benefits, prerequisites to include wages below the subsistence minimum, which is possible if income distribution within a household is not equal. All in all, as of 2025, the Ukrainian populace appears to be equal in poverty and highly dependent on social transfers, with even the highest income brackets not being entrepreneurs but high-wage workers.

Empirical analysis over 2009—2021 highlights the asymmetric relationship between growth and inequality in Ukraine: periods of GDP growth are accompanied by rising economic inequality, whereas increased inequality does not serve as a catalyst for subsequent economic growth. A decline in GDP results in a superficial reduction in measured inequality, as overall incomes decrease to similarly low levels. When a significant segment of households relies on fixed social transfers and wages collapse, income variability diminishes, leading to an apparent decrease in inequality. However, this perceived improvement in equality does not stem from enhanced economic well-being; rather, it reflects a widespread decline in living standards, with many households equally deprived of resources. These findings underscore that a reduction in inequality observed during economic downturns may primarily signify pervasive impoverishment, emphasising the need to consider qualitative aspects of income distribution alongside quantitative metrics.

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CHAPTER 7

MIDDLE CLASS & ECONOMIC INEQUALITY

Oleksandra Kurbet

Chapter 7 explores the links between economic inequality and the formation of the middle class. It demonstrates that the middle class has expanded considerably, partly due to the inclusion of the global middle class from developing countries. The Chapter discusses methods for measuring the middle class and highlights three common approaches: economic, sociological, and political. It also notes a growing trend towards using a multi-approach framework that incorporates comprehensive well-being indicators, combining objective and subjective criteria, emphasising expenditures rather than income. Relying on income as a primary measure by international institutions underscores its universality, despite limitations, making it essential to consider a variety of quantitative and qualitative indicators. The Chapter further addresses issues of gender inequality that affect women's economic opportunities and inclusion in the middle class. While Ukraine has made progress in closing educational gaps and increasing women's representation in professional fields, significant disparities in earnings, decision-making roles, and political empowerment still exist, highlighting the need for mechanisms to support women. The Chapter concludes with recommendations to foster the growth of the middle class in Ukraine through targeted support programmes, progressive taxation, state investment in education and healthcare, and reforms to improve social justice mechanisms to address economic inequality.

Introduction

The impact of economic inequality is manifested in various aspects of socio-economic life. The increasing polarisation of income and property creates a gap between the wealthy and the poor, which weakens economic mobility and risks economic stability. The deepening of economic inequality contributes to rising poverty. At the same time, one of the most noticeable effects is the decline of the middle class, which traditionally acts as a stabiliser in society, maintaining economic stability and fostering social cohesion. An important factor influencing the formation and structure of the middle class is gender inequality in the labour market. Women's limited access to quality, stable, and well-paid employment diminishes their economic independence and makes it harder to reach middle-class income levels. Therefore, addressing

gender inequality is vital for expanding the middle class as a foundation for inclusive socio-economic development. This Chapter aims to analyse the relationship between economic inequality and the formation of the middle class, focusing on approaches to measuring the middle class and assessing its size in Ukraine. It also examines the specific aspects of gender inequality that significantly impact women's economic opportunities and their inclusion in the middle class.

7.1. Middle class in Ukraine: theory and measurement approaches

Interconnections of economic inequality and middle-class formation

During the last decades of the 20th century, the middle class in many developed countries was shrinking. An analysis of a sample of eleven countries suggested that over 1980—2000, the weighted average reduction in the middle class (defined as households with 75—125% of the median income) was almost two percentage points. The decline occurred in seven countries — Sweden (–7.1%), Great Britain (–4.5%), Taiwan (–4.5%), Spain (–3.2%), USA (–2.4%), Netherlands (–1.3%), Israel (–0.7%). This reduction was characterised by mobility mainly to the lower, rather than the upper class. At the same time, significant growth occurred in Canada (+4%) and Norway (+4.9%) (Pressman, 2001, p. 12, 29). Based on the analysis of European countries' data for 2004—2014, Dendorfer and Kranzinger (2021) found that the middle class decreased in eighteen out of twenty-six countries, and the polarisation of society by income level increased. At the same time, the results of Salido and Carabaña (2020) refute the reduction of the EU-15 (the first 15 EU countries) middle class incomes. Eurostat data for 1994—2016 suggested that the middle-class income share did not change (Salido & Carabaña, 2019). Despite the shrinking middle class in many developed countries, its income did not decrease.

Modern studies state that the middle class of developed countries is shrinking (Kolot & Herasymenko, 2017). However, forecasts for the global middle class are characterised by the expected significant growth due to growth in developing countries. Thus, Ravallion (2010) pointed to significant middle-class growth in developing countries in the last decade of the 20th century. According to the World Bank's (2006) forecast, by 2030, the global middle class will include 1.2 billion people.

The impact of economic inequality on middle-class formation should also be considered through the prism of factors that affect economic inequality, particularly changes in the middle class during economic and financial crises. Thus, the negative impact of economic crises, which resulted in increased unemployment, reduced employment and wages, changes in the structure of employment and part-time work, led to a weakening of the middle class, which reduced aggregate demand, thereby deepening and prolonging the recession (Vaughan-Whitehead, 2016).

Global and local challenges related to military conflicts and political shifts negatively affect the middle class. The UNDP's report (2024) on Myanmar proves the impact of deep challenges, exacerbated by the military seizure of power in February 2021, on the deepening of poverty and the disappearance of the middle class, which has shrunk by 50% over the past three years, 76% of the country's households lives below or dangerously close to the subsistence existence, the poverty rate has almost doubled since 2017, and poverty has deepened (the poor have become even poorer). The deepening of economic inequality occurred under rising unemployment and the social policy cuts, particularly by the US government during neoliberal transformations (Thurow, 1984).

In general, the following main mechanisms through which economic inequality affects the decline of the middle class can be identified: (i) *income growth disparities* (income growth is concentrated mainly in the upper (wealthy) class, while the middle class remains at the same level); (ii) *gap in access to quality education* (lack of opportunity to invest in education limits economic mobility and income growth prospects); (iii) *high housing costs*, which outpace income growth, lead to a reduction in savings and financial difficulties; (iv) *inequality in access to financial resources* (limited access to favourable lending and financial instruments makes it difficult to invest in business, real estate, or other assets) and (v) *ineffective (or insufficient) state social policy and excessive taxation* of the middle class deepen inequality.

Global trends for the middle class formation under the influence of economic inequality are the risks of deepening economic inequality, which will naturally lead to a reduction in the middle class. At the same time, it should be considered that, on the one hand, the growth of the global middle class can become a driving force of economic growth in countries with developing economies; on the other hand, the fragility of the middle class, particularly in the society of the so-called global South, warns against overly optimistic assessments of its role and positive impact on economic growth, as Melber (2022) argued.

The formation of the middle class depends on the presence of strong institutions that ensure its formation, along with the reduction of economic inequality. Thus, post-war reconstruction programs and redistribution policies were the key factors in forming the mass middle class. Current studies indicate that income redistribution is still decisive in calculating the size of the middle class in individual European countries. The difference in the middle class share before and after redistribution is up to 30% (Eurofound, 2024). In accordance with the consideration of redistribution processes, the middle class's share in many countries is far from the established figure of 60%. In this regard, the attitude of different social classes to the redistribution of wealth is important. Baizidi (2019) found that only the lower class positively evaluates the redistribution of wealth, because its economic benefits are obvious. The middle and upper classes have a negative attitude towards the redistribution of wealth, although only the upper class does not receive benefits.

Approaches to measuring the middle class

The term middle class is complex and multifaceted, as it can be interpreted through the lens of different theoretical approaches, each offering a unique understanding of the meaning and characteristics. The main groups of approaches to defining the middle class are economic, sociological and political. According to the first, the middle class is interpreted as a group of a country's households with an average income level (within certain limits) that acts as a key characteristic. Among other important parameters are wealth, professional status and level of education. The sociological approach considers the middle class primarily as a social category. It considers criteria that determine an individual's status in society, such as the level of education, professional activity (position held), and own housing. The political approach additionally deals with the involvement of society members in public life and an active civic position, involves political factors and emphasises other dimensions of inequality, including within one class.

Despite the considerable interest in the middle class, there is no consensus in the expert community regarding its definition and identification criteria. Until the middle of the last century, criteria included social status in society and ownership of the means of production, and the middle class was considered a socio-professional category. According to experts, this was seen as an attempt to strengthen social division by identifying different groups' cultural and socio-economic characteristics (Bigot, Croutte, Muller, & Osier, 2012, p. 5).

Subsequently, the definition of the middle class as a socio-economic category whose defining indicator is income became widespread. This is reflected in English-language sources that deal with income classes (for example, Salido & Carabaña, 2019), such as *the low-income class, the middle-income class, the high-income class,* and their variations. The most common definition of the middle class is a group of people or part of the households that has a stable income sufficient to meet a wide range of material and social needs, an appropriate level of education and professional training, and plays an important role in maintaining stability in the country. Metzgar (2021) noted that the middle class often refers to the majority of people with sufficient income to buy things other than necessities.

The conventional criterion for measuring the middle class in economic research is income. For developed countries, such a model is the median household income range between the poor and the rich, which researchers define differently. Thurow (1987, p. 30) defined it at 75—125% of the median income for American society. Vaughan-Whitehead's (2016) approach is fundamentally similar and divides the 60—200% range into three subgroups of the middle class: 60—80% for the lower, 80—120% for the middle, and 120—200% for the upper. This approach is also used by the OECD (2019), suggesting three subgroups with slightly different thresholds of the ranges: 75—100%, 100—150%, and 150—200%, respectively. The main advantage of this criterion is its universality and

the availability of data for calculation. At the same time, it is more relevant for developed countries, since, on the one hand, it reflects the middle, and on the other hand, the income level within the specified range reflects the ability to provide a certain standard of living and purchase a particular set of goods. The application of this criterion for countries with a lower level of economic development is limited, since the middle may still reflect the poor stratum of the households due to the generally low level of prosperity.

A number of researchers offer alternative (adapted) approaches for developing countries (Banerjee & Duflo, 2008), or the so-called global middle class (Milanovic & Yitzhaki, 2002). Milanovic and Yitzhaki (2002, p. 172) offered to include in the global middle class all countries with a middle income between Brazil and Italy (average annual income between USD 3,470 and 8,000 at PPP per capita). They argued that this approach is convenient because the Brazilian average income threshold, about USD 10 PPP per day, is close to the official poverty line in rich countries. According to the World Bank (2006, p. 69), measuring the global middle class using this approach will include 1.2 billion people by 2030. Its representatives can buy cars (possibly on the secondary market) and many consumer durables, travel abroad, demand world-class products and international higher education standards.

To determine the income range thresholds of the middle class for developing countries, Kharas (2010, p. 12) chose the poverty lines in two developed countries with a clear definition of poverty — Portugal and Italy, as well as double the median income of the richest developed country — Luxembourg. Thus, the average daily income per person at the level of USD 10—100 in PPP excludes those who are considered rich, as well as the poorest in developed countries. Banerjee and Duflo (2008) distinguished two groups of the middle class depending on the amount of income received: USD 2—4 and USD 6—10 per day. Using the examples of China and India, Ravallion (2010, p. 4—5) argued that by US standards, the middle class in these countries is poor and offered to define the lower income limit for the middle class of these countries at the level of USD 2 in PPP 2005. This indicator is based on poverty measurements conducted by the World Bank and national governments and is the lower median poverty line (Ravallion, Chen, & Sangraula, 2008). A common approach to benchmarking income levels in developing countries is that households with similar income levels in rich countries are considered poor.

