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Is income inequality a contributing factor to poverty and crime? Empirical evidence of the CIS nations

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Abstract

This article addresses a critical research gap by investigating the link between social polarization and contemporary societal challenges, such as poverty and crime. Despite the existence of numerous studies describing the effects of income disparity, the role of social stratification in inducing delinquency and poorness in transitional economies has not received sufficient consideration. The author conducts an analysis of income inequality metrics (IIMs) across Commonwealth of Independent States (CIS) nations, examining dependencies that provide a precise depiction of the correlation between socioeconomic disparity and urgent society's problems. The study disclosed that the lowest proportion of the impoverished was observed in countries with a minimal income disparity, such as Belarus and Kazakhstan; in contrast, nations that exhibit a significant degree of income differentiation, such as Kyrgyzstan, Moldova, and Armenia, demonstrate the highest proportion of the impoverished. Following a linear regression approach, the study revealed a strong positive correlation between IIMs and crime rate. By shedding light on these dependencies, the article provides fresh insights into the dynamic relationship between major social problems in the CIS countries.

Introduction

In contemporary societies, income differentiation has become a crucial determinant of socio-economic advancement, as its *uneven distribution* fosters economic growth (Cingano, 2014; Cerra et al., 2021). It appears that a society with *rational differentiation* becomes the most stable due to the prevailing middle class (Birdsall, 2006); the prospect of social advancement and professional growth motivates individuals to acquire an education and engage in entrepreneurial endeavours. Nevertheless, excessive social differentiation may result in the inadequate utilization of resources, thereby exacerbating societal polarization. This phenomenon exhibits a *cumulative nature* (OECD, 2015), encompassing the preservation of wealth in one segment of the populace and the emergence of poverty in another (Piketty and Saez, 2001; Deaton, 2013). Therefore, in order to ensure economic stability, the regulation of social inequality appears to be an imperative component of state policy.

Throughout the socio-economic transformation, the Commonwealth of Independent States (CIS) has acquired a system of social protection that covered nearly all segments of the populace, encompassing provision of fundamental medical services, extensive food aid, professional skills training, and so forth, thereby circumventing the crucial issues that contribute to poverty in developing countries. Following market reforms since the mid-1990s, the CIS nations initiated a novel system of social

protection, comprising social and medical insurance, pension systems, and state social assistance (Gupta, 1998; Heller, 2001; Simai, 2006). At present, the "ancient" and "new" social protection systems are observed to exist in varying proportions. This transitional state, in which the "old" has not yet been eradicated and the "new" has not yet been fully established, poses specific challenges and constraints.

In the present day, the issues of poverty and social inequality in transition economies are significantly underestimated by the scientific community and international organizations, as their focus is primarily directed towards developing countries (UBS, 2025). In light of the average statistics, the severity of these issues does not appear to be particularly pronounced. According to the World Inequality Report (Chancel at al, 2022), the Gini (GIN) value of certain CIS states, including Belarus, Kazakhstan, and Uzbekistan, is not inferior to that of the European Union (EU) countries. Additionally, the poverty rate in Central Asia and Europe is a mere 0.2% of the global average (UNDP, 2023). However, aggregated statistics only partially reflect the true picture, which is less optimistic when viewed in the context of individual countries. A significant number of CIS citizens (ranging from 30 to 60%, depending on the country) lack a safety net in savings (OECD, 2021). The situation is further complicated by the fact that the relatively high inflation rates in CIS states have a more substantial impact on the incomes of namely impoverished segments of the population (Easterly and Fischer, 2001), and targeted payments are insufficient to alleviate widespread poverty.

The complexity of research in the CIS states is ascribed to data constraints. Since 2022, the Interstate Statistical Committee of the Commonwealth of Independent States (CIS Statcommittee) has discontinued the publication of the official data on poverty and socio-economic inequality. This decision might be attributed to the Russian invasion of Ukraine and the desire to conceal the rapidly deteriorating internal problems from the public. Data concealment is also apparent in the state statistical sources. Governments frequently withhold official data (as seen in Belarus), display outdated data (as in Moldova, where the most recent update was in 2012), or provide "convenient" figures that align with their political objectives. Nevertheless, the silence surrounding the problem only underscores its gravity and the significance of research on this topic.

Recent studies examine the impact of income differentiation on diverse processes, encompassing economic growth (Stiglitz, 2016; Mdingi and Ho, 2021; Ferreira et al., 2022; Topuz, 2022), investments (Melki, 2022), birth and death rates (Huynh et al., 2005; Siddiqi et al., 2015; Sanhueza et al., 2024), life expectancy (Wilkinson and Pickett, 2009), labour productivity (Delhey and Kohler, 2011), demography (Butler et al., 2020; Taresh et al., 2021) and social mobility (Günther and Martorano, 2025), and political efficacy (Bouveta and King, 2016) and economic stability (Murphy, 2015; Galbraith et al., 2006).

This research contributes to the growing literature by providing novel insights into the impact of high-income inequality on poverty and crime in transitional economies. The author extends the recent research of Amponsah et al. (2023), Bergstrom (2020), Beker (2020), Lechheb et al. (2019), Omar and Inaba (2020), Hazra (2020), Itskovich and Factor (2023), Sugiharti et al. (2023), in two different ways. In lieu of the most frequently used GIN coefficient, the author employs a set of generalized income inequality metrics (IIMs) encompassing quintile (QNT) and decile (DEC) differentiation coefficients, as well as the GIN index, which are more precise indicators of nations' sensitivity to the negative impact of income inequality. Second, the author examines the CIS states, which were underestimated by the scientific community in terms of their poverty and social stratification issues. The author seeks to answer two questions: (i) Does income inequality influence poverty and crime in CIS countries? and (ii) Does the correlation between IIMs and poverty (crime) display linear dependence? To answer these questions, the author analyses the IIMs, the Multidimensional Poverty Index (MPI), and the crime rate (CRM) variables within CIS states, setting Pearson correlation tests. Understanding these relationships would become imperative for policymakers and international organizations who strive to fight against poverty and crime.

The article is structured as follows: Section "**Theoretical Background of the Income Inequality Problem and Hypothesis**" provides a comprehensive overview of the subject matter, encompassing the hypothesis set. Section "**Methodology**" describes the methodology employed. Section "**The Analysis of data by the CIS countries**" presents the data for analysis. Section "**Poverty and Crime as Possible Repercussions of Income Inequality**" employs sufficient testing and discusses the empirical findings.

Finally, Section "**Concluding remarks**" provides pivotal policy implications based on the achieved results.

Theoretical background of the income inequality problem and hypothesis

The study of diverse aspects of socio-economic inequality is devoted to both contemporary economic thought and related sciences, such as philosophy, psychology, and sociology. The intricate nature of global economic relations necessitated the utilization of an economic framework in studying this problem.

In the theory of *social stratification* (Weber, 1947; Parsons, 1951; Barber, 1963; Durkheim, 1964), income inequality is primarily examined in the *functional* approach, which emphasizes the positive, "functional" nature of inequality and demonstrates its necessity. Davis and Moore (1945), American sociologists, argued that the stratification of society is a direct consequence of the division of labour. They posited that the unequal social functions of different groups of individuals objectively require correspondingly unequal remuneration. Society fosters the pursuit of essential, yet difficult and unpleasant, occupations through income and prestige inequality, which also motivates individuals who are more educated and talented. Parsons (1951) concluded that the *stratification factors* of Western society are distinct from those employed by traditional societies. The "statuses" that an individual acquires are of greater significance than those that are innate and prescribed. Particular importance was given to the establishment of social consensus regarding the value of specific professions, determining differentiation in income. For instance, in American society, the primary social value is success in business and career, which is why scientists of technological specialties and plant directors are granted a higher status and income. In Europe, the concern is the preservation of "cultural patterns," and as a result, intellectuals, humanists, clergymen, and university professors are accorded special recognition by society. However, the study was unable to offer a definitive response to the question of why the value systems of different societies are so dissimilar.

By today, sociology has not yet developed a comprehensive theory of stratification, as the various approaches (functional, hierarchical, and production) only illuminate individual aspects of inequality. In examining this issue, the theory of *social welfare* recognizes income inequality as a factor that impacts the efficiency of resource allocation and overall welfare. Two fundamental approaches elucidate the welfare state formation: economic, which emphasizes the economic reasons for the increased activity of the state in public life (as a response to unemployment, poverty, urbanization, the need to finance large-scale infrastructure projects, education, and health care) (Wilensky, 1975); and political, which describes the development of the welfare state as a phenomenon of power (political and legal) relations (Korpi, 1983). In countries with an originally strong public sector and a developed civil society, the formation of the welfare state is primarily attributed to the political approach. Conversely, in nations with transition economies and emerging markets, the welfare state's origins are rooted in the economic challenges and the objective incapacity to address them through market mechanisms.