Depending on the purpose of the study, researchers also suggest expanding the definition of income by including taxes and non-cash payments, calculating income not for tax units but for households, and adjusting for the number of their members. Thus, all financial resources available to individuals will be reflected more accurately. For example, over the long term from 1979 to 2007, Burkhauser, Larrimore and Simon (2012) suggested that under the expanded interpretation of income, the resources available to the middle class increased to

a greater extent than under the traditional interpretation. Haskins (2012) also drew attention to the fact that studies of economic inequality often do not take into account health care costs. However, most people consider its value to be at least as great as the value of other types of income, as well as government benefits, including food stamps, the earned income tax credit, etc.

Instead, Darity, Addo and Smith (2020) argue that wealth, not income, should define the middle class. Their study suggested that the so-called black middle class in the United States is proportionally much smaller than the white one, and the gap between the distributions of wealth is much broader than between the distributions of income. This is a consequence of more than 150 years of discriminatory policies (Darity, Addo, & Smith, 2020, p. 3), including the policies of the post-war years, which contributed to the creation of a massive American middle class, leaving the black households outside this process. At the same time, black families own significantly fewer financial and non-financial assets, which makes them more vulnerable. Therefore, the wealth indicator is significant for analysing marginalised groups of the population.

Analysing the middle class by income criterion, Atkinson and Brandolini (2013), simultaneously questioned its use as the main criterion. They noted that identifying the middle class requires the study of the other indicators, particularly property and the position held. Similarly, Kolyada (2011, p. 9) identified the income, property, education, profession, self-identification and worldview of middle-class representatives as the most general criteria and emphasised that using only one indicator would lead to contradictory results.

A multidimensional approach was suggested by Edo et al. (2020). They used an extensive data set on the well-being, from which a unidimensional well-being index was created by projecting the data towards increasing well-being. Authors found that their approach was unique in that it addressed several shortcomings of previously proposed multidimensional approaches, which first defined the middle class by income level and then analysed this group by other indicators (Davis & Huston, 1992; Gayo, 2013) and did not provide an exhaustive classification of individuals who do not belong to the middle group (poor and rich) (Gigliarano & Mosler, 2009). Thus, this approach takes into account many factors and can be applied to all classes.

A consumption-based measurement of the middle class tends to be more reliable in terms of the limitation of official statistics. Haller et al. (2022) found that only 55% of those considered the middle class by income criterion belong to the middle class by consumption; the rest are made up of the consumer working (34%) and consumer upper (11%) classes. Schotte et al. (2018) emphasised the tendency to define the middle class primarily by the absence of vulnerability to poverty. Differentiating the middle class within a group, they distinguished its vulnerable part and stable middle. The example of South Africa suggested that the factor restraining the middle class development was the lack of jobs

and the instability of forms of work, while the factor of achieving economic stability was the access to a stable income.

For economic research purposes, defining the middle-income group is the most justified for becoming the basis for the formation of the middle class. Libanova et al. (2014) determined this group based on the analysis of natural gaps in the ranked series of 1% groups by the indicator of total equivalent expenses. It is noted that the expense indicator is more reliable for reflecting the real household's financial situation in conditions of income shadowing. Authors found positive dynamics in the household share with middle incomes in combination with a higher education attainment (6.7% — 2002, 9.8% — 2013), sufficient status in the labour market (6.2 and 9.4%, respectively), and the two specified criteria simultaneously (4.3 and 6.6%, respectively). A similar method (natural gaps) was used by Cherenko (2020) to determine the middle-income group over a long period. She found that it decreased from 16% in 2000 to 13% in 2019, with a simultaneous increase in purchasing power. She proposed to consider a group with over 200% of the median income as the basis for the formation of the Ukrainian middle class, arguing this by the insufficient coverage of wealthy segments of the households in household surveys and a shift in the distribution towards low incomes. According to the calculations, this group has decreased from 8.5 to 7.2% in almost twenty years. The problem of comparable data that would indicate the lifestyle of the middle class was noted, therefore it was proposed to use indirect indicators such as the presence of modern information and communication means and access to the Internet, ownership of durable goods (car, dishwasher, etc.), signs of leading a healthy lifestyle (going to the gym, absence of bad habits, etc.).

In 2002, 2008, 2014 and 2016, Razumkov Centre's Sociological surveys aimed to determine the subjective middle class, that is, the one determined by the surveyors' self-assessment. The proposed methodology is not limited to a subjective assessment but also contains a strong objective component. Thus, the criteria are an income higher than necessary to meet basic needs for food and everyday goods (the authors emphasised a subjective assessment of income adequacy, since the answers about the income level could be insincere or were absent); the level of education not lower than secondary special education; stable self-determination; common interests with other middle class representatives; and dominance in the immediate social environment of middle class representatives (The Middle Class in Ukraine: Perceptions and Realities, 2016). Experts emphasised limitations of the "education — work — income — status" approach, which is inherent in Western societies, particularly due to the weak correlation of education level with income level.

A similar approach was applied to the so-called medium class, which complements and deepens the interpretation of the abovementioned criteria, emphasising their importance for developing the economy and human potential. This approach suggests the following criteria: high-quality education and the predominantly creative nature of socially beneficial work (as a prerequisite for innovative development

of the economy and the socio-economic status of an individual); carrying out professional activities predominantly in accordance with the acquired specialty (contributes to the accumulation of professional experience and improving qualifications, increasing human capital); high duration of physical and creative life; low barriers to access to quality social goods source, as well as active involvement in their creation; sufficient income to meet basic needs, which is transparent in the sense of financial reporting (Economic efficiency vs. social justice: priorities of Ukraine's development at the stage of overcoming the crisis, 2019). Libanova (2003) also emphasised the last criterion, noting that an unregistered income is incompatible with belonging to the middle class, but is "a product and at the same time a prerequisite for forming a polarised society with corrupt authorities".

A combined approach to measuring the middle class using objective and subjective criteria was also proposed by Andronik (2016). Objective criteria are the level of various types of income of the population; the distribution of the households by the level of average daily equivalent total income; the structure of total aggregate expenditures; the dynamics of the number of persons who studied in educational institutions; the average wage by type of economic activity; the availability of certain durable goods in the household; and the number of economic entities with a distribution by size. Moreover, subjective criteria are a stable self-identification as a middle class, positive perception of the degree of one's adaptability to market reforms and orientation on the values of one's achievements.

So, the classic triad of income, education, and social status is familiar to most approaches. It combines with the criteria of legal income, increase in human capital, feeling of self-sufficiency and belonging, including belonging to a particular group according to various characteristics, such as some kinds of property (housing, car, durable goods), certain profession, level of education, level of savings, etc. According to surveys, the elements of self-identification as a middle class are real estate ownership, a certain average income level, relying primarily on one's strength, higher education degree, car ownership and modern household appliances (Libanova, 2003, p. 158). The disadvantage of self-identification is the feeling of being average, that is, *a person like everyone else*. Researchers note that one should not expect a representative of the middle class to meet all the criteria or selected characteristics, since the middle class can be a set of different groups. At the same time, compliance with all the criteria can be a sign of the core of the middle class.

Measuring the middle class in Ukraine

It should be noted that there are significant shortcomings in measuring the middle class in Ukraine. The use of internationally applied methods to ensure comparability of results is not always relevant, often due to the unreliability of specific indicators or the lack of data needed. The emphasis on the perception of one's level of prosperity to ensure a standard of living that corresponds to the

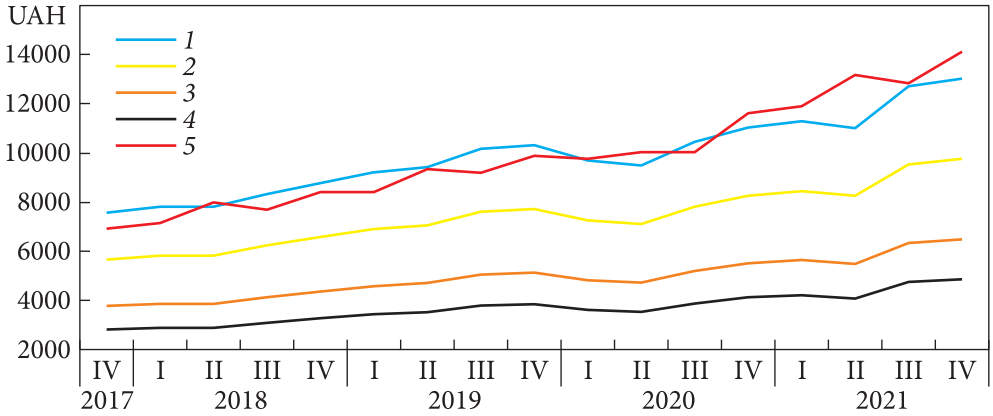

Fig. 7.1. Average monthly wage and the median thresholds of equivalised income per household member in Ukraine, 2017—2021, UAH: *1* — 200% of median; *2* — 150% of median; *3* — 100% of median; *4* — 75% of median; *5* — Average salary (PFU)
Source: compiled by the author based on (SSSU, 2021; Pension Fund of Ukraine, n.d.).

middle class is important. At the same time, self-identification carries the risks of both underestimating and overestimating the expected level of prosperity of the middle class, since, on the one hand, the middle class of a conventional Western society of welfare states serves as the standard; on the other hand, respondents may perceive the meaning of the term "middle" as "the same as others", not identifying themselves with the needy or poor population, actually referring to this category according to objective criteria. Particularly, Libanova (2003) noted that the ability to travel abroad contributed to the distortion of self-esteem, since, comparing the standard of living in developed countries with their own, Ukrainians tend to overestimate their living standards.

According to the approach that may provide the possibility of international comparisons, the middle class of Ukraine, as a household group with income at 75—200% of the median for 2018—2021, was from about 60 to over 70%. For 2019—2021, it decreased from over 67% to about 60%. The number of lower-income households decreased within the 75—200% group. In 2019, 17—20% of households received UAH 4—5 thousand; by the end of 2021, this share decreased to 1.7%. Moderate growth (within 2—3%) was observed in groups with a UAH 6—8 thousand income. An increase in the poverty line indicator and the median accompanied these changes. It should be noted that, as of the end of 2021, the middle class included households with an average per capita income of UAH 5—13 thousand. The higher class included households with an average per capita income of more than UAH 13 thousand (Fig. 7.1), i.e., less than USD 500, which is too low for this class.

The criterion of self-assessment of household financial capacity suggested that between 2021 and 2023, the percentage of households classified as a middle

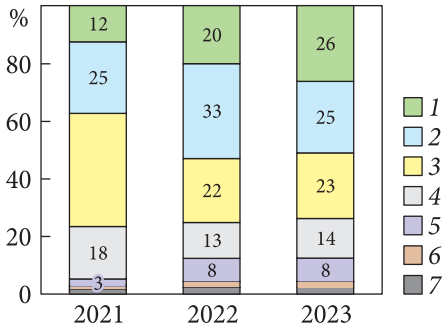

Fig. 7.2. Self-assessment of the households' financial situation in Ukraine, Q3 of 2021—2023, %: *1* — save money on food; *2* — enough for point 1, you need to save / borrow money for clothes and shoes; *3* — sufficient for point 2, you need to save / borrow to buy small equipment; *4* — sufficient for point 3, you need to save / borrow money to purchase large equipment; *5* — sufficient for point 4, you need to save / borrow to buy a car / apartment; *6* — the household can afford any purchases; *7* — hard to answer
Source: compiled by the author based on (NBU, 2023).

class, those can afford food, clothing, footwear and durable goods, increased from 3 to 8.3% (Fig. 7.2). In contrast, the share of households that needed to cut back on food expenditures grew sharply, increasing by 14% for three years.