The concept and typologies of the *welfare state* were initially examined in the renowned work "Three Worlds of Welfare Capitalism" (Esping-Andersen, 1990), which served as a foundation for subsequent research in this scope. Utilizing a diverse array of critical indicators (e.g., residuality, stratification, and decommodification), he distinguished three welfare state models: liberal, conservative, and social democratic. Subsequently, the scientist introduced a novel classification that rested on the welfare state model's criteria and the family's role within it (Esping-Andersen, 1996, 1999). Its primary distinction from the preceding typology was the allocation of Scandinavian countries to a distinct group and the inclusion of southern European countries in the typology. Other classifications of welfare state models employ alternative criteria. The typology of Bonoli (1997) and Ferrera (1996) is based on the quantification of public expenditure in relation to Gross domestic product (GDP) and social expenditure, both in absolute and relative terms. The scientists have identified four welfare state models: Anglo-Saxon, Bismarckian, Scandinavian, and Southern European. Kautto (2002), in a similar vein, conducted an

analysis of the extent of social assistance expenditure, distinguishing between states where social assistance is primarily provided in kind, cash, or a mixed form.

However, these approaches have since been the subject of criticisms (Gough, 2001; Wildeboer Schut et al., 2001; Bambra, 2007; Jensen, 2008), as welfare state models were examined statically, without considering the qualitative changes that have occurred over the past 30 years in relation to globalization, demographic changes, transformation of the household structure and labour market, and slowdown in economic growth. Additionally, the models were restricted to a small number of countries, primarily Western European, and the classification criteria did not account for gender and family policies (Orloff, 1993; Daly and Lewis, 1998), as well as inequality in the primary distribution of income (Castles, 1993). Deacon (2007), Arcanjo (2009), Castles et al. (2010), and Korpi (2003) proposed that the welfare state models be disseminated to countries in Asia, Africa, North and South America, and Eastern Europe. Further, the qualitative criteria for classifying welfare states are evolving, with a greater emphasis on institutional changes than redistribution processes.

Neoliberal economists broadened their analysis by interpreting inequality and poverty through the lens of *globalization* and *economic growth*. Remarkably, empirical studies can yield conflicting results for advanced and emerging countries, as well as for internal and external economic inequality. Initially, the disparity between developing and wealthier economies is decreasing as communications and transportation become more efficient and "cost-effective," and countries are becoming more integrated into a single global production and trade network (Milanovic, 2002; Firebaugh and Goesling, 2004; Sala-i-Martin, 2006). Conversely, *economic discrimination* is considerably more prevalent in developing nations. Enderwick (2006) estimated that a mere 5% increase in the proportion of exports generated by developing countries would lead to an annual increase of $350 billion, which is more than seven times the current level of financial assistance they receive. As for the social inequality, the situation is frequently less impressive. Globalization drivers, such as the expansion of multinational corporations (Feenstra and Hanson, 1996; Meschi and Vivarelli, 2007; Brewer, 2011), the development of information and communication technologies (Brown and Campbell, 2002; Mills, 2009; Baek and Shi, 2016), population growth, and migration (Borjas, 2000), have a substantial impact on the wage gap in developing countries, thereby exacerbating poverty (Ravallion, 2003) and increasing social stratification (Cornia, 2004; Dreher and Gaston, 2008). Therefore, the relationship between inequality, growth, and poverty strikes a *delicate balance* (UN, 2013), necessitating an effective social policy to reduce poverty rather than solely prioritizing economic growth.

Today, the issue of poverty is often reflected in the "*green*" *Keynesianism*, which claims that developed nations should reorient towards a moderate level of consumption and efficiency in income redistribution (Custers, 2010; Cömert, 2019). Economic progress must be oriented towards enhancing social and cultural life, which assumes the distribution of services that encompass *human capital*, for example, education and healthcare (Harris, 2013).

In order to further investigate the issues of poverty (crime) and income polarization, the author proposes the following hypotheses:

H1: *Poverty is associated with income inequality in the CIS countries*, and

H2: *The increase in crime could be attributed to income inequality.*

To validate these hypotheses, the author conducts an analysis of income inequality indicators across nine CIS nations, examining dependencies that provide a precise depiction of the correlation between income inequality and contemporary society's problems, such as poverty and crime.

Methodology

To evaluate the impact of income inequality on the expansion of poverty and crime, we employed IIMs and the CRM.

IIMs, such as the GIN, QNT, and DEC differentiation coefficients, are determined through the *Lorenz curve* (Lorenz, 1905). It is defined by the points $(p, L(p))$, where p is the cumulative proportion of income-receiving units sorted from the poorest to the richest and $L(p)$ is the cumulative proportion of income. Gastwirth (1971) proposed a general definition of the Lorenz curve as if X were a random variable with a cumulative distribution function $F(x)$, a quantile function $F^{-1}(x)$, and a mean $\int x dF(x)$. Then the Lorenz curve is the mapping

$$p \rightarrow L(p) = \frac{1}{\mu} \int_0^p F^{-1}(t) dt \tag{1}$$

A Lorenz curve will have some expected properties: (1) if $p = 0$ then $L(p) = 0$, (2) if $p = 1$ then $L(p) = 1$, (3) $L(p) \leq p$, and (4) $L(p)$ is continuous and differentiable, and the slope of the curve increases monotonically (Belz, 2019).

The *GIN index* (G) is determined in terms of the Lorenz curve, corresponding to twice the area between $L(p)$ and the egalitarian line as

$$G = 2 \int_0^1 (p - L(p)) dp \tag{2}$$

The methodology for its assessment (Gini, 1914) uses a population-weighted national income per capita, which varies from 0 to 1: the greater the value deviates from zero, the greater the degree of income concentration among individual population groups. Generally, the GIN coefficient should not exceed 0.4, as excessive income inequality can adversely impact the rate of economic growth and create a poverty trap.

QNT and *DEC* differentiation coefficients are based on a method for ranking households according to their income. QNT groups refer to the distribution of households into five subgroups of 20% of families. The first QNT group is 20% of families with the lowest income, and the fifth is 20% of families with the highest income. Thus, the QNT differentiation coefficient is a ratio between the income level of the fifth QNT group, which has the highest income level, and that of the first QNT group, which has the lowest income level. The DEC differentiation coefficient is calculated in a similar manner. Higher values indicate a higher inequality.

Applying the standard Pearson correlation (Pearson, 1904), the relationship between IIMs and CRM as a result of social stratification will be represented as follows:

$$corr(IIM, CRM) = \frac{\sum (CRM_i - \overline{CRM})(IIM_i - \overline{IIM})}{\sqrt{\sum (CRM_i - \overline{CRM})^2 \sum (IIM_i - \overline{IIM})^2}} \tag{3}$$

where IIM_i is the value of the income inequality indicator, CRM_i is the value of the crime rate, $\overline{IIM}$ is the arithmetic mean for the income inequality indicator, and $\overline{CRM}$ is the arithmetic mean for the crime rate.

A similar approach is employed to assess the correlation between IIMs and MPI.

The analysis of data by the CIS countries

The sources of income

In the CIS countries, wages constitute the primary source of total income, accounting for between 26.5% (Tajikistan) and 64.0% (Kazakhstan). A significant portion of income also comes from self-employment and entrepreneurship (Figure 1).

Although the income structure has not significantly changed over the past decade, overall, the CIS countries have experienced a positive trend. According to Table 1, the highest increase in average monthly nominal wages was observed in Moldova (up by 131% since 2010); the lowest income growth

Figure 1. The sources of household income, 2010 and 2022.
Note. Upper graph: 2010 data; lower graph: 2022 data.
Source: Composed by the author based on the Interstate Statistical Committee of the Commonwealth of Independent States data.

Table 1. The average monthly nominal wages, US dollars

Country	2010	2015	2020	2021	2022
Azerbaijan	413.0	455.0	416.3	430.6	494.1
Armenia	274.7	359.1	388.0	405.0	540.7
Belarus	406.6	413.1	509.9	568.7	623.4
Kazakhstan	526.7	568.4	498.0	587.5	672.9
Kyrgyzstan	156.4	209.2	244.5	228.4	315.5
Moldova	239.7	241.2	458.6	507.9	552.7
Russia	681.6	561.0	711.8	777.3	968.6
Tajikistan	80.9	142.6	135.0	136.2	156.9
Uzbekistan	318.2	456.6	265.9	303.0	351.3
Ukraine	282.2	192.5	432.1	513.6	NA

Source: Composed by the author based of the CIS Statcommitte (, 2023b) data.

was observed in Uzbekistan (down by 10% since 2015), which can be attributed to the fact that the economy of Uzbekistan was the most vulnerable to the coronavirus disease 2019 pandemic (CIS Statcommittee, 2023a), resulting in a significant decline in primary financial revenues. In 2015, Russia saw a decline in average incomes due to the Ruble's dependence on oil prices. Its exports experienced a

Table 2. The monthly growth in average wages compared to the previous year, 2022

Country	Nominal	Real
Azerbaijan	115	101
Armenia	116	106
Belarus	113	98
Kazakhstan	124	108
Kyrgyzstan	137	121
Moldova	116	90
Russia	114	100
Tajikistan	112	105
Uzbekistan	121	108

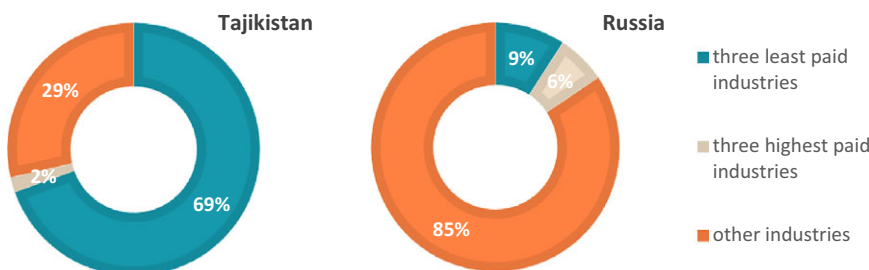*Source*: Composed by the author based on the CIS Statcommittee (2023c) data.

decline of 32% compared to 2014 levels, and according to the Russian Public Opinion Research Center, every fourth Russian rated their financial situation as "poor."