Thus, there are three most common approaches to defining the middle class: economists emphasise its importance for economic development, sociologists see it as a key segment of households that ensures the stability of society, and political scientists see it as the basis of a democratic state. Combined approaches to defining and measuring the middle class are gaining relevance, including objective criteria of income, expenditure structure, level of education, property and subjective criteria of self-identification, orientation to the value of one's achievements and positive perception of the degree of adaptability to market reforms.

Given the complexity of defining the middle class and the limited use of the income criterion, researchers are developing methods based on a broader range of criteria. It is proposed to expand the concept of income and take into account the costs of health care and state benefits, to take as a basis the criterion of wealth, which explains the difference in the size of the middle class depending on the racial and ethnic group of the population; to measure the middle class based on consumption, which revealed significant differences in demographic composition compared to measurements based on income; to define the middle class based on the absence of vulnerability to poverty. There is a growing trend towards using multi-approach methods based on integrated well-being indicators and a set of objective and subjective criteria.

Conclusion. The deepening of inequality creates a shrinking middle class and income polarisation risks. At the same time, studies suggested that such a shrinking is accompanied to a greater extent by social mobility to the lower group, particularly in crisis periods, under the influence of rising unemployment, declining wages, and changing employment structures. Understanding the mechanisms of the im-

pact of economic inequality creates the basis for developing effective measures aimed both at overcoming economic inequality and at forming the middle class. These include progressive taxation, education and vocational training investments, expanding access to financial services, supporting small and medium-sized businesses, and strengthening social protection. The main patterns of the formation of the middle class are associated with a change in its structure and a significant quantitative growth of the global middle class, which is at the same time vulnerable and does not perform its traditional function — influencing economic growth.

The fact that multi-approaches are attracting increasing attention among specialists indicates the limitations of using only the income criterion, but it should be one using measurement criteria in a methodology built on a set of indicators — income, wealth, capital, profession and qualification. Such an approach allows for analysing the middle class as a complex phenomenon characterised by internal heterogeneity. In addition, it is important to note that several factors influence the capability of a person to join the middle class throughout one's life, starting from the kindergarten, and what one's parents have in the context of starting conditions.

7.2. Gender inequality in the labour market

Gender and economic inequality are closely related phenomena that affect each other. Gender-based disparities in access to resources, opportunities and power influence economic inequality globally and nationally. This interrelationship is most evident in the labour market through occupational segregation, wage inequality, and unequal access to leadership positions.

Women are often overrepresented in low-paid and less protected sectors and remain underrepresented in leadership and decision-making positions. This form of segregation directly contributes to income inequality and limits the redistributive potential of labour markets. Additionally, women receive lower wages for the same work, which remains a key mechanism for maintaining economic inequality. Even when education and experience are equal, women consistently earn less than men for comparable work, indicating the persistent impact of discrimination and the undervaluation of the work that women typically do. At the same time, women are entrusted with household responsibilities, raising children, and providing emotional support for the family, which is significant but unpaid work that is neither recorded in the work record book nor contributes to women's economic independence and the preservation of qualifications or careers. This also makes women more vulnerable to economic crises.

The economic consequences of gender inequality in the labour market are quite significant. As Scott (2021) has shown, women's economic empowerment goes hand in hand with high GDP per capita rates and leads to better conditions for the entire households, and, conversely, women's exclusion establishes poverty, neglects children's rights, incites violence, and wastes resources. At the

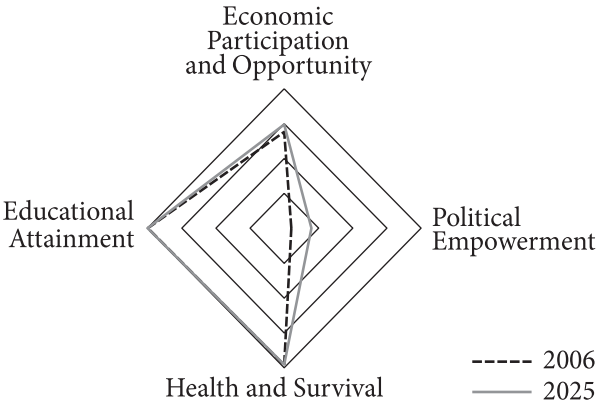

Fig. 7.3. Global gender gap index for Ukraine, 2025 compared to 2006
Source: compiled by the author based on data (WEF, 2025a).

macroeconomic level, discriminatory labour practices reduce the productivity and efficiency of the workforce, limit innovation and inhibit inclusive growth. As the WEF (2025b) says, "The collective cost of gender gaps manifests in underutilised talent, lost productivity, slower innovation and frayed social cohesion" (p. 49). According to the WEF, Ukraine demonstrated a generally positive trend in narrowing the gender gap from 2006 to 2025 (Fig. 7.3). The overall Global Gender Gap Index (GGGI) for Ukraine increased from 0.68 in 2006 to 0.73 in 2025.

Ukraine consistently performed above the global average throughout the period. While narrowing the gender gap in absolute terms, its place in the world ranking fluctuated significantly. It declined from the 48th position in 2006 to 81st in 2022, with some improvements in 2014, 2017, 2020, and steadily climbing in the ranking during 2023—2025 (Fig. 7.4). Simultaneously, the difference in GGGI for Ukraine and the world was between 0.017 and 0.042 throughout the period. Regarding GGGI subindexes for Ukraine, *Economic Participation and Opportunity* proves a modest upward trend, indicating gradual improvement, though still below full parity; *Educational Attainment* maintains a high and stable performance of gender parity during 2010—2025; *Health and Survival* remains almost flat and very close to parity, showing minimal gender disparity in health; while *Political Empowerment* remains the weakest area, though it proves gradual progress from a very low level in 2006 (0.051) to increasing in 2025 (0.198), reflecting limited but improving female representation in politics. This trend indicates the global one, where political empowerment, economic participation and opportunity remain the weakest dimensions of the gender gap. But there is a positive thing as the gap in educational attainment, health and survival is usually inherent in less developed countries.

A closer look at the Economic Participation and Opportunity subindex, which is mainly related to the labour market, reveals that its upward trend is primarily supported by consistently high gender parity among professional and technical workers, where women's representation remains near full equality (Fig. 7.5).

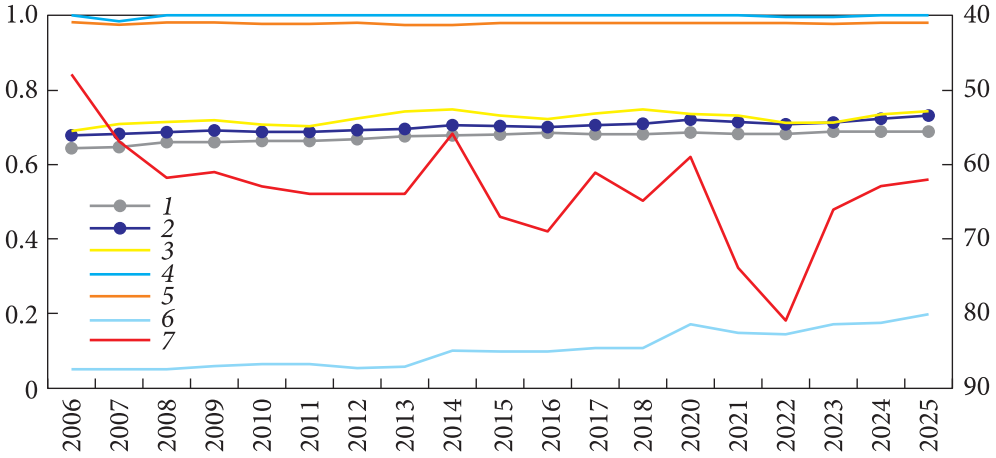

Fig. 7.4. GGGI subindexes for Ukraine and its position in the world ranking, 2006—2025. *Left scale: 1* — global gender gap index (World); *2* — global gender gap index (Ukraine); *3* — economic participation and opportunity; *4* — educational attainment; *5* — health and survival; *6* — political empowerment; *right scale: 7* — Ukraine in world ranking
Source: compiled by the author based on data (WEF, 2025a).

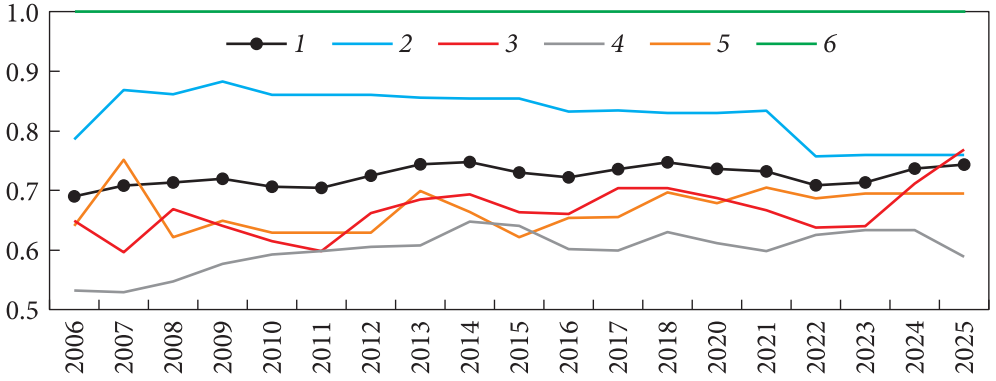

Fig. 7.5. Subindex "Economic Participation and Opportunity" and its components for Ukraine, 2006—2025*: 1* — economic participation and opportunity; *2* — labour-force participation rate; *3* — wage equality for similar work; *4* — estimated earned income; *5* — legislators, senior officials and managers; *6* — professional and technical workers
Source: compiled by the author based on data (WEF, 2025a).

The labour force participation rate remains relatively stable but below parity, ranging from 0.78 to 0.85, with a slight dip after 2021. Significant gender disparities persist in the estimated earned income: in the 0.53—0.64 range, it remains consistently low, declining in 2025. This tendency is similar to the wage equality for similar work, ranging around 0.60—0.70, showing some improvement in

2024—2025. The proportion of women among legislators, senior officials, and managers reflects continued underrepresentation in leadership and decision-making roles.

The Info Sapiens (2025) survey results confirm a positive trend in narrowing the gender gap. Particularly, due to an increase in satisfaction with equality (from 54% in 2020 to 64% in 2025), men and women contribute equally to the family budget and distribution of household responsibilities. 61% of men said that they brought the primary or significant share of income in 2022, this number is 56% in 2025. In contrast, 16% of women claimed that they brought the leading share of the income in 2025, while it was 11% in 2022. It is noticeable that the younger generation proves greater dissatisfaction with inequality, which can be explained by a clearer vision of inequality as it is, which has the potential for active involvement in overcoming the gender gap.

This positive trend is accompanied by today's reality of a country at war, in which the role of women's labour is growing. According to the State Employment Service (2025), 32.1% of surveyed enterprises planned to hire in 2025, of which 57.1% planned to hire women for conventionally male professions. Many women have faced the fact that, depending on personal circumstances, they have to sacrifice their careers or work more, without abandoning household duties and childcare due to the mobilisation of a husband, loss of a breadwinner, or a seriously injured spouse. At the same time, vulnerable groups such as single mothers, older women, and IDPs face a heightened risk of poverty, illustrating the gendered dimensions of socioeconomic vulnerability in Ukraine.

Conclusion. Ukraine has achieved a considerable success in narrowing gender gaps in educational attainment and in the representation of women in professional and technical occupations. However, these advances have not fully translated into economic equality. Persistent disparities remain in terms of earnings (women's wages were 81.4% of men's wages in 2021 (SSSU, 2023), representation in high-level decision-making and political empowerment. It requires providing mechanisms to empower women.

Conclusions

The current discussions indicate the depth of measuring the middle-class issue. At the same time, the authoritative international institutions' use of the income criterion as a basic one confirms its universality, despite the shortcomings. Therefore, when measuring the middle class based primarily on the income indicator, it is necessary to also take into account a set of quantitative and qualitative indicators that allow analysing the middle class not only as a heterogeneous phenomenon but also as a set of different middle groups of the population, which are characterised by different consumer behaviour and different degrees of vulnerability to economic fluctuations.

The formation of the middle class in Ukraine will be facilitated by policies aimed at overcoming poverty and economic inequality, as well as supporting certain categories of the population. The following areas are advisable: veteran support programs (providing benefits for education, purchasing housing, starting one's own business), creating inclusive jobs, effectively implementing a program to build the resilience of the households and supplementing their functionality in terms of informing about opportunities for professional retraining and consulting on self-employment. Measures that have proven their effectiveness in promoting the formation of the middle class in developed economies and that can be implemented in Ukraine are a progressive taxation system, state investments in education and healthcare, various forms of social insurance, and increasing government spending on development.

The level of economic inequality and the mechanisms for its reduction depend to a large extent on the institutions that influence the formation of the economic policy, the regulation of resource allocation, and the provision of social justice. The challenges in applying institutional policy measures to reduce economic inequality and form a middle class as a stable foundation of society are related both to the objective realities of a country at war and to the quality of institutions.

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CHAPTER 8

DIGITALIZATION & ECONOMIC INEQUALITY

Oleksii Shpanel-Yukhta

The rapid digital transformation of economies has made digital inequality a key factor shaping patterns of economic development and social inclusion in Ukraine. This Chapter explores the impact of expanding digital infrastructure, financial services digitalisation, and the emergence of IT clusters on the regional and sectoral economic inequality. The analysis relies on correlation-regression methods, focusing on the number of active SIM cards, fixed internet access points, capital investments in software, and sectoral wage dynamics from 2015 to 2024. The findings show that increased penetration of high-speed internet and mobile networks has reduced regional disparities in digital access, while investments in software are strongly linked to higher wages, reflecting a technology premium effect. At the same time, the growth of IT clusters in Kyiv, Lviv and Kharkiv has helped create more balanced regional income distribution by concentrating skilled employment and innovation potential. These results support the idea that expanding digital infrastructure and spreading digital skills are essential for decreasing economic inequality, as demonstrated by the alignment of technological investments with wage convergence across sectors and regions. The practical implications include recommending targeted public policies to promote digital literacy, further develop IT clusters and improve affordable broadband access, thus harnessing digitalisation as a tool for inclusive economic growth.

Introduction

In the contemporary digital era, access to the internet and mobile connectivity constitutes a fundamental prerequisite not only for participation in economic activities but also for securing basic services and engaging in public life. Under these conditions, internet and mobile access increasingly represent a basic-level need within the hierarchy of human needs and continue to grow in importance. Simultaneously, the evolving role of access to digital resources has led to a situation where individuals, households, enterprises and public institutions experience significantly unequal access to essential digital services. As a result, a new dimension of social inequality has emerged — digital inequality.

This Chapter analyses how digital transformation relates to economic inequality in Ukraine, emphasising regional and sec-

toral differences. Subchapter 8.1 explores digital inequality by considering access to digital infrastructure. Subchapter 8.2 focuses on the uneven spread of digital technologies across different sectors and their impacts on productivity, employment, and income distribution. Subchapter 8.3 evaluates how IT clusters might help narrow interregional disparities.

8.1. Digital inequality, digital infrastructure and regional inequality in Ukraine

Digital inequality: theoretical foundations

Researchers differentiate between the concepts of digital inequality and the digital divide. Among the key definitions of the digital divide, and considering the Ukrainian terminological context, the term digital exclusion seems more appropriate, as it refers to the lack of access to digital services, especially internet access as a fundamental digital service (Norris, 2001). Eurostat, for its part, conceptualises the digital divide from two main perspectives: access and usage. The digital divide describes the gap between those who have access to the internet or other digital technologies and are able to utilise online services, and those who are excluded from such services. This divide can be categorised according to criteria that reflect disparities in participation based on gender, age, education, income, social group, or geographical location (Eurostat).

With the rapid advancement of technology, more refined definitions of the digital divide have emerged. These not only consider the basic level of access to a given technology but also the quality or tier of technological access. The present study adopts this nuanced understanding of the digital divide. In this context, the term "technological level" refers, for example, to access to broadband internet instead of narrowband connections, which cannot support adequate data speeds, or to mobile internet access via 4G and higher technologies. For instance, the mere presence of 2G coverage is insufficient to meet even basic informational needs (DiMaggio & Hargittai).

Particularly, Van Dijk examines the concept of the digital divide, which he defines as a gap between individuals who have access to ICT, particularly computers and the internet, and those who do not. He emphasises that this divide is a complex and evolving phenomenon that goes beyond physical access to technology, including motivational factors, digital skills, and the diversity of ICT use. Van Dijk suggests that access should be seen as a process of "appropriation" of technology, involving several stages: motivation, physical access, the development of digital skills, and actual usage. He argues that inequality at any stage can lead to broader social and informational disparities within society. Van Dijk also examines the evolution of digital divide research, noting that since the early 2000s, scholars have shifted their focus from physical access issues to digital skills and the varied use of ICT (M. Van Dijk, 2017). In the study by A. Elena-Bucea

et al. (2020), the authors explore the impact of age, education, gender, and income on the digital divide across the 28 EU member states. Using a multidimensional approach with factor analysis, the study identifies two main components: electronic services (e-Services) and engagement with social networks (Social Networks). The results show that education level is the main factor influencing individuals' engagement with e-Services, while age has a greater effect on the use of social networks. These findings reveal the complexity of the digital divide and highlight the importance of considering various socio-demographic factors when developing policies to address digital exclusion within the EU.

At the same time, if society is viewed not only as a collection of individuals or households but also as encompassing the corporate sector, the issues of digital divide and digital inequality also emerge in the business domain. Following the rapid wave of technologization in the 21st century, there were high expectations that further digitalisation would trigger Industry 4.0. However, there is no conclusive evidence of substantial gains in productivity or overall economic efficiency to date. Meanwhile, concerns have been raised that digitalisation may become a source of social disruption, potentially leading to a more polarised economic structure. In such a scenario, benefits would be concentrated among a few "superstar" firms, while many other companies and workers could be disadvantaged.

The growing digital polarisation within the global corporate landscape — between firms that actively adopt technological innovations and those operating within relatively static IT ecosystems — also contributes to an increasing productivity divide. There is mounting concern that EU-based companies in non-digital sectors are lagging in adopting digital technologies, particularly within the service sector (Rückert & Weiss, 2020). Thus, within the corporate sector, several key dimensions of the digital divide and digital inequality can be identified:

- Enterprises providing digital services: the growing importance of IT and related industries within the service sector — and in GDP more broadly — has led to an ecosystem for generating IT innovations and creating new sub-industries within this structure.

Enterprises in other sectors: these firms either adopt or refrain from adopting IT innovations and automation, contributing to intra-sectoral technological advancement and productivity disparities.

- A distinct category involves industries for which digital solutions have not yet been developed or for which the cost of digital transformation remains prohibitively high, representing a form of intersectoral digital inequality.

Concerning the citizens, digitalisation and the resulting inequality in access are considered in this study through the following key dimensions:

1. Access to high-speed internet and next-generation mobile connectivity. These services form the foundational infrastructure for providing all other digital services and are therefore regarded as essential for digital inclusion.

2. Access to public services through remote channels. In Ukraine, the significant territorial expanse and spatial distribution of administrative service centres create challenges in ensuring equal access for residents of local communities. The digitalisation of public service delivery, combined with access to the Internet and mobile networks, has the potential to address this territorial inequality.

3. Access to financial services. Several core aspects of financial digitalisation are relevant here, including the Internet and mobile banking use, the availability and use of POS and the distribution of self-service terminals.

In this context, the digitalisation of financial services represents one of the key factors contributing to reducing economic inequality in the modern world. Through digital technologies in the financial sector, access to previously unavailable services has become possible for large segments of households, even in the most remote regions. This process enhances financial inclusion and helps to equalise opportunities across different socio-economic groups.

One of the most critical aspects of digitalisation is ensuring access to basic financial services, such as the opening and maintaining of bank accounts and/or payment cards, money transfers, credit provision, and insurance. According to data from the World Bank, more than 1.4 billion adults worldwide remain unbanked, lacking access to formal financial services (Demirguc-Kunt, Klapper, Singer, & Ansar, 2022). Digital platforms — such as mobile banking, electronic wallets and fintech applications — offer practical solutions to this issue by providing access to financial services via smartphones or other digital devices. For example, in African countries, mobile platforms like M-Pesa have revolutionised financial access for low-income populations (Jack & Suri).

A distinct dimension concerns business digitalisation and the emergence of digital enterprises. SMEs are critical economic growth drivers, particularly in developing countries. However, SMEs frequently face barriers in accessing financing through traditional banking channels. Digital crowdfunding platforms and alternative lending services are creating new opportunities for entrepreneurs. For instance, studies indicate that in several Asian countries, fintech development has contributed to SME growth by 12—20% through improved access to financial resources (Che, Wu, & Yang).

Thus, digital inequality today extends beyond basic internet access, encompassing differences in the technology quality, digital skills, and actual usage. These gaps affect individuals, particularly along age, education, and income, and also deepen divides between firms, contributing to economic polarisation. Expanding high-speed connectivity, digital public services and inclusive financial platforms in Ukraine and elsewhere is essential to reducing disparities.

Digital infrastructure and regional inequality in Ukraine

To analyse the impact of digitalisation on economic inequality, core indicators of digitalisation were selected — namely, access to and utilisation of the internet and mobile access (active SIM cards). Between 2019 and 2023, several significant changes took place in mobile communications, substantially expanding their potential for use:

- In 2020, the number of mobile network operators offering telecommunications services using a new identification card, eSIM, increased, enhancing consumers' flexibility and access.
- The number of users of machine-to-machine (M2M) communication services and IoT technologies has gradually increased, stimulating further development of IoT networks and thereby creating the potential for new subsectors within the digital economy.
- Throughout 2020, mobile operators such as PJSC "VF Ukraine," PJSC "Kyivstar" and LLC "Lifecell" continued to expand 4G network coverage across Ukraine, operating within the 1800 MHz and 2600 MHz frequency bands. Additionally, in 2020 these mobile operators obtained licenses to deploy a new radio technology — International Mobile Telecommunications (IMT) — in the 900 MHz frequency band, enabling the rollout of 4G networks in that spectrum. As a result, the coverage of 4G networks across Ukraine expanded significantly, facilitating broader access to broadband internet services. This expansion proved particularly critical during the Covid-19 pandemic and the related lockdown measures.

The main driver of growth in 2021 was forecasted to be internet access services, supported by the large-scale deployment of 4G infrastructure in the 900 MHz band, the national digitalisation strategy and the rapid expansion of digital services for the population. Overall, the extension of 4G network coverage led to a significant increase (nearly by 32%) in the number of active mobile identification cards used to access the internet (National Energy and Utilities Regulatory Commission, n.d.).

One of the key changes in the mobile communications sector amid Russia's full-scale war in Ukraine was the launch of national roaming services by Ukrainian mobile operators on March 7, 2022. This service, which remains active to this day, has proven exceptionally valuable during emergency power outages. In the most challenging months marked by disruptions in energy supply, approximately 2.2 million Ukrainians used this service daily. National roaming allows mobile devices to automatically switch between the networks of Ukrainian mobile operators, thereby maintaining access to telecommunications services.