In 2022, nominal wages experienced an increase in all CIS countries (Table 2), with the highest increase occurring in Kyrgyzstan (137%). The real wages experienced a rise too, except Belarus and Moldova (98 and 90% of the 2021 value, respectively). The highest reported average wage in Russia demonstrates a sixfold discrepancy with Tajikistan. (Compared to other countries, this disparity ranges from 0.99 with Kazakhstan to 4.36 with Kyrgyzstan.)

An examination of economic activity within the CIS countries revealed that the number of individuals employed in low-paid industries was significantly higher than that employed in high-paid industries. For instance, in Tajikistan, 64.28% of the population is employed in agriculture, one of the lowest-paid sectors of the economy; and only 2% of the employed population works in such industries as information and communications, finance and insurance, and sports and entertainment (Figure 2). A similar situation was observed in Azerbaijan, with 51.42 and 2.73%, respectively. In contrast, in Russia, only 9% of the populace is employed in low-paying industries, whereas 6.99% are employed in high-paying industries, such as information and communications (1.83%), mining (2.34%), and finance and insurance (2.24%).

The indicators of income inequality

Over the past decade, a trend towards decreasing social inequality has been observed in the CIS countries (Figure 3). The exception is Kyrgyzstan, where the GIN coefficient reached 0.408 in 2022, surpassing

Figure 2. The percentage of the workforce employed, 2022.
Source: Composed by the author based on the CIS Statcommittee (2023c) data.
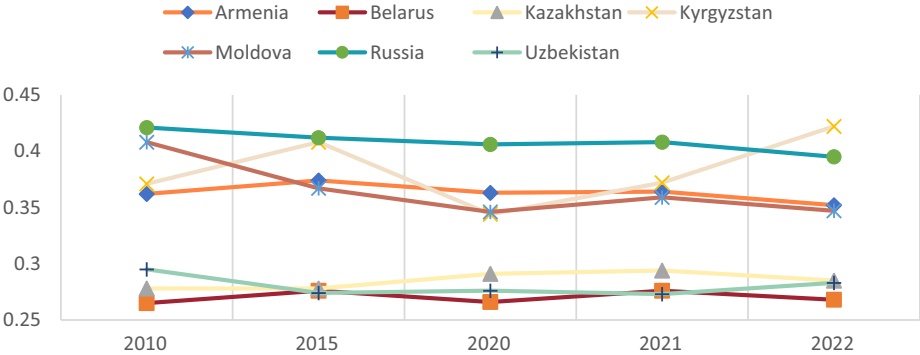
Figure 3. The Gini Index values.
Source: Composed by the author based on the World Population Review official website.

Russia, which has historically demonstrated the highest values. The most notable achievements in reducing income disparities were observed in Moldova (37%); the highest increase was observed in Kyrgyzstan (by 25%). Belarus and Kazakhstan have not undergone any changes; however, in Armenia, Uzbekistan, Russia, and Azerbaijan, the ratio has experienced a decline of 11–16%

According to the income inequality by GIN index, the CIS countries can be divided into two groups, with less and more critical income differentiation. The initial group comprises Belarus, with a GIN value of 0.268, Uzbekistan (0.283), and Kazakhstan (0.285). The second group comprises Moldova (0.347), Armenia (0.352), Russia (0.395), and Kyrgyzstan (0.422). Although the GIN index is not specified for Azerbaijan, the values of the QNT and DEC coefficients allow us to assign it to the first group. The CIS nations belonging to the first contingent group are not inferior to the EU countries in terms of the GIN value (Figure A1), whereas in the second group, particularly in Russia and Kyrgyzstan, income inequality is significantly more evident.

In 2022, the QNT ratio in Kyrgyzstan complied with 8.5, indicating that the wealthiest 20% of households concentrated approximately half of all resources; simultaneously, the 20% of Azerbaijan's population that is least affluent possesses twice as many resources as the corresponding group in Kyrgyzstan (Figure 4).

The DEC coefficient reveals similar dynamics. According to Table 3, there was no significant difference in income in Kazakhstan and Belarus; in contrast, in Azerbaijan and Kyrgyzstan, the disparity between the 10% of the most and least affluent households was 23%. In Russia, Uzbekistan, and Moldova, this gap has narrowed (by 17, 18, and 49%, respectively). Simultaneously, in Moldova, Armenia,
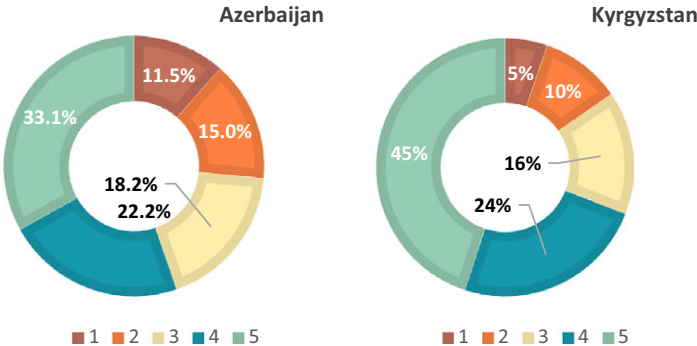
Figure 4. The household income ranking by quintile groups, 2022.
Source: Composed by the author based on the CIS Statcommittee (2023a, 2023b) data.

Table 3. The quintile and decile ratios, 2010 and 2022

Country	Quintile			Decile	
	2010	2022		2010	2022
Azerbaijan	2.5	2.9		3.0	3.7
Armenia	8.0	7.1		14.2	13.2
Belarus	3.9	4.0		5.6	5.9
Kazakhstan	4.0	4.0		5.7	5.7
Kyrgyzstan	6.8	8.5		11.1	13.6
Moldova	9.8	6.2		21.2	10.8
Russia	9.2	8.0		16.6	13.8
Uzbekistan	5.2	4.6		8.5	7.0

Source: Composed by the author based on the CIS Statcommittee (2023a, 2023b) data.

Kyrgyzstan, and Russia, the social disparities exceeded the threshold value. Therefore, the values of the QNT and DEC coefficients confirm the division based on the GIN index, as previously stated.

The factors of income inequality

Territorial affiliation (Lessmann, 2014; Remington, 2015; Wang et al., 2019), education (Afonso et al., 2010; Artige and Cavenaile, 2023), gender pay gap (Oyenubi and Mosomi, 2024), and population aging (Fields and Yoo, 2000; Dolls et al., 2019; Thaning, 2021; Kim and Kim, 2024) have a significant impact on income differentiation.

Large cities play a crucial role in the region's development, attracting significant foreign investment. Simultaneously, the heightened burden on cities indicates uneven settlement (Li et al., 2024), thereby escalating the burden on social, engineering, and transportation infrastructures. Today, capital cities of the CIS countries account for 36.4% of the urban populace in Armenia, 22.8% in Azerbaijan, 22% in Moldova, 21.7% in Belarus, 16.3% in Kyrgyzstan, 12.2% in Tajikistan, 8.9% in Russia, 6.9% in Uzbekistan, and 6.6% in Kazakhstan (CIS Statcommittee, 2023c). The number of impoverished individuals indicates a significant inequality between urban and rural areas (Table 4), with the largest disparity level in Belarus (8.89 times), Moldova (7.84 times), and Kazakhstan (6.01 times).

Education accessibility varies significantly among the CIS nations. In Belarus, the educational standard surpasses the global average. In contrast, in Azerbaijan and Tajikistan, the availability of higher education is significantly restricted; as for Uzbekistan, only 10% of the youth have the opportunity to obtain a higher education. According to CIS Statcommittee (2024), there are 51–60 university students per 1,000 people in Belarus, Kazakhstan, Kyrgyzstan, and Russia; 34 and 41 in Armenia and Moldova, respectively; and 27 and 23 in Tajikistan and Azerbaijan, respectively. The ratio of female students in secondary and higher educational institutions varies from 57 to 58% in Belarus, Kazakhstan, and Moldova; 49–55% in Azerbaijan, Armenia, Kyrgyzstan, and Russia; and 32% in Tajikistan (CIS Statcommittee, 2023d). As a result, limited access to education leads to a decrease in human capital (Erosa et al., 2010) and a slowdown in labour productivity growth (Magableh et al., 2022), consequently increasing social disparity.