Analysing the dynamics of mobile communication indicators in Ukraine (Table 8.1), the highest number of SIM cards per 100 inhabitants was recorded in Kyiv, reaching a peak of 204 in 2023. Similarly, the Kyiv region experienced a notable decrease, from 196 in 2021 to 181 in 2023. The data also reveal certain re-

gions where the number of active SIM cards significantly increased over the years, such as the Odesa region, where the indicator rose from 160 in 2019 to 209 in 2021. This growth may be associated with both preparations ahead of the full-scale war and the expansion of call centre operations relying on disposable SIM cards.

The impact of the full-scale war is particularly evident in regions such as the Kharkiv region, where the number of active SIM cards declined from 154 per 100 inhabitants in 2021 to 111 in 2022. The Mykolaiv region shows a similar trend, dropping from 138 in 2021 to 119 in 2022. These declines are primarily attributed to the significant outflow of younger populations, particularly women and children, who are among the most active users of mobile services, either abroad or in safer regions within Ukraine (National Commission for the state regulation of electronic communications, radio frequency spectrum and the provision of postal services).

Despite such regional disparities, most areas of Ukraine have shown a general upward trend in the number of active SIM cards per 100 inhabitants over the observed period. In 2022, a report was published on 4G network coverage across Ukrainian regions. Overall, excluding territories temporarily occupied at the time, coverage rates ranged from 88% in Chernivtsi to 100% in Kyiv, indicating that a high density of high-speed internet infrastructure is a result of prior investments and, under the conditions of the full-scale war, by 2023.

Table 8.1. **Active SIM card indicators per 100 people across Ukraine's regions, 2019—2023**

Region	Year					Region	Year				
	2019	2020	2021	2022	2023		2019	2020	2021	2022	2023
Vinnytsia	120	123	127	135	134	Kyiv City	196	199	201	180	204
Volyn	122	123	128	135	135	Mykolaiv	138	137	138	119	123
Dnipropetrovsk	142	147	150	155	153	Odesa	160	153	209	167	170
Donetsk	70	69	69			Poltava	137	135	139	145	145
Zhytomyr	125	127	128	132	131	Rivne	114	116	119	125	125
Zakarpattia	108	109	114	122	119	Sumy	120	124	130	125	121
Zaporizhzhia	138	139	143			Ternopil	103	102	107	110	108
Ivano-Frankivsk	114	115	119	122	119	Kharkiv	145	150	154	111	120
						Kherson	130	130	134		
Kyiv region	181	188	196	186	181	Khmelnytskyi	114	117	123	130	129
Kirovohrad	121	124	128	136	129	Cherkasy	131	136	137	143	141
Luhansk	74	69	64			Chernivtsi	111	111	115	123	120
Lviv	130	130	136	149	154	Chernihiv	134	141	143	142	139

Source: compiled by the author based on (National Commission for the state regulation of electronic communications, radio frequency spectrum and the provision of postal services).

On the one hand, internet access is a key component in addressing digital inequality: assessments of mobile connectivity inherently include access to mobile internet via corresponding communication standards. On the other hand, access to fixed (wired) internet is more difficult to assess at the individual level, as it can only be measured by the number of connected households.

Moreover, technological advancements in mobile communications have resulted in mobile internet speeds under the 4G/LTE standard exceeding those of fixed internet at 100 Mbps. Depending on the standard and frequency band, mobile download speeds can exceed 100 Mbps and, in some cases, reach up to 700 Mbps. Taking this into account, fixed internet access should be viewed as one of several equivalent channels for delivering digital services that are comparable in effectiveness to mobile access and ensure equal opportunities for digital participation.

At the end of 2022, Ukraine recorded 7.191 million fixed internet access points, of which 1.686 million were located in rural areas. At the same time, 6.388 million subscribers (88.8%) used high-speed wired internet with speeds of 100 Mbps or higher. Under the full-scale war conditions, ensuring internet connectivity stability became critical, particularly during power outages. As a result, capital investments in the electronic communications sector in 2023 amounted to 19 billion UAH, marking a 50% increase compared to 2022.

The number of fixed internet lines, particularly in rural areas, increased by 25%. Additionally, the share of usage of fibre-optic cable (xPON) rose to approximately 40%, partly driven by electricity supply disruptions. This shift reveals strong potential for deploying gigabit connectivity, aligning with the broader European strategy for developing a gigabit-capable digital infrastructure.

According to Table 8.2, which presents the dynamics of fixed internet access points across Ukrainian regions, Kyiv consistently demonstrates the highest level of access. In 2019, there were 78 fixed internet access points per 100 households, increasing to 86 and 84 in 2020 and 2021, respectively. By 2023, 101 households per 100 reported about having fixed internet access, which may be due a broad range of available internet service providers and the prevalence of dual (backup) contracts held by many households.

Certain regions experienced a notable increase in the number of access points following the onset of the full-scale war: the Poltava region experienced growth due to large-scale migration from the Kharkiv region; the Lviv and Ivano-Frankivsk regions benefited from favourable conditions for rapid network expansion from the western regions. In contrast, a decline in fixed internet access per 100 households was observed in Cherkasy and Mykolaiv regions, partly due to a shift toward wireless communication technologies (National Commission for the state regulation of electronic communications, radio frequency spectrum and the provision of postal services).

Nationwide, the average GRP per capita rose from UAH 94,633 in 2019 to UAH 131,734 in 2021, representing a growth of 39.2% (Table 8.3). Kyiv remains the

Table 8.2. **Households with access to fixed Internet per 100 households across Ukraine's regions, 2019—2023**

Region	Year				Region	Year			
	2019	2020	2021	2023		2019	2020	2021	2023
Vinnytsia	38	43	48	55	Mykolaiv	42	46	65	50
Volyn	51	54	65	65	Odesa	61	71	68	63
Dnipropetrovsk	48	51	50	60	Poltava	36	43	49	58
Donetsk	31	38	36		Rivne	48	56	50	65
Zhytomyr	32	41	46	56	Sumy	47	51	50	57
Zakarpattia	35	37	48	46	Ternopil	47	53	56	60
Zaporizhzhia	53	58	47		Kharkiv	39	41	44	47
Ivano-Frankivsk	43	53	53	66	Kherson	45	54	65	
Kyiv region	69	76	76	101	Khmelnytskyi	47	52	56	62
Kirovohrad	30	33	36	44	Cherkasy	33	41	37	34
Luhansk	26	32	36		Chernivtsi	32	29	37	37
Lviv	54	64	60	77	Chernihiv	30	38	65	47
Kyiv City	78	86	84	92					

Source: compiled by the author based on (National Commission for the state regulation of electronic communications, radio frequency spectrum and the provision of postal services).

Table 8.3. **Gross regional income per capita in Ukraine, UAH, 2019—2022**

Region	Year			Region	Year		
	2019	2020	2021		2019	2020	2021
Vinnytsia	83.133	88.380	114.218	Mykolaiv	82.121	86.750	112.864
Volyn	73.192	75.193	90.331	Odesa	82.879	92.823	115.129
Dnipropetrovsk	122.298	126.209	186.697	Poltava	134.383	136.608	195.825
Donetsk	49.385	50.124	69.446	Rivne	58.318	62.485	77.599
Zhytomyr	70.225	76.017	95.948	Sumy	70.550	75.815	100.760
Zakarpattia	48.853	49.538	60.632	Ternopil	54.821	60.565	79.412
Zaporizhzhia	91.452	99.738	138.521	Kharkiv	92.835	97.428	122.227
Ivano-Frankivsk	63.237	66.245	88.227	Kherson	59.972	66.973	87.378
Kyiv region	123.216	135.817	162.696	Khmelnytskyi	65.893	77.153	96.964
Kirovohrad	77.788	81.166	109.183	Cherkasy	86.279	91.817	112.145
Luhansk	18.793	20.297	24.684	Chernivtsi	46.135	50.110	61.088
Lviv	85.177	94.317	119.049	Chernihiv	78.098	85.435	117.225
Kyiv City	320.898	342.247	431.616	Ukraine	94.633	101.138	131.734

Source: compiled based on data from (SSSU, 2021).

undisputed leader, with GRP per capita increasing from UAH 320,898 in 2019 to UAH 431,616 in 2021, reflecting an increase of 34.5%. Among the regions, the highest values in 2021 were recorded in the Dnipropetrovsk region (UAH 186,697), the Poltava region (UAH 195,825) and the Kyiv region (UAH 162,696). In contrast, the Luhansk region demonstrated the lowest GRP per capita (UAH 24,684 in 2021), primarily due to military activities within the territory. The most dynamic growth rates over 2019—2021 were observed in the Dnipropetrovsk region, which recorded an increase of 52.6%, followed by the Poltava region with 45.7%, and the Donetsk region with 40.7%. Despite challenging external conditions, these data indicate positive economic dynamics in most Ukrainian regions.

Hence, as for direct income-digital correlation: higher digital access directly correlates with higher disposable income across Ukrainian regions. Regional inequality: significant disparities exist between regions, with urban areas (particularly Kyiv) having much better digital access than rural regions. Mobile vs. Fixed Access: mobile internet access is more evenly distributed than fixed internet, suggesting it may be more important for reducing digital inequality. Economic development link: regions with better digital infrastructure tend to have higher economic indicators and income levels.

Conclusion. Digital financial services, in particular, can play a transformative role in promoting economic inclusion and equal opportunities if supported by coordinated policies and investment. Over 2019—2023, Ukraine experienced rapid mobile and fixed internet infrastructure advances, which became particularly critical during the Covid-19 pandemic and the full-scale war. Expanding 4G networks, introducing eSIM and national roaming, and increasing the use of IoT technologies significantly improved digital access and resilience. Despite regional disparities, particularly in conflict-affected areas, most regions have shown a steady increase in active SIM cards and fixed internet connections. Notably, investments in high-speed and fibre-optic infrastructure accelerated, supporting both the continuity of services during emergencies and the long-term goal of gigabit connectivity. These developments emphasise digitalisation's vital role in maintaining economic activity and reducing inequalities in access, even during severe crises. GDP per capita analysis highlights variability across regions and indicates a strong link between digital infrastructure and income distribution due to income inequality. Therefore, improving digital access could directly influence income levels in the Ukrainian regions, with mobile internet potentially being more effective for reaching underserved populations than fixed broadband infrastructure.

8.2. Sectoral economic inequality in Ukraine: the transformative role of digitalisation

Trends in the digitalisation of economic sectors are among the most challenging to assess, primarily because digitalisation and digital components are not traditionally considered direct factors of production. However, they are undeniably part of the broader category of capital and are thus reflected in capital investments. Although the term digitalisation is increasingly used, what is effectively taking place is a rise in the capital intensity of production, driven by the growing role of intangible capital. Given this, a seemingly straightforward approach to assessing digitalisation would involve evaluating the role and dynamics of intangible capital in production. Nevertheless, distinct conditions shape the current software market, and the digitalisation of production processes may occur through several pathways:

• Development, procurement, and adaptation of software or integrated IT systems customised for a specific enterprise.

• Outsourcing complex software management tasks. In such cases, intangible assets on the balance sheet do not increase; instead, operational expenditures rise. However, the integrated nature of such solutions often leads to increased product value and company valuation.

• Adoption of Software-as-a-Service (SaaS) solutions — sector-specific or general-purpose. Under this model, widely used software (e.g., Windows, MS Office, Power BI, AWS) is accessed through paid subscriptions, making it difficult to trace its role in digitalisation. These costs are often spread across operational and administrative categories, complicating measurement.

Under these conditions, the only viable method to statistically assess the impact of digitalisation on enterprise performance — and, by extension, on sectoral economic inequality — is the analysis of capital investments in software. Other assessment approaches, such as estimating vendor revenues in specific software markets or conducting sample-based surveys, are either indirect or limited in scope (Table 8.4).

Table 8.4. **Matrix of issues in assessing digitalisation's impact on economic sectors**

Impact type / Software type	Development / Purchase and adaptation of software to the enterprise	Outsourcing comprehensive digitalisation tasks	SaaS solutions
Impact on company value	+	+	–
Impact on intangible assets	+	–	–
Market positioning	+	–	–
Possibility to assess the impact of digitalisation	+	+/– (if public)	–

Source: compiled by the author.

Accordingly, the increasing share of expenditures directed towards software investment can be analysed as a distinct factor contributing to income disparities. Since investment activity is highly sector-specific, it is appropriate to analyse it based on sectoral distribution. The available data from the SSSU on capital investments (based on enterprise balance sheet data) reveal significant fluctuations in capital investments across different sectors of Ukraine during 2019—2024, with notable patterns emerging in investments in intangible assets and software. Overall capital investments demonstrated volatility, declining in 2020 and 2022 primarily due to the impact of Covid-19 and the full-scale war. However, a recovery trend emerged in 2023—2024. Investments in intangible assets increased from 3.8% of total investments in 2019 to 5.9% in 2024. Software investment steadily expanded, rising from 1.6% of total investments in 2019 to 3.6% in 2024. Investment patterns varied significantly across economy sectors in 2019—2024:

- The IT sector remained the primary driver of software investment: 15—26% of total capital investments were permanently allocated to software; software investments grew by 173% in 2023 and 141% in 2024 year-on-year.
- The financial and insurance sector emerged as the second most intensive adopter. It allocated 25—50% of total investments annually to software, demonstrated consistent investment growth even during periods of crisis, and maintained a high focus on software, with 91—97% of intangible asset investments directed towards software.
- While the manufacturing (processing industry) industry leads in absolute investment volumes, it allocates only 1—3% of total investments to software, though this share is trending upwards.

The persistent rise in the proportion of software investment observed across almost all sectors is clear evidence of a broad-based digital transformation underway in the Ukrainian economy. The information/telecommunication and financial sectors sustained software investment even during economic downturns, underscoring their strategic orientation and technological maturity. Most sectors demonstrated strong rebound dynamics in 2023—2024 following the 2022 contraction. Traditional economy sectors such as agriculture and manufacturing still allocate relatively small investment shares to software, but their rapid growth rates point to ongoing technological catch-up processes.

The income distribution across economic sectors constitutes one of the fundamental determinants of economic inequality. The conventional comparison of average wage levels between sectors increasingly fails to reflect the actual state of affairs, although it still provides a basis for substantiating the sectoral foundations of inequality. On the one hand, the average wage level by sector makes it possible to identify the most profitable areas of economic activity. On the other hand, under conditions of the digitalisation of economic relations, the growing complexity of financial transactions and the increasing expenditures on administrative personnel, the sectoral structure of costs is increasingly distorted.

The average annual growth rate of nominal wages over the ten years 2015—2024 amounted to 17.7% (Appendix 1). Over the same period, the average annual consumer price index reached 13.67%. Consequently, real wages increased on average by 3.6% per year over the past decade. According to various estimates, the average annual growth rate of the physical volume of GDP in the period from 2014 to 2021 ranged between 1% and 2% (including the impact of the temporary occupation of the Autonomous Republic of Crimea and certain territories of Donbas) (SSSU, 2023). This indicates that wage dynamics significantly outpaced the rate of real economic growth. On the one hand, this trend can be explained by the relatively low level of remuneration observed at the beginning of the analysed period. On the other hand, digitalisation and automation have freed up resources that could be directed towards higher remuneration of employees, thereby driving the observed acceleration of income growth.

At the end of 2024 (Appendix 1), the highest wages were in the information technology sector (exceeding UAH 52,500 per month), air transport (UAH 43,900) and the financial and insurance sector (UAH 41,300). In contrast, the lowest average wages were observed in the areas of library, archive, museum and other cultural institution activities (UAH 13,100) and creative, arts and entertainment activities (UAH 13,100), as well as education (UAH 14,500). The level of funding for education and culture remains critically low, even though these sectors supply human resources for other branches of the national economy. The reasons for this situation are the absence of effective mechanisms for the "commercialisation" of educational activities and the lack of clear linkages between potential sectoral revenues, the costs of training personnel and the remuneration of educators.

Over 2015—2024 (Appendix 1), there was a substantial reduction in the gap between wages in the highest-paid and lowest-paid sectors. For example, in 2015, the ratio between the average wage in air transport and that in postal and courier activities stood at 8.47, whereas by the end of 2024, this ratio for the pair information and telecommunications versus library activities had decreased to 3.99. This reflects transformations in the structure of income distribution and a marked narrowing of the gap between the highest- and lowest-paid sectors. Although the relative gap has substantially decreased, in absolute terms it increased from UAH 16,000 to UAH 39,000, which is only roughly comparable when expressed in US dollars.

The highest average annual growth rates (exceeding 22%) were observed in two sectors: postal and courier delivery, as well as information and telecommunications. One of the main drivers of wage growth in the IT sector was the significant expansion of IT outsourcing services during the specified period. Postal services experienced growth due to a substantial redistribution of the market in favour of private companies. The lowest growth rates were recorded in the aviation sector. Two critical factors — Covid-19 and the full-scale war — caused considerable losses

to the industry and, consequently, hindered the aviation sector's previously leading positions in remuneration levels. One of the significant challenges in this context is the potential outflow of skilled personnel, since the aviation industry requires, on average, one of the most extended training periods for its workforce.

Over 2010—2024 (Appendix 1), the following sectoral trends were observed:

- Impact of Covid-19. The average wage in air transport decreased from UAH 27 300 in 2019 to UAH 21 685 in 2020 (a decline of 20.6%), representing the most significant drop among all economy sectors, as air traffic was severely restricted for most of the year.
- Stagnation in education (2022—2023). Wages in the education sector increased by only 3.7%, rising from UAH 11 999 to UAH 12 439 lowest growth rate across all sectors and substantially below the inflation rate over the same period.
- The postal and courier sector demonstrated one of the highest increases (639% over ten years), reflecting the boom in e-commerce and delivery services, particularly during the pandemic and the war. During the analysed period, two key transformations occurred: the role of private postal operators (Nova Poshta, Meest Delivery) expanded significantly, and, consequently, substantial reforms in remuneration practices were implemented at the state-owned enterprise Ukrposhta.
- Despite the war and the loss of part of the territory, the agricultural sector demonstrated stable wage growth, underscoring its strategic importance for the Ukrainian economy.
- Deviation in construction sector wages in 2022. Average wages in construction fell to UAH 9,781 in 2022, noticeably below the 2021 level (UAH 11,289). This decline was anomalous against the consistently rising wages in other sectors during the same period. It was likely associated with the negative consequences of the war, the economic crisis, and a significant decline in construction activity following the onset of the full-scale war in Ukraine in 2022.

Analysing the dynamics of sectoral employment (Appendix 2), the following trends in the evolution of hours worked across sectors in Ukraine during 2015—2023 are: (i) the total number of hours worked increased from 9.4 billion hours in 2015 to a peak of 10.5 billion hours in 2019, followed by a sharp decline to 8.1 billion hours in 2022—2023, which is attributable to the full-scale war and the partial occupation of territories; (ii) manufacturing has remained the largest sector by total hours worked; however, its share declined from 25.1% in 2015 to 19.7% in 2023; (iii) the healthcare and social assistance sector demonstrated the most pronounced growth — from 1.4% in 2015—2017 to 12.6% in 2023; a particularly sharp increase occurred between 2017 (1.4%) and 2019 (8.6%), driven by the Covid-19 pandemic and healthcare system reform; (iv) wholesale and retail trade exhibited steady growth in its share, rising from 16.2% to 18.6%, thus becoming the second-largest sector by total hours worked; (v) agriculture displayed a gradual decline in its share from 10.2% to 8.6%; and (vi) the mining industry recorded the most consistent decline in its share, decreasing from 4.6%

to 2.9%, which is linked to the occupation of regions that had previously been leaders in the development of extractive industries.

Analysis of hourly labour costs across Ukrainian economic sectors (2015—2023, excluding the self-employed) reveals the following trends (Appendix 3):

- The average cost of one hour of labour in the economy increased from UAH 43.99 in 2015 to UAH 153.49 in 2023, representing a 3.5-fold increase. Importantly, this growth was lower than the increase in average wages over the same period (a factor of 4.17). Thus, real labour costs per hour have been rising more slowly than average wages in the country. This trend can be explained by the increase in the minimum wage over the same period, which compelled enterprises to raise compensation for unskilled labour and to adjust minimum payments at enterprises that previously applied wage evasion schemes, thereby leaving fewer resources for wage increases proportionate to productivity.
- An unstable growth trend was observed. The most rapid increase occurred between 2017 and 2018, when the average cost per hour rose by 58.7% (from UAH 48.81 to UAH 77.46). After 2018, growth rates somewhat slowed but remained stable within 10—20% annually.
- The financial and insurance sector recorded the highest hourly labour costs. In 2023, the average hourly wage reached UAH 739.05, which is 4.8 times higher than the economy-wide average.
- Information and telecommunications ranked second (UAH 299.08 per hour in 2023); however, over 2015—2023, this sector demonstrated the highest growth rate. Labour costs increased by a factor of 5.2, corresponding to an average annual growth rate of 20%.
- The healthcare sector suggested a significant acceleration in labour cost growth after 2019, likely driven by healthcare reform and the Covid-19 pandemic. Overall, the increase during the period amounted to 4.4 times (from UAH 28.86 to UAH 126.46 per hour).
- The construction sector demonstrated the lowest growth rates of labour costs, with a decline observed in 2022.

The distribution of the share of investments in software and labour costs across sectors of the Ukrainian economy in 2023 reflects the structural characteristics of the economy as well as the level of digital transformation within individual sectors (Fig. 8.1). A significant proportion of investments in software is observed in industries where digital technologies constitute a key factor in value creation, in particular in financial and insurance activities (33.0%) and information and telecommunications (26.4%). The high level of labour costs in these sectors (UAH 739.05/hour and UAH 299.08/hour, respectively) indicates the high qualification of personnel, as well as competition for skilled professionals in the labour market. In these sectors, software serves not only as a tool for automation but also as the foundation of the business model, which determines the prioritisation of investments in digital solutions.

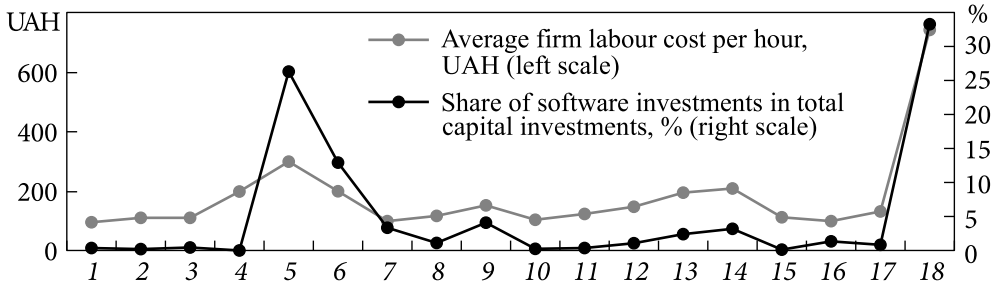

Fig. 8.1. Average firm labour cost per hour and share of software investments in capital investment, Ukraine, 2023: *1* — construction; *2* — water supply; *3* — administrative service; *4* — mining and quarrying; *5* — inform. and communications; *6* — arts, sports and recreation; *7* — provision of other services; *8* — real estate activities; *9* — wholesale and retail trade; *10* — education; *11* — healthcare and social; *12* — manufacturing; *13* — electricity, gas and air conditioning; *14* — professional, scientific activities; *15* — agriculture, forestry and fishing; *16* — accommodation service activities; *17* — transportation postal and courier; *18* — financial and insurance activities
Source: compiled based on data (SSSU, 2023; SSSU, 2024).