Gender pay gap is another factor of income inequality. According to the report on *Monitoring of Sustainable Development Goals Indicators in the CIS region* by CIS Statcommittee (2024), in 2022, the average monthly salary of women was 27.7% lower than that of men (Table 5). The most significant

Table 4. The proportion of the impoverished populace as a percentage of the overall population, 2019

Country	Capital city	Cities and urban-type settlements	Country side
Azerbaijan	NA	4.5%	5.2%
Armenia	14.1%	22.2%	33.2%
Belarus	0.9%	4.0%	8.0%
Kazakhstan	1.1%	2.7%	6.6%
Kyrgyzstan	11.9%	14.7%	23.2%
Moldova	4.4%	11.2%	34.5%
Russia*	6.8%	7.1%	22.0%
Tajikistan	18.0%	18.4%	30.1%
Uzbekistan	NA	8.4%	13.5%

Note: *2018 data.
Source: Composed by the author based on the CIS Statcommittee (2021) data.

Table 5. The gender gap in women's wages as a percentage of men's average monthly wages

Country	2018	2019	2020	2021	2022
Azerbaijan	46%	42%	37%	35%	33%
Armenia	35%	35%	35%	35%	39%
Belarus	27%	27%	27%	28%	26%
Kazakhstan	34%	32%	25%	22%	25%
Kyrgyzstan	28%	23%	25%	25%	22%
Moldova	14%	14%	14%	14%	15%
Russia	NA	28%	NA	28%	NA
Tajikistan	40%	36%	33%	32%	NA
Uzbekistan	39%	36%	37%	36%	34%

Source: Composed by the author based on the CIS Statcommittee (2024) data.

disparity was observed in Armenia (39%). The recent years have shown a tendency towards a reduction in the gender gap in the CIS countries, which, nevertheless, remains significant.

In 2023, the number of pensioners in the CIS nations surpassed 42 million, accounting for 17% of the entire population. According to forecasts (CIS Statcommittee, 2023b), in CIS countries, the number of individuals over the age of 60 years will double by 2050. It is an overall trend that a significant proportion of elderly people remain in their employment after reaching retirement age. The highest proportion of employed pensioners is observed in Moldova (20%), Russia (12%), and Armenia (8%).

It is noteworthy that the ratio of the minimum pension to the average monthly wage exceeds 20% in countries with comparatively low-income inequality, such as Azerbaijan, Belarus, Kazakhstan, and Moldova; conversely, in countries with higher social polarization (Uzbekistan, Tajikistan, Kyrgyzstan, Russia, and Armenia), this ratio is significantly below 20% (Table 6). Hence, the magnitude of pension provision is correlated with income differentiation. These findings are consistent with existing empirical

Table 6. The ratio of minimum pension to average monthly wage, 2022

Country	Min pension payment, US dollars	Ratio
Azerbaijan	141	29%
Armenia	53	10%
Belarus	169	27%
Kazakhstan	148	22%
Kyrgyzstan	37	12%
Moldova	119	22%
Russia	103	11%
Tajikistan	20	13%
Uzbekistan	56	16%

Source: Composed by the author based on the CIS Statcommittee (2023c) data.

studies by Li et al. (2020) and Andersen et al. (2024). Hence, social policy plays a pivotal role in addressing the issue of income inequality.

Poverty and crime as possible repercussions of income inequality

Data analysis

Social inequality and poverty are measured by comparing the ratio of per capita cash income to the subsistence minimum budget. According to Table 7, Kazakhstan and Belarus have the lowest income differentiation, with 3.9 and 5.2, respectively. In contrast, Kyrgyzstan, Moldova, and Armenia exhibit the highest degree of income disparity, with more than 20% of the populace being impoverished.

According to Table 8, a significant proportion of individuals who live on less than $5.5 per day reside in Moldova, Kyrgyzstan, and Armenia. As for the CIS Statcommittee data, 13.5% of the population of Moldova, or every 10th resident, lives below the extreme poverty line (Table 9). However, the methodology employed for defining and evaluating extreme poverty varies depending on the country, allowing for the distinction between food insecurity (Armenia), a minimum expenditure basket (Kazakhstan), or extreme poverty (Moldova).

Table 7. The proportion of the populace with an income below the minimum subsistence level

Country	2010	2015	2020	2021	2022
Azerbaijan	9.1%	4.9%	6.2%	5.9%	5.5%
Armenia	35.8%	29.8%	27.0%	26.5%	24.8%
Belarus	5.2%	5.1%	4.8%	4.1%	3.9%
Kazakhstan	6.5%	2.6%	5.3%	5.2%	5.2%
Kyrgyzstan	33.7%	32.1%	25.3%	33.3%	33.2%
Moldova	21.9%	25.4%	26.8%	24.5%	31.1%
Russia	12.5%	13.4%	12.1%	11.0%	9.8%
Uzbekistan	17.7%	12.8%	11.5%	17.0%	14.1%

Source: Composed by the author based on the CIS Statcommittee (2023b) data.

Table 8. The percentage of the populace living on less than $5.50 a day

Country	2019	2020	2021
Armenia	52.3%	53.5%	51.7%
Belarus	0.1%	0.1%	0%
Kazakhstan	3.8%	2.7%	1.2%
Kyrgyzstan	63.7%	67.6%	NA
Moldova	14.7%	NA	NA
Russia	0.8%	0.6%	0.6%

Source: Composed by the author based on the World Bank data.

Table 9. The percentage of the populace living below the extreme poverty line

Country	2019	2020	2021	2022
Armenia	1.4%	0.7%	1.5%	NA
Kyrgyzstan	0.5%	0.9%	6.0%	6.0%
Moldova	10.7%	10.8%	9.5%	13.5%

Source: Composed by the author based on the Interstate Statistical Committee of the Commonwealth of Independent States data.

The Global MPI was developed in 2010 by the Oxford Poverty & Human Development Initiative and the United Nations Development Program (UNDP) to evaluate the prevalence and severity of poverty in over 100 developing nations. The global MPI promotes SDG 1 – ending poverty in all its forms everywhere – and measures interconnected deprivations across indicators related to SDGs 1, 2, 3, 4, 6, 7, and 11.

The MPI comprises 10 indicators that span three dimensions, namely health (nutrition and child mortality), education (years of schooling and school attendance), and living standards (cooking fuel, sanitation, drinking water, electricity, housing, and assets). All indicators are equally weighted within the same dimension. A person's deprivation score is the sum of all the weighted deprivations she/he experience. The MPI indicates that individuals are multidimensionally impoverished if their deprivation score exceeds 1/3; a higher score indicates a greater degree of impoverishment (UNDP, 2023).

Table 10 illustrates the country's poverty score. It is anticipated that most CIS countries, except for Tajikistan, exhibit a lower poverty score that does not exceed 0.02.

To analyse the extent of organized crime, we employed the Global Organized Crime Index (GOCI). The index considers aspects, such as the presence of criminal groups, the degree of corruption, drug trafficking, smuggling, terrorist activity, and other related factors. According to the GOCI data, Russia holds the highest level of organized crime among the CIS nations, followed by Belarus, Moldova, and Tajikistan (Table 11). Therefore, organized crime remains a serious problem in the majority of the CIS countries.

Preliminary tests

To examine the impact of income inequality on poverty and crime growth, the author employs several variables (Appendix, Table A1). Before performing the linear regression, the data were checked for normality distribution. After analysing the skewness, kurtosis, Kolmogorov–Smirnov (Kolmogorov, 1933; Smirnov, 1948), and Shapiro–Wilk (Shapiro and Wilk, 1965) tests (Table 12), the results reject the

Table 10. The MPI values, 2022

Country	Index value
Tajikistan	0.029
Uzbekistan	0.006
Moldova	0.004
Kazakhstan	0.002
Ukraine	0.001
Turkmenistan	0.001
Kyrgyzstan	0.001
Armenia	0.001

Source: Composed by the author based on the Global Multidimensional Poverty Index website.

Table 11. The GOCI ranking, 2023

Ranking	Country	Index value
19	Russia	6.87
56	Belarus	5.87
69	Moldova	5.60
78	Tajikistan	5.45
81	Kyrgyzstan	5.32
100	Uzbekistan	4.95
112	Azerbaijan	4.80
127	Kazakhstan	4.47
182	Armenia	2.82

Source: Composed by the author based on the Global Organized Crime Index official website.

Table 12. Normal distribution tests

			Skewness		Kurtosis		Kolmogorov–Smirnov		Shapiro–Wilk test	
Varbl.	Mean	Median	Statistics	Std.Err.	Statistics	Std.Err.	Statistics	*p*-val	Statistics	*p*-val
QNT	5.54000	4.55000	.268874	.373783	−1.30636	.732600	.20180	< .01	.90360	.00244
DEC	9.27500	8.10000	.271159	.373783	−1.31508	.732600	.20315	< .01	.90798	.00329
CRM	839.425	889.000	.157346	.373783	-.609080	.732600	.10434	> .20	.95604	.12246
GIN	.331176	0.34200	.175523	.403053	−1.43085	.787898	.19896	< .15	.89941	.00443
MPI	.002579	.002000	1.518765	.523767	2.091475	1.014270	.30078	< .01	.78392	.00067

Source: Composed by the author.

null hypothesis for the CRM variables, indicating a normal distribution of the data. Regarding the QNT, DEC, GIN, and MPI variables, tests have revealed that the data are not normally distributed. Nevertheless, normal distribution of the data is not a necessary prerequisite for using it in linear regression. The assumption frequently pertains to the error term, which can be ascertained by analysing residuals rather than data.

Pearson correlation tests

Figure 5 illustrates the linear relationship between the MPI and income inequality variables (QNT, DEC, and GIN); Figure 6 illustrates the linear relationship between CRM and IIMs. The corresponding correlation statistics are presented in Tables 13 and 14.

Analysis of the results

In the current research, the author was unable to determine whether a greater risk of income inequality was associated with greater poverty. Regarding the impact of social stratification on poverty, linear regression exhibits a weak dependence on GIN-MPI (Pearson coefficient 0.10732) and even a reverse dependence on QNT-MPI and DEC-MPI (0.18566 and 0.18434, respectively). At the same time, during the main data examination, the lowest proportion of the impoverished was observed in countries with a minimal income disparity, such as Belarus and Kazakhstan; in contrast, nations that exhibit a significant degree of income differentiation, such as Kyrgyzstan, Moldova, and Armenia, demonstrate the highest proportion of the impoverished. The sole exception is Russia, where poverty is primarily caused by the oligarchy's strengthening and the critically disproportionate distribution of financial assets (Novokmet et al., 2018), as well as high interregional and intersectoral differentiation.
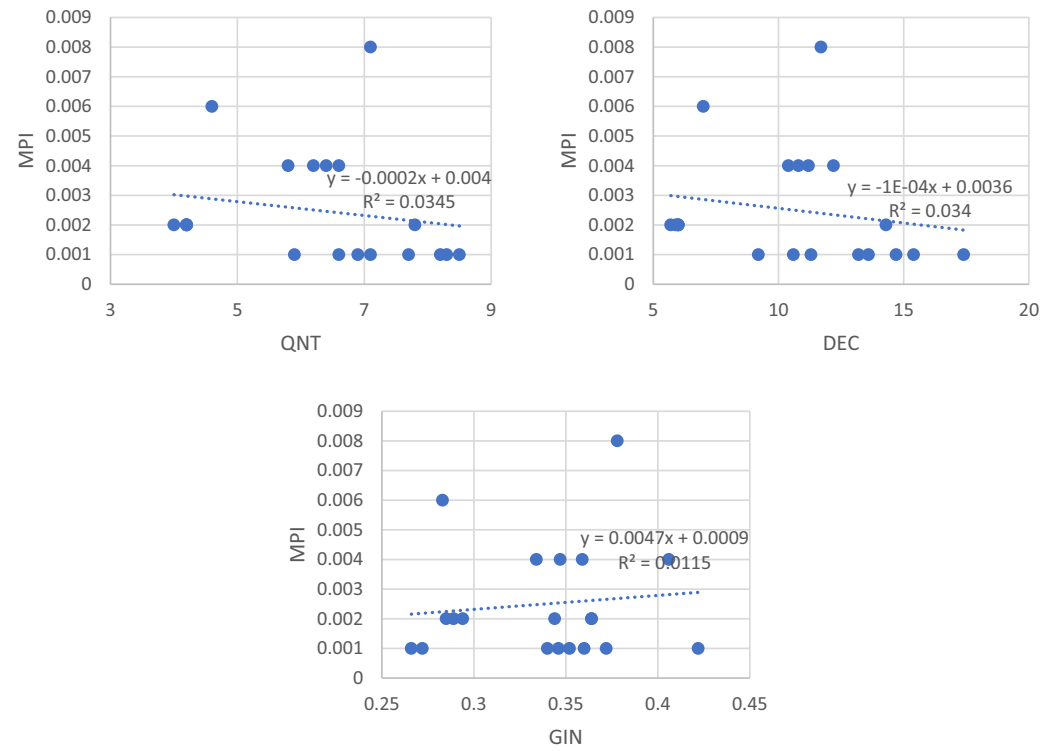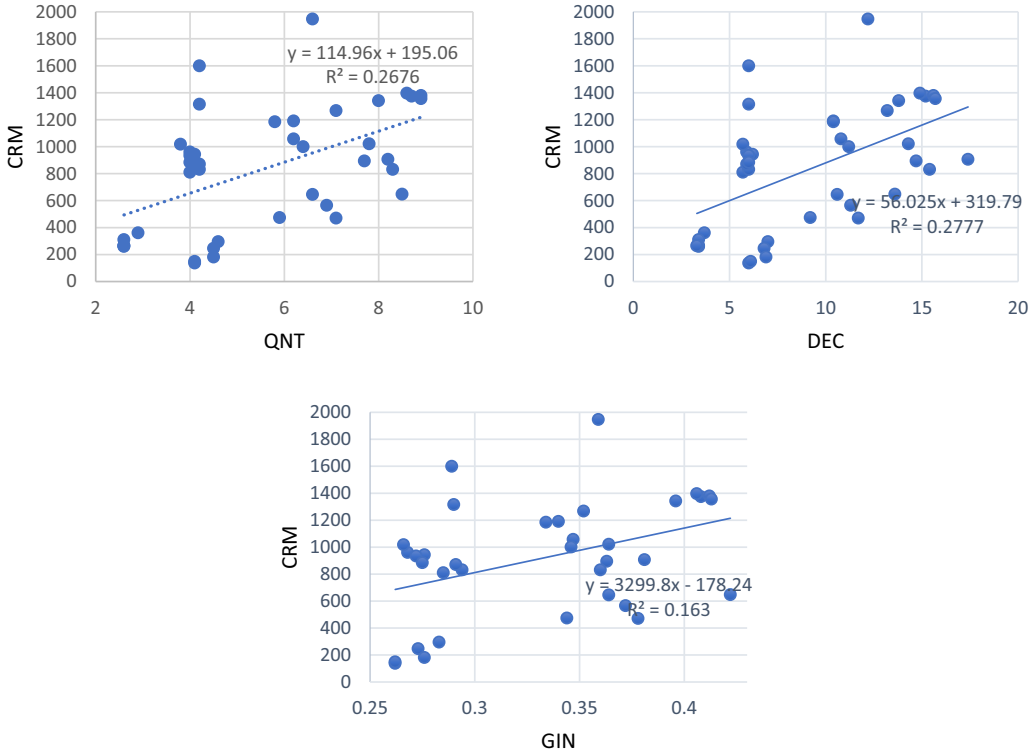

Figure 5. The Pearson correlation scatter plots for the dependence of the IIMs and the Multidimensional Poverty Index.
Source: Composed by the author.

Figure 6. The Pearson correlation scatter plots for the dependence of the IIMs and the crime rate.
Source: Composed by the author.

Table 13. The regression statistics for the dependence of the IIMs and the Multidimensional Poverty Index

	QNT–MPI	DEC–MPI	GIN–MPI
Coefficient (r)	.185666906	.184348918	.107326693
R^2	.0344722	.033984524	.011519019
Normalized R^2	-.019168233	-.019683003	-.043396591
Standard arrow	.00195153	.001952023	.001974591
Number of observations	20	20	20

Source: Composed by the author.

Table 14. The regression statistics for the dependence of the IIMs and the crime rate

	QNT–CRM	DEC–CRM	GIN–CRM
Coefficient (*r*)	.517302591	.526943905	.403696222
R^2	.26760197	.277669879	.16297064
Normalized R^2	.248328338	.258661191	.137606113
Standard arrow	1.768750048	3.671629892	.048902322
Number of observations	40	40	35

Source: Composed by the author.

Current empirical studies that examine the correlation between poverty and income inequality exhibit both positive and negative dependencies. On the one hand, income inequities encourage entrepreneurial activity, financial inclusion, and capital inflow, thereby propelling economic growth, leading to a rise in incomes and a reduction in poverty (Beker, 2020; Bergstrom, 2020; Omar and Inaba, 2020). On the other hand, substantial income inequality, exhibited by low-income economies, may have the opposite effect, causing economic stagnation and therefore increasing poverty (Lechheb et al., 2019; Amponsah et al., 2023).

Similar to developing countries, transition economies are marked by polarization. Therefore, a group of impoverished nations exists, with over half (Tajikistan), one-sixth (Kyrgyzstan), and one-seventh of the population (Armenia) living in conditions of severe deprivation. Despite the substantial progress that these countries have made in poverty reduction since 2010, it is expected that the significant disparity between them and other CIS nations will continue for an extended period. The increasing living standards of all socio-economic groups in Russia are resulting in a gradual decrease in poverty and a concurrent increase in income inequality, albeit at a varying pace. A notably high DEC ratio suggests that the affluent's income growth exceeds the impoverished rate of improvement in their material circumstances. This discrepancy leads to the official poverty line failing to accurately reflect the actual state of need.

As of the present, Belarus is the sole CIS nation to have eradicated poverty as a socio-economic phenomenon. Its presence in other countries of this economic group (Kazakhstan and Azerbaijan), albeit in minimal amounts, indicates the insufficient efforts of governments to provide the entire population with state minimum guarantees. And also serves as evidence of the immense distance that even the most promising post-Soviet nations have from the European *Universal Basic Income* model.