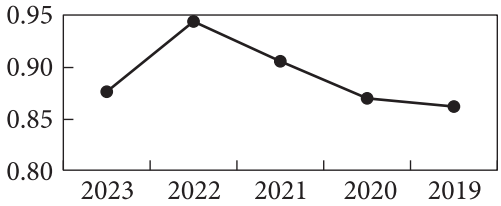

Fig. 8.2. Correlation coefficient between average firm labour cost per hour and share of software investments in capital by sectors, Ukraine, 2019—2023
Source: compiled based on data (SSSU, 2024; SSSU, 2023).

Conversely, in traditional sectors such as construction, agriculture, water supply, and education, the share of investments in software remains low (0.2—0.4%), while labour costs are moderate or low. This can be attributed to their lesser dependence on digital technologies, the predominance of manual labour, or the reliance on standard technological processes where software is not a critical production element. This structure highlights the duality of the Ukrainian economy between digitally intensive and traditional sectors. It is also worth noting sectors with intermediate indicators, for example, professional, scientific and technical activities (3.3% of investments in software, UAH 210.67/hour), where digitalisation is gradually advancing but has not yet reached the level observed in IT or finance.

The dynamics of the correlation between average firm labour cost per hour and share of software investments in capital by sectors (Fig. 8.2) demonstrates a stable positive link between labour remuneration and the share of investments in software over the period 2019—2023, with correlation coefficients ranging from 0.8619 to 0.9438. The peak correlation value was observed in 2022 (0.9438), indicating the highest synchronisation between technological investments and wage levels, as well as the necessity for maximum virtualisation of processes under the

conditions of the full-scale war. The high correlation coefficients (>0.85) confirm the hypothesis of a technology premium: sectors with higher software investments consistently exhibit higher levels of remuneration due to increased productivity as a result of automation, growth of value added in technology-intensive processes, and demand for qualified labour capable of operating complex systems.

Conclusion. The evidence proves that digitalisation is increasingly reshaping Ukraine's economic structure and patterns of income distribution. While digital investments — particularly in software — remain concentrated in information technology and financial services, traditional sectors such as agriculture, construction, and education lag behind both in digital adoption and wage growth. The persistently high correlation between software investment and labour costs confirms the emergence of a technology premium: sectors prioritising digital tools experience higher productivity and command more qualified and better-remunerated workforces.

At the same time, structural duality persists. Digitally intensive industries drive modernisation and value creation, while large parts of the economy remain dependent on manual labour and conventional practices. This divide underscores the need for targeted policies to foster digital transformation across all sectors, reduce skill gaps, and ensure that the benefits of technological progress translate into broader economic inclusion. The trends observed during crises, including Covid-19 and the full-scale war, demonstrate that digitalisation is not merely a competitive advantage but a critical factor for resilience and continuity of economic activity.

8.3. Role of IT clusters in enhancing regional income distribution

Digital companies can act as drivers of economic development not only for entire countries but also for individual regions. Analysing the experience of Ukraine, one can observe an increase in the share of ICT enterprises from 2.15% in 2017 to 2.38% in 2021, i.e., during the period prior to the full-scale war. This growth was also accompanied by an overall rise in economic activity: the total number of active enterprises increased by 9.1%. Following the onset of the full-scale war, both economic activity and the number of active ICT enterprises declined. Focusing on individual regions reveals certain differences in the distribution of active ICT companies. For example, Kyiv consistently exhibited the highest percentage of active ICT enterprises compared to other regions, reaching a peak of 5.78% in 2021, with a slight decline to 5.46% in 2023.

In general, three key areas of ICT enterprise concentration can be identified in Ukraine: the city of Kyiv, the Kharkiv region and the Lviv region. The main factors underlying this distribution include: the concentration of an educated workforce, the concentration of higher education institutions, and the concentration of IT courses, including offline training programmes. Other regions maintained

shares of ICT enterprises within the 1—2% range over 2018—2023, and were relatively evenly distributed across the country's territory. These data fully correlate with the ranking of Ukraine's IT clusters, in which the Kyiv, Lviv and Kharkiv clusters are identified as the largest and most active (Ucluster, 2024). One of the key areas of activity involves supporting education, namely, developing IT talent for enterprises within the respective region. Over 2014—2024, the Lviv IT Cluster and companies from the community have launched 19 new IT programmes, enrolling more than 4,500 students. Member companies can collaborate to participate in educational projects and establish new bachelor's and master's degree programmes. (Lviv IT Cluster, n.d.). Regarding the activities of the Kharkiv IT Cluster, in addition to promoting and updating educational programmes, it has been assisting — and continues to assist — in relocating enterprises under the conditions of the full-scale war. While over 2014—2022 the cluster facilitated the relocation of IT companies from Donetsk and Luhansk regions to Kharkiv, it now coordinates the operations of enterprises across the entire territory of Ukraine (Kharkiv IT Cluster Projects, n.d.). The cluster-based organisation of activities has demonstrated its effectiveness, ranging from one of the world's most renowned digital clusters (Silicon Valley) to the widespread adoption of this approach across the European Union.

The presence of clusters in regions correlates with stronger innovation behaviour, higher economic productivity, and improved employment indicators. This evidence supports the rationale behind cluster policies, which enhance firm-level innovation and competitiveness and contribute to greater economic resilience. More than 80% of cluster organisations in the EU-27 support companies in the digital transition, and over 60% assist in the green transition, underscoring the transversal nature of greening and digitalisation across all sectors and industrial ecosystems. This is reflected in the service cluster organisations provide, their collaborative interests, and the priority domains and technological fields in which they operate. A new typology of regions, based on their specialisation in industrial ecosystems, further confirms the important role of cluster organisations in driving digital transformation (European Cluster Collaboration Platform, 2021). Since 2021, the SSSU has published a more detailed classification of enterprises by primary type of activity, enabling a separate analysis specifically of IT companies (whose main activities are registered under categories 62 and 63 — Computer Programming, Consultancy and Related Activities, and Information Service Activities). The number of active IT companies in Ukraine has decreased by nearly 1,000 enterprises since the beginning of the full-scale war. Kyiv, Lviv and Kharkiv regions have maintained leading positions in IT companies. At the same time, a clear relocation trend is observed: over the past three years, Zakarpattia, Volyn and Lviv regions have demonstrated not only an increase in the share of IT companies within the ICT sector but also growth in the absolute number of registered companies.

Given that IT company operations are typically focused on the availability of skilled personnel and access to predominantly cloud-based systems, the physical relocation of an IT enterprise mainly entails relocating employees rather than re-registering the company in a different region. Nonetheless, western regions have "capitalised" on the situation by actively seeking to attract IT companies to their territories. With this objective, the Zakarpattia IT Cluster was established in 2022 and underwent active development throughout 2022—2023 (IT Cluster Transcarpathia, n.d.). In addition to other focus areas, the cluster has concentrated on engaging the maximum possible number of sole proprietors (FOPs) operating in the IT sector in its activities. Among companies providing ICT services, an increase in the share of IT companies has been observed, confirming the broader trend towards IT-driven transformation across economic sectors.

Despite numerous benefits, the digitalisation of financial services faces challenges such as the digital divide between urban and rural areas, low digital literacy levels, and cybersecurity threats. Tackling these problems effectively requires coordinated efforts from governments, the private sector and international organisations. Investing in education, infrastructure, and regulatory frameworks can significantly reduce the negative impacts of these issues.

Conclusion. Ukraine's experience proves that digital companies play an increasingly important role as regional and national economic development drivers, particularly in the IT sector. Despite setbacks from the full-scale war, leading clusters in Kyiv, Lviv and Kharkiv have remained centres of innovation, education, and resilience. The rise of new clusters in western regions further highlights the sector's adaptability and potential for regional revitalisation. Cluster-based approaches have proven effective in strengthening innovation, supporting the relocation of firms and enhancing competitiveness. However, persistent challenges — such as regional disparities in digital skills, infrastructure gaps, and cybersecurity risks — underline the need for coordinated policies and sustained investment in digital capacity-building to ensure inclusive growth and maximise the benefits of digital transformation across all regions.

Conclusions

The digitalisation of financial services has significant potential to reduce economic inequality by expanding access to financial instruments for a broader household segment and fostering entrepreneurship development. However, to realise this potential, addressing existing challenges and ensuring equitable and secure access to digital financial technologies for all household groups is essential. The joint efforts of the state, the private sector and civil society are key to successfully implementing digitalisation in the financial sphere.

It has been evaluated that Ukraine has made substantial progress in developing digital infrastructure in recent years. The expansion of 4G network coverage,

the introduction of eSIM cards and the growth of IoT and mobile communications services have improved access to broadband internet, particularly during the Covid-19 pandemic and Russia's full-scale war. At the same time, the dynamics of active SIM cards and fixed internet access points demonstrates regional disparities. Quantitative analysis shows that access to the internet, mobile communications and the use of digital services have a positive impact on household income levels. Notably, the influence of mobile communications has increased significantly for countries and regions with higher income levels compared to those with lower income. Despite positive trends, uneven access to digital technologies across regions remains one of the key obstacles requiring strategic investments and government programmes to overcome the digital divide and promote economic equality. The distribution of investments in software and expenditures on labour costs reflects the degree of a sector's digital maturity, its dependence on intellectual capital and innovation, and the structure of demand for highly qualified labour. Overall, the observed correlation between the share of software investments in capital expenditures and the cost of one hour of labour supports the conclusion that, within the structure of the Ukrainian economy, investment in software is a characteristic feature of sectors with high human capital value, and this relationship has persisted in recent years.

To address digital inequality, it is necessary to: implement regional digital access and digital education programmes, taking into account the specific characteristics of each region; expand opportunities for using communication spectrum for mobile internet; increase the number of educational programmes to foster digital inclusion for all segments of the population; stimulate the digitalisation of individual sectors of the economy; enhance the level of digital protection for the population. To realise the identified potential, it is essential to introduce structural reforms based on productivity and technological change in the wage system. This will enable the creation of mechanisms that align wages with the rising cost of labour, while simultaneously stimulating the modernisation of both high-paying and traditionally underdeveloped sectors. Fiscal incentives should be created for critical sectors with low wages levels. Expanding opportunities for innovative technologies will help increase the competitiveness of sectors that have traditionally demonstrated low remuneration levels, thereby contributing to a more balanced income distribution.