The author observes a positive correlation between IIMs and the CRM. (The correlation coefficient stands at 0.51730 for the QNT–CRM, 0.52694 for the DEC–CRM, and 0.40369 for the GIN–CRM dependence.) The results are consistent with the existing research by Hazra (2020), Sugiharti et al. (2023), and Itskovich and Factor (2023), and allow us to confirm the significance of income inequality in the context of poverty and criminality rise for the CIS economies.

Concluding remarks

In the majority of CIS countries, the income differentiation appears below the global average level. However, regardless of how critical it may be, the results obtained allowed us to state the importance of this problem in the context of escalating poverty and crime.

Although the author was unable to establish a strong correlation between IIMs and MPI through linear regression tests, the analysis of countries' data revealed that CIS states with a higher degree of income differentiation have a higher prevalence of poverty. Additionally, we found a positive correlation between IIMs and the CRM. In this regard, an efficient social policy of the CIS states aimed at reducing income inequality may indirectly contribute to the reduction of poverty and the number of criminal acts.

An essential step in this direction would become the implementation of *progressive taxation*, which appears to be a fundamental component of civilized distribution relations in advanced economies., Without additional budgetary costs, a progressive tax scale would enable (i) the augmentation of the minimum amount for all types of pensions to the subsistence minimum, (ii) the augmentation of accrued wages of public sector employment by one and a half times, (iii) the introduction of a guaranteed per capita monetary income for complete and incomplete nuclear families with children at the level of 50% of the median per capita monetary income, as well as an enhancement of the monthly child allowance for other families with children, and (iv) the augmentation of the minimum wage to the subsistence minimum (Farhi and Werning, 2005). Additionally, a combination of income tax and a progressive property tax could serve as an optimal mechanism for implementing social planning (Makdissi and Mussard, 2008).

Further, a redistribution of income would provide an incentive to improve the demographic situation through the construction of affordable housing, compensatory benefits, and so forth. In the CIS countries, the magnitude of the impact of excessive inequality and poverty on the economic and demographic dynamics is considerable. Reducing excess inequality will not only halt depopulation but also ensure significantly higher rates of economic growth. Thus, the indicators of inequality and relative poverty should become a key benchmark for coordinated economic, social, and demographic policies.

One of the measures should be directed towards supporting the agricultural sector. In Tajikistan and Kyrgyzstan, a significant portion of the workforce is employed in the agricultural sector, which makes the issue of low wages particularly important. In the longer term, enhancing the standard of living of rural residents will alleviate the burden on cities, thereby reducing the degree of inequity within society. This will necessitate the implementation of reforms aimed at enhancing labour productivity, infrastructure, and social services in rural regions.

As revealed during the research, countries with minimal income differentiation exhibit higher social payments compared to those with significant income inequality. Nevertheless, all CIS nations are undergoing a significant transformation in pension and social insurance systems, identifying optimal financial models for pensions and social benefits that adhere to international norms and standards. Kazakhstan has made notable progress in this direction among the other Commonwealth nations. The new Social Code, which entered into force on July 1, 2023, is intended to establish an equitable society based on the fundamental principle of inclusion, where all citizens are afforded "*equal opportunities and have equal access to social services.*" The document contains numerous provisions that aim to improve work environments, attract individuals with disabilities, establish job quotas, collaborate with non-governmental organizations, and increase the amount of social benefits by 23%.

Kazakhstan's experience is instructive and may serve as a model for other CIS nations to improve their social programmes. However, given the internal processes occurring within the CIS states, it is imperative to develop a comprehensive regional strategy as well as individual country strategies that will take into account the specifics and exigencies of each country. Due to the plethora of economic, political, and social factors that have an impact on the CIS nations, it is imperative to explore novel approaches to attain an optimal balance between the economic and social components of society's advancement, thereby preventing any potential conflict between economic priorities and the principles of social justice.

Limitations

Models constructed with a variety of measures and variables have the potential to yield divergent and occasionally diametrically opposed outcomes. This can be attributed to disparities in data collection systems across various nations, as well as disparities in the translation of national monetary measures into a comparable currency, thereby complicating cross-country comparisons. Furthermore, the CIS Statcommittee publishes wage statistics for individuals who are employed in large and medium-sized enterprises, omitting self-employed individuals who are not included in the official registers.

The author found that the MPI, which was used to determine the relationship between income inequality and poverty, was not appropriate for the CIS nations. For some countries, low poverty results were attributed to methodological limitations, for example, missing indicators on nutrition (Uzbekistan), child death (Kazakhstan), cooking fuel (Turkmenistan), and so forth. In this regard, the author's subsequent research will necessitate a more meticulous selection of poverty metrics.

Additionally, the CIS countries employ diverse methodologies for determining poverty, which posed an obstacle for the empirical data collection. For instance, in Russia, the poverty threshold is determined by monetary income, while in Belarus, it is consumption expenditure. Such an absolute approach, applied to income evaluation, does not permit the assessment of individuals who are on the brink of poverty and those who can be classified as middle-income. Moreover, it is important to acknowledge that governments frequently conceal official data (such as in Belarus), furnish outdated data (such as in

Moldova, which was last updated in 2012), or provide "convenient" figures based on political objectives. These aspects suggest the need for further in-depth research using more sophisticated methodological approaches applied to various levels and aspects of the topic.

Future research

The investigation of "income inequality–poverty" dependence will require a more meticulous selection of poverty metrics, as the MPI was found to be inappropriate for the CIS nations. Future research should employ panel quantile regression (Koenker, 2004), setting macroeconomic conditions of IIMs (e.g., urbanization, education, and employment) as control variables to provide a more precise representation of the correlation between income inequality and poverty.

Data availability statement. Data will be available on request.

Compliance with ethical standards. Ethical approval was not sought for the present study.

Informed consent. This article does not contain any studies with human participants performed by the author.

References

Afonso, A., **Schuknecht, L.**, & **Tanzi, V.** (2010). Income distribution determinants and public spending efficiency. *Journal of Economic Inequality*, 8 (*3*), 367–389. https://doi.org/10.1007/s10888-010-9138-z.

Amponsah, M., **Agbola, F.W.**, & **Mahmood, A.** (2023). The relationship between poverty, income inequality and inclusive growth in sub-Saharan Africa. *Economic Modelling*, 126. https://doi.org/10.1016/j.econmod.2023.106415.

Andersen, T.M., **Bhattacharya, J.**, **Grodecka-Messi, A.**, & **Mann, K.** (2024). Pension reform and wealth inequality: Theory and evidence. *European Economic Review*, 165. https://doi.org/10.1016/j.euroecorev.2024.104746.

Arcanjo, M. (2009). Regimes and reform of welfare state: The classification of ten European countries in 1990 and 2006. *ISEG Working Papers*, 34, 1–18.

Artige, L. & **Cavenaile, L.** (2023). Public education expenditures, growth and income inequality. *Journal of Economic Theory*, *209*(C). https://doi.org/10.1016/j.jet.2023.105622.

Baek, I. & **Shi, Q.** (2016). Impact of economic globalization on income inequality: Developed economies vs emerging economies. *Global Economy Journal*, 16 (*1*), 49–61. https://doi.org/10.1515/gej-2015-0047.

Bambra, C. (2007). 'Sifting the wheat from the chaff': A two-dimensional discriminant analysis of welfare state regime theory. *Social Policy and Administration*, 41 (*1*), 1–28. https://doi.org/10.1111/j.1467-9515.2007.00536.x.

Barber, B. (1963). Some problems in the sociology of the professions. *Daedalus*, 92, 669–688.

Beker, V. A. (2020). Poverty and income inequality: A complex relationship. *Real-World Economics Review*, 92. Accessed from https://www.paecon.net/PAEReview/issue92/Beker92.pdf

Belz, E. (2019). *Estimating inequality measures from quantile data. Economics Working Paper archive (University of Rennes & University of Caen) 2019-09, Center for Research in economics and management (CREM)*, University of Rennes, University of Caen and CNRS. Accessed from https://shs.hal.science/halshs-02320110/file/Belz_Estimating-Inequality-Measures-from-Quantile-Data_2019.pdf

Bergstrom, K. A. (2020). *The role of inequality for poverty reduction*. The World Bank Policy Research Working Paper Series No 9409. Accessed from https://pdfs.semanticscholar.org/4338/5f8424216d194b75cd06cdf04ef91d9c8def.pdf

Birdsall, N. (2006). *Globalization will increase inequality. Global policy forum*. Accessed from https://archive.globalpolicy.org/component/content/article/218-injustice-and-inequality/46552.html

Bonoli, G. (1997). Classifying welfare states: A two-dimension approach. *Journal of Social Policy*, *26*(3), 351–372.

Borjas, G.J. (2000). *Issues in the economics of immigration*. Chicago: Univ. of Chicago Press.

Bouveta, F. & **King, S.** (2016). Income inequality and election outcomes in OECD countries: New evidence following the great recession of 2008-2009. *Electoral Studies*, 41, 70–79. https://doi.org/10.1016/j.electstud.2015.11.006.

Brewer, B. D. (2011). Global commodity chains & world income inequalities: The missing link of inequality & the «upgrading» paradox. *Journal of World-Systems Research*, *17-I*(2), 308–327. https://doi.org/10.5195/jwsr.2011.423

Brown, C. & **Campbell, B.** (2002). The impact of technological change on work and wages. *Industrial relations. Journal of economy and society*, 41 (*1*), 1–33. https://doi.org/10.1111/1468-232X.00233.

Butler, J., **Wildermuth, A.G.**, **Thiede, B.C.**, & **Brown, D.L.** (2020). Population change and income inequality in rural America. *Population Research and Policy Review*, 39 (5), 889–911. https://doi.org/10.1007/s11113-020-09606-7.

Castles, F.G. (1993). *Families of nations: Patterns of policy in Western democracies*. Aldershot: Dartmouth Publishing.

Castles, F.G., **Leibfried, S.**, **Lewis, J.**, **Obinger, H.**, & **Pierson, C.** (2010). *The Oxford handbook of the welfare state*. Oxford: Oxford University Press.

Cerra, V., **Lama, R.**, & **Loayza, N.V.** (2021). *Links between growth, inequality, and poverty : A survey. Policy research Working Paper series 9603*: The World Bank.

Chancel, L., **Piketty, T.**, **Saez, E.**, **Zucman, G.**, et al. (2022). *World inequality report 2022*: World Inequality Lab.

Cingano, F. (2014). *Trends in income inequality and its impact on economic growth. OECD social, employment and migration working papers* (Vol. 163): OECD Publishing. https://doi.org/10.1787/5jxrjncwxv6j-en.

CIS Statcommittee (2021). *Monitoring of population life quality indicators in the countries of the commonwealth of independent states: 2017-2020.*

CIS Statcommittee (2023a). *Population and social indicators of the CIS and other countries of the world: 2019-2022.*

CIS Statcommittee. (2023b). *Population, employment and living conditions in the countries of the commonwealth of independent states: 2022*. Statistical abstract. Accessed from https://new.cisstat.org/documents/20143/857297/sb_population2022.pdf/527996ba-b68b-055a-3c7f-a59419f938a3?t=1707378712143

CIS Statcommittee. (2023c). *Commonwealth of Independent States in 2022. Statistical Yearbook*.

CIS Statcommittee (2023d). *Monitoring of population life quality indicators in the countries of the commonwealth of independent states: 2019-2022.*

CIS Statcommittee (2024). *Monitoring of sustainable development goal (SDG) indicators in the CIS region 2018-2022: Statistical abstract.*

Cömert, M. (2019). Revival of Keynesian economics or greening capitalism: "Green Keynesianism". *Sosyoekonomi*, 27 (42), 129–144. https://doi.org/10.17233/sosyoekonomi.2019.04.07.

Cornia, G.A. (2004). *Inequality, growth, and poverty in an era of liberalization and globalization*. Oxford: Oxford Univ. Press.

Custers, P. (2010). The tasks of Keynesianism today: Green new deals as transition towards a zero-growth economy? *New Political Science*, 32 (2), 173–191. https://doi.org/10.1080/07393141003722032.

Daly, M. & **Lewis, J.** (1998). *Introduction: Conceptualizing social Care in the Context of welfare state restructuring. Gender, social care and welfare state restructuring in Europe*. Brookfield: Ashgate.

Davis, K. & **Moore, W.E.** (1945). Some principles of stratification. *American Sociological Review*, 10, 242–249. https://doi.org/10.2307/2085643.

Deacon, B. (2007). *Global social policy and governance*. London: Sage.

Deaton, A.S. (2013). *The great escape: Health, wealth, and the origins of inequality*. Princeton: Princeton University Press.

Delhey, J. & **Kohler, U.** (2011). Is happiness inequality immune to income inequality? New evidence through instrument-effect-corrected standard deviations. *Social Science Research*, 40 (3), 742–756. https://doi.org/10.1016/j.ssresearch.2010.12.004.

Dolls, M., **Doorley, K.**, **Paulus, L.**, **Schneider, H.**, & **Sommer? E.** (2019). Demographic change and the European income distribution. *Journal of Economic Inequality*, 17 (3), 337–357. https://doi.org/10.1007/s10888-019-09411-z.

Dreher, A. & **Gaston, N.** (2008). Has globalization increased inequality? *Review of International Economics*, 16 (3), 516–536. https://doi.org/10.1111/j.1467-9396.2008.00743.x.

Durkheim, E. (1964). *The division of labor in society*. New York: Free Press.

Easterly, W. & **Fischer, S.** (2001). Inflation and the poor. *Journal of Money, Credit and Banking*, 33 (2) Part 1, 160–178. https://doi.org/10.2307/2673879.

Enderwick, P. (2006). *Globalization and labor*. Philadelphia: Chelsea House Publishers.

Erosa, A., **Koreshkova, T.**, & **Restuccia, D.** (2010). How important is human capital? A quantitative theory assessment of world income inequality. *The Review of Economic Studies*, 77 (4), 1421–1449. https://doi.org/10.1111/j.1467-937X.2010.00610.x.

Esping-Andersen, G. (1990). *Three world of welfare capitalism*. Oxford: Oxford Polity Press.

Esping-Andersen, G. (1996). *Welfare states in transition: National Adaptations in global economies*. London: Sage.

Esping-Andersen, G. (1999). *Social foundations of postindustrial economies*. Oxford: Oxford University Press.

Farhi, E. & **Werning, I.** (2005). *Inequality, social discounting and estate taxation*. NBER Working Paper № 11408. https://doi.org/10.3386/w11408

Feenstra, R.C. & **Hanson, G.H.** (1996). Globalization, outsourcing, and wage inequality. *The American Economic Review*, 86 (2), 240–245. https://doi.org/10.3386/w5424.

Ferreira, I.A., **Gisselquist, R.M.**, & **Tarp, F.** (2022). On the impact of inequality on growth, human development, and governance. *International Studies Review*, 24 (1). https://doi.org/10.1093/isr/viab058.

Ferrera, M. (1996). The 'southern model' of welfare state in social Europe. *Journal of European Social Policy*, 6 (1), 17–37. https://doi.org/10.1177/095892879600600102.

Fields, G.S. & **Yoo, G.** (2000). Falling labor income inequality in Korea's economic growth: Patterns and underlying causes. *The Review of Income and Wealth*, 46 (2), 139–159. https://doi.org/10.1111/j.1475-4991.2000.tb00952.x.

Firebaugh, G. & **Goesling, B.** (2004). Accounting for the recent decline in global income inequality. *American Journal of Sociology*, *110* (*2*), 283–312. https://doi.org/10.1086/421541.

Galbraith, J.K., **Priest, C.**, & **Purcell, G.** (2006). Economic equality and victory in war: An empirical investigation. *Defense and Peace Economics*, *18* (*5*), 431–449. https://doi.org/10.1080/10242690701455482.

Gastwirth, J.L. (1971). A general definition of the Lorenz curve. *Econometrica*, *39* (*6*), 1037–1039. https://doi.org/10.2307/1909675.

Gini, C. (1914). Sulla misura della concentrazione e della variabilita Dei caratteri. *Premiate officine grafiche C. Ferrari*, *73c*, 1203–1248.

Gough, I. (2001). Social assistance regimes: A cluster analysis. *Journal of European Social Policy*, *1* (*1*), 1–13. https://doi.org/10.1177/095892870101100205.

Günther, I. & **Martorano, B.** (2025). Inequality, social mobility and redistributive preferences. *Journal of Economic Behavior & Organization*, *229*. https://doi.org/10.1016/j.jebo.2024.106828.

Gupta, S. (1998). *Economic transition and social protection--issues and agenda for reform*. IMF Paper on Policy Analysis and Assessment No. 98/14. Accessed from https://www.imf.org/external/pubs/ft/ppaa/ppaa9814.pdf

Harris, J.M. (2013). *Green Keynesianism: Beyond standard growth paradigms. Building a green economy: Perspectives from ecological economics* (pp. 69–82): Michigan State University Press.

Hazra, D. (2020). What does (and does not) affect crime in India? *International Journal of Social Economics 47*, 503–521. https://doi.org/10.1108/IJSE-03-2019-0206

Heller, P.S. (2001). Social sector reform in transition countries. *IMF Working Paper*, *01* (*35*). https://doi.org/10.5089/9781451845358.001.

Huynh, M., **Parker, J.D.**, **Harper, S.**, **Pamuk, E.**, & **Schoendorf, K.C.** (2005). Contextual effect of income inequality on birth outcomes. *International Journal of Epidemiology*, *34* (*4*), 888–895. https://doi.org/10.1093/ije/dyi092.

Itskovich, E. & **Factor, R.** (2023). Economic inequality and crime: The role of social resistance. *Journal of Criminal Justice*, *86*. https://doi.org/10.1016/j.jcrimjus.2023.102065.

Jensen, C. (2008). Words of welfare services and transfers. *Journal of European Social Policy*, *18* (*2*), 151–162. https://doi.org/10.1177/0958928707087591.

Kautto, M. (2002). Investing in Services in West European Welfare States. *Journal of European Social Policy*, *12* (*1*), 53–65. https://doi.org/10.1177/0952872002012001636.

Kim, C. & **Kim, A.T.** (2024). Aging and the rise in bottom income inequality in Korea. *Research in Social Stratification and Mobility*, *89*. https://doi.org/10.1016/j.rssm.2023.100882.