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Appendix 1. **Average wages by economic sector, Ukraine, 2010—2023**

Type of Activity	2010	2011	2012	2013	2014
Total	2.250	2.648	3.041	3.282	3.480
Agriculture, forestry and fishing	1.467	1.852	2.094	2.344	2.556
of which agriculture	1.422	1.786	2.024	2.269	2.476
Industry	2.578	3.119	3.497	3.774	3.988
Construction	1.777	2.294	2.543	2.727	2.860
Wholesale and retail trade; repair of motor vehicles and motorcycles	1.898	2.371	2.739	3.049	3.439
Transportation warehousing postal and courier activities	2.648	3.061	3.405	3.582	3.768
land and pipeline transport	2.357	2.706	2.977	3.181	3.541
water transport	2.781	3.058	2.908	3.340	3.622
air transport	6.947	8.917	9.996	10.642	11.967
warehousing and support activities for transportation	2.976	3.427	3.848	4.040	4.231
postal and courier activities	1.521	1.693	1.845	1.917	1.934
Accommodation and food service activities	1.424	1.750	2.020	2.195	2.261
Information and telecommunications	3.185	3.705	4.360	4.659	5.176
Financial and insurance activities	4.695	5.433	6.077	6.326	7.020
Real estate activities	1.864	2.184	2.384	2.786	3.090
Professional scientific and technical activities	2.914	3.575	4.287	4.505	5.290
Administrative and support service activities	1.826	2.162	2.298	2.546	2.601
Public administration and defence; compulsory social security	2.735	3.049	3.432	3.719	3.817
Education	1.884	2.077	2.532	2.696	2.745
Human health and social work activities	1.616	1.762	2.186	2.351	2.441
Arts sports entertainment and recreation	2.129	2.394	3.017	3.343	3.626
creative arts and entertainment activities	1.905	2.096	2.611	2.934	2.841
operation of libraries archives museums and other cultural institutions	1.912	2.124	2.579	2.737	2.769
Other service activities	1.742	2.062	2.601	2.738	3.361

Source: compiled based on data from the Enterpreneurship statistics. https://www.ukrstat.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	4.195	5.183	7.104	8.865	10.497	11.591	14.014	14.847	17.442	21.473
	3.309	4.195	6.057	7.557	8.856	9.757	12.287	13.061	14.625	18.012
	3.140	3.916	5.761	7.166	8.738	9.734	11.733	12.243	14.184	17.630
	4.789	5.902	7.631	9.633	11.788	12.759	14.902	15.176	18.390	23.150
	3.551	4.731	6.251	7.845	9.356	9.832	11.289	9.781	12.634	16.928
	4.692	5.808	7.631	9.404	10.795	11.286	13.488	15.103	20.630	25.286
	4.653	5.810	7.688	9.860	11.704	11.951	13.837	13.731	17.184	21.699
	4.172	5.265	7.183	9.187	10.705	11.288	13.121	13.111	15.452	19.325
	5.076	6.974	7.590	10.467	13.057	12.807	14.473	14.773	21.858	25.720
	18.470	24.688	31.088	35.651	27.300	21.685	28.506	24.963	31.391	43.938
	5.358	6.603	8.485	10.884	12.954	13.137	14.961	14.763	19.056	23.773
	2.180	2.818	3.851	5.044	5.993	6.838	8.214	8.592	11.830	16.106
	2.786	3.505	4.988	5.875	6.730	6.026	8.543	9.367	12.300	15.881
	7.111	9.530	12.018	14.276	17.543	19.888	25.530	30.829	37.946	52.457
	8.603	10.227	12.865	16.161	19.132	20.379	23.975	27.986	34.393	41.384
	3.659	4.804	5.947	7.329	8.626	8.981	11.142	11.560	15.509	19.508
	6.736	8.060	10.039	12.144	14.550	16.613	19.369	20.497	23.413	29.200
	3.114	3.995	5.578	7.228	8.700	9.878	11.186	12.291	14.395	17.562
	4.381	5.953	9.372	12.698	14.785	16.443	19.048	20.764	23.395	29.099
	3.132	3.769	5.857	7.041	8.135	9.271	11.817	11.999	12.439	14.593
	2.829	3.400	4.977	5.853	7.020	8.848	11.616	13.738	14.688	16.850
	4.134	4.844	6.608	7.612	8.659	9.624	12.508	11.567	13.336	15.872
	3.150	3.828	5.774	6.801	7.834	8.564	11.315	11.050	11.345	13.143
	3.049	3.705	5.464	6.381	7.519	8.024	10.462	10.469	10.990	13.142
	3.634	4.615	6.536	8.132	9.096	11.998	13.279	14.554	18.332	24.242

gov.ua/operativ/menu/menu_u/sze_20.htm (SSSU, 2024).

Appendix 2. **Number of hours worked (thousands) by industry, Ukraine, 2015—2023, %**

Industry	2015		2016		2017		2018	
	Hours	Share	Hours	Share	Hours	Share	Hours	Share
Total	9 396 747	100.0	9 468 718	100.0	9 354 380	100.0	9 799 483	100.0
Agriculture, forestry and fishing	960 504	10.2	990 145	10.5	922 446	9.9	928 804	9.5
Mining and quarrying	435 957	4.6	430 859	4.6	385 814	4.1	362 573	3.7
Manufacturing	2 358 923	25.1	2 356 193	24.9	2 390 822	25.6	2 458 019	25.1
Electricity, gas, steam and air conditioning supply	575 048	6.1	561 028	5.9	531 617	5.7	517 849	5.3
Water supply, sewerage and waste management	219 485	2.3	219 449	2.3	217 042	2.3	212 373	2.2
Construction	374 322	4.0	388 514	4.1	406 762	4.3	444 420	4.5
Wholesale and retail trade; repair of motor vehicles and motorcycles	1 524 588	16.2	1 556 360	16.4	1 612 520	17.2	1 717 441	17.5
Transportation, warehousing, postal and courier activities	1 223 324	13.0	1 271 034	13.4	1 255 208	13.4	1 268 930	12.9
Accommodation and food service activities	141 116	1.5	147 456	1.6	146 144	1.6	161 021	1.6
Information and telecommunications	270 931	2.9	252 796	2.7	254 385	2.7	257 388	2.6
Financial and insurance activities	95 433	1.0	111 667	1.2	107 762	1.2	120 352	1.2
Real estate activities	256 258	2.7	248 430	2.6	240 412	2.6	258 721	2.6
Professional, scientific and technical activities	304 882	3.2	296 171	3.1	284 545	3.0	293 705	3.0
Administrative and support service activities	412 415	4.4	399 432	4.2	375 723	4.0	361 867	3.7
Education	26 777	0.3	26 553	0.3	24 561	0.3	24 927	0.3
Human health and social work activities	131 662	1.4	135 394	1.4	126 462	1.4	342 341	3.5
Arts, sports, entertainment and recreation	47 766	0.5	43 125	0.5	41 695	0.4	41 681	0.4
Other service activities	37 357	0.4	34 111	0.4	30 458	0.3	27 070	0.3

Source: compiled based on data from (SSSU, 2024).

	2019		2020		2021		2022		2023	
	Hours	Share	Hours	Share	Hours	Share	Hours	Share	Hours	Share
	10 454 332	100.0	10 141 293	100.0	10 351 690	100.0	8 155 171	100.0	8 146 192	100.0
	913 171	8.7	860 879	8.5	856 418	8.3	732 413	9.0	703 418	8.6
	357 603	3.4	342 389	3.4	339 072	3.3	246 491	3.0	234 349	2.9
	2 382 937	22.8	2 202 701	21.7	2 229 063	21.5	1 631 808	20.0	1 604 840	19.7
	508 347	4.9	504 239	5.0	507 991	4.9	447 553	5.5	444 318	5.5
	198 607	1.9	205 219	2.0	224 292	2.2	181 971	2.2	180 239	2.2
	477 521	4.6	458 572	4.5	487 748	4.7	308 908	3.8	283 227	3.5
	1 770 838	16.9	1 762 745	17.4	1 849 397	17.9	1 501 858	18.4	1 516 207	18.6
	1 314 847	12.6	1 156 903	11.4	1 174 332	11.3	930 605	11.4	998 717	12.3
	168 847	1.6	117 675	1.2	124 289	1.2	81 003	1.0	84 964	1.0
	264 234	2.5	238 044	2.3	249 289	2.4	207 733	2.5	203 411	2.5
	123 728	1.2	106 674	1.1	118 602	1.1	96 055	1.2	93 066	1.1
	257 408	2.5	227 430	2.2	228 753	2.2	172 539	2.1	176 911	2.2
	318 934	3.1	289 624	2.9	299 588	2.9	219 561	2.7	219 155	2.7
	392 539	3.8	393 089	3.9	394 427	3.8	302 580	3.7	298 526	3.7
	30 891	0.3	29 724	0.3	27 764	0.3	21 995	0.3	23 852	0.3
	900 672	8.6	1 182 425	11.7	1 171 682	11.3	1 021 137	12.5	1 025 073	12.6
	43 233	0.4	37 325	0.4	41 863	0.4	31 820	0.4	36 276	0.4
	29 975	0.3	25 637	0.3	27 119	0.3	19 141	0.2	19 645	0.2

Appendix 3. **Cost of 1 working hour by industry, Ukraine, 2015—2023**

Industry	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total	43.99	48.22	48.81	77.46	89.87	101.82	117.61	133.62	153.49
Agriculture, forestry and fishing	29.67	33.32	35.77	59.28	68.92	75.96	91.55	101.45	113.87
Mining and quarrying	67.36	70.48	78.70	120.88	139.41	150.85	170.11	183.10	201.04
Manufacturing	43.56	47.08	46.40	75.76	91.36	100.93	113.23	128.30	149.66
Electricity, gas, steam and air conditioning supply	52.47	59.85	63.17	91.43	119.63	147.30	168.96	183.30	194.68
Water supply; sewerage; waste management	32.23	32.72	33.08	54.07	67.32	78.11	91.41	107.65	114.49
Construction	31.06	32.46	31.01	54.73	65.51	73.38	82.83	81.50	97.21
Wholesale and retail trade; repair of motor vehicles and motorcycles	38.09	43.61	42.09	69.58	82.38	90.93	110.64	119.59	153.52
Transportation, warehousing, postal and courier activities	44.83	48.98	49.60	83.87	93.86	106.26	117.10	125.30	135.33
Accommodation and food service activities	24.70	26.32	26.55	46.30	53.28	62.23	72.92	86.69	101.35
Information and telecommunications	57.73	67.62	67.20	103.08	119.55	153.22	169.14	231.65	299.08
Financial and insurance activities	256.68	235.86	244.41	328.80	387.54	495.36	516.54	637.52	739.05
Real estate activities	31.18	33.59	34.71	54.35	64.44	74.84	82.32	95.60	119.88
Professional, scientific and technical activities	60.26	68.26	71.05	109.53	125.71	143.92	155.38	190.75	210.67
Administrative and support service activities	28.28	31.69	33.69	56.08	69.46	76.25	84.57	98.93	111.51
Education	30.66	35.05	37.90	60.41	70.72	76.52	95.85	100.81	106.07
Human health and social work activities	28.86	33.30	35.65	49.88	58.39	77.09	100.19	121.69	126.46
Arts, sports, entertainment and recreation	79.86	91.21	94.33	115.60	121.19	150.34	162.75	160.66	203.73
Other service activities	23.96	26.30	29.45	51.09	60.22	67.33	74.57	81.98	98.40

Source: author's calculations based on data from (SSSU, 2024).

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У монографії представлено науково обґрунтоване дослідження економічної нерівності в Україні. Автори аналізують її структурні зв'язки з монетарною та фіскальною політикою, цифровізацією та трансформацією середнього класу, розглядаючи національний кейс у ширшому міжнародному та теоретичному контекстах. На основі українських даних у восьми розділах висвітлено: динаміку доходів домогосподарств, вплив монетарної політики на розподіл благ, роль фіскальної політики у подоланні нерівності (зокрема значення соціальних трансфертів), а також наслідки тіньової та P2P-економік для оподаткування. Окрему увагу приділено взаємозв'язку між економічним зростанням та нерівністю, формуванню середнього класу з урахуванням гендерного аспекту, а також регіональним і секторальним диспорціям, спричиненим процесами цифровізації. Видання буде цікавим дослідникам, науковцям та представникам органів державної влади, які займаються питаннями нерівності в країнах з перехідною економікою.

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НАЦІОНАЛЬНОЇ АКАДЕМІЇ НАУК УКРАЇНИ

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