Koenker, R. (2004). Quantile regression for longitudinal data. *Journal of Multivariate Analysis*, *91* (*1*), 74–89. https://doi.org/10.1016/j.jmva.2004.05.006.

Kolmogorov, A. (1933). Sulla determinazione empirica di una legge di distribuzione. *Giornale dell'Istituto Italiano degli Attuari*, *4*, 83–89

Korpi, W. (1983). *The democratic class struggle*. London: Routledge and Kegan Paul.

Korpi, N. (2003). *Welfare states regress in Western Europe: Politics, institutions, globalization and Europeanization. Working Paper series 5/2003*: Stockholm University, Swedish Institute for Social Research.

Lechheb, H., **Ouakil, H.**, & **Jouilil, Y.** (2019). Economic growth, poverty, and income inequality. *The Journal of Private Equity*, *23* (*2*), 137–145. https://doi.org/10.3905/jpe.2019.1.097.

Lessmann, C. (2014). Spatial inequality and development — Is there an inverted-U relationship? *Journal of Development Economics*, *106* (*C*), 35–51. https://doi.org/10.1016/j.jdeveco.2013.08.011.

Li, Y., **Jia, N.**, **Song, W.**, & **Cheng, J.** (2024). Unbalanced burden is escalating: Urban inequality landscape under sudden shocks? *Journal of Urban Management* (In Press). https://doi.org/10.1016/j.jum.2024.08.006.

Li, J., **Wang, X.**, **Xu, J.**, & **Yuan, C.** (2020). The role of public pensions in income inequality among elderly households in China 1988–2013. *China Economic Review*, *61* (*C*). https://doi.org/10.1016/j.chieco.2020.101422.

Lorenz, M.O. (1905). Methods of measuring the concentration of wealth. *Publications of the American Statistical Association*, *9* (*70*), 209–219.

Magableh, S., **Alalawneh, M.**, & **Al-qalawi, U.** (2022). An empirical study on the effect of education on labor productivity. *Journal of Governance and Regulation*, *11* (*2*), 301–308. https://doi.org/10.22495/jgrv11i2siart9.

Makdissi, P. & **Mussard, S.** (2008). Decomposition of s-concentration curves. *The Canadian Journal of Economics*, *41* (*4*), 1312–1328. https://doi.org/10.1111/j.1540-5982.2008.00505.x.

Mdingi, K. & **Ho, S.-Y.** (2021). Literature review on income inequality and economic growth. *MethodsX*, *8*. https://doi.org/10.1016/j.mex.2021.101402.

Melki, M. (2022). Inequality and investment: The role of institutions. *Economic Modelling*, *108*. https://doi.org/10.1016/j.econmod.2021.105736.

Meschi, E. & **Vivarelli, M.** (2007). *Globalization and income inequality*. Bonn: Forschungsinstitut zur Zukunft der Arbeit.

Milanovic, B. (2002). *Can we discern the effect of globalization on income distribution? Evidence from household budget surveys. Policy research Working Paper, series 2876*: The World Bank.

Mills, M. (2009). Globalization and inequality. *European Sociological Review*, 25 (*1*), 1 –8. https://doi.org/10.1093/esr/jcn046.

Murphy, R.H. (2015). The impact of economic inequality on economic freedom. *Cato Journal*, 35 (*1*), 117–131. https://doi.org/10.2139/ssrn.2438033.

Novokmet, F., **Piketty, T.**, & **Zucman, G.** (2018). From soviets to oligarchs: Inequality and property in Russia 1905-2016. *The Journal of Economic Inequality, Springer; Society for the Study of Economic Inequality*, 16 (*2*), 189–223. https://doi.org/10.3386/w23712.

OECD (2015). *In it together: Why less inequality benefits all*: OECD Publishing Accessed from. https://doi.org/10.1787/9789264235120-en.

OECD (2021). *Financial literacy levels in the commonwealth of independent states*. Paris: OECD Publishing. https://doi.org/10.1787/394dbe88-en.

Omar, M.A. & **Inaba, K.** (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. *Journal of Economic Structures*, 9 (*1*), 1–25 *December*. https://doi.org/10.1186/s40008-020-00214-4.

Orloff, A.S. (1993). Gender and the social rights of citizenship: The comparative analysis of state policies and gender relations. *American Sociological Review*, 58 (*3*), 303–328. https://doi.org/10.2307/2095903.

Oyenubi, A. & **Mosomi, J.** (2024). Utility of inequality sensitive measures of the gender wage gap: Evidence from South Africa. *Economic Analysis and Policy*, 81, 576–590. https://doi.org/10.1016/j.eap.2023.12.017.

Parsons, T. (1951). *The social system*. New York: The Free Press.

Pearson, K. (1904). *On the theory of contingency and its relation to association and Normal correlation*. London: Dulau & Co.

Piketty, T. & **Saez, E.** (2001). *Income inequality in the United States, 1913–1998. NBER Working Paper № 8467*. https://doi.org/10.3386/w8467.

Ravallion, M. (2003). *The debate on globalization, poverty, and inequality : Why measurement matters. Policy research Working Paper series* (Vol. *3038*): The World Bank.

Remington, T.F. (2015). Why is interregional inequality in Russia and China not falling? *Communist and Post-Communist Studies*, 48, 1–13. https://doi.org/10.1016/j.postcomstud.2015.01.005.

Sala-i-Martin, X. (2006). The world distribution of income: Falling poverty and… Convergence, period. *The Quarterly Journal of Economics*, 121(2), 351–397.

Sanhueza, A., **Cueva, D.A.**, **Mujica, O.J.**, **Soliz, P.**, & **Duran, P.** (2024). Income inequality as a determinant of neonatal mortality in the Americas during 2000-2019: Implications for the attainment of sustainable development goal target 3.2. *International Journal for Equity in Health*, 23 (*1*), 109. https://doi.org/10.1186/s12939-024-02157-9.

Shapiro, S.S. & **Wilk, M.B.** (1965). An analysis of variance test for normality (complete samples). *Biometrika*, 52 (*3–4*), 591–611. https://doi.org/10.1093/biomet/52.3-4.591.

Siddiqi, A., **Jones, M.K.**, & **Erwin, P.K.** (2015). Does higher income inequality adversely influence infant mortality rates? Reconciling descriptive patterns and recent research findings. *Social Science & Medicine*, 131, 82–88. https://doi.org/10.1016/j.socscimed.2015.03.010.

Simai, M. (2006). *Poverty and inequality in Eastern Europe and the CIS transition economies*. UN. Department of Economic and Social Affairs. Accessed from https://www.un.org/esa/desa/papers/2006/wp17_2006.pdf

Smirnov, N. (1948). Table for estimating the goodness of fit of empirical distributions. *Annals of Mathematical Statistics*, 19 (*2*), 279–281. https://doi.org/10.1214/aoms/1177730256.

Stiglitz, J.E. (2016). Inequality and economic growth. *The Political Quarterly*, 86, 134–155. https://doi.org/10.1111/1467-923X.12237.

Sugiharti, L., **Purwono, R.**, **Esquivias, M.G.**, & **Rohmawati, H.** (2023). The nexus between crime rates, poverty, and income inequality: A case study of Indonesia. *Economies*, 11 (*2*). https://doi.org/10.3390/economies11020062.

Taresh, A., **Sari, D.W.**, & **Purwono, R.** (2021). Analysis of the relationship between income inequality and social variables: Evidence from Indonesia. *Economics and Sociology*, 14 (*1*), 103–119. https://doi.org/10.14254/2071-789X.2021/14-1/7.

Thaning, M. (2021). Resource specificity in intergenerational inequality: The case of education, occupation, and income. *Research in Social Stratification and Mobility*, 75 (*1*). https://doi.org/10.1016/j.rssm.2021.100644.

Topuz, S.G. (2022). The relationship between income inequality and economic growth: Are transmission channels effective? *Social Indicators Research*, 162, 1177–1231. https://doi.org/10.1007/s11205-022-02882-0.

UBS. (2025). *Global wealth report 2025*. Accessed online from https://www.ubs.com/global/en/wealthmanagement/insights/global-wealth-report.html

UN. (2013). *Report on world social situation 2013: Inequality matters*. Accessed from https://www.un.org/en/development/desa/publications/world-social-situation-2013.html

UNDP. (2023). Global multidimensional poverty index 2023. Unstacking global poverty: Data for high impact action. Accessed from https://hdr.undp.org/system/files/documents/hdp-document/2023mpireporten.pdf

Wang, X., **Shao, S.**, & **Li, L.** (2019). Agricultural inputs, urbanization, and urban-rural income disparity: Evidence from China. *China Economic Review*, *55*, 67–84. https://doi.org/10.1016/j.chieco.2019.03.009.

Weber, M. (1947). *The theory of social and economic organizations*. New York: Free Press.

Wildeboer Schut, J.M., **Vrooman, J.C.**, & **Beer, P.** (2001). *On worlds of welfare. Institutions and their effects in eleven welfare states*. Hague: Social and Cultural Planning Office.

Wilensky, H.L. (1975). *The welfare state and equality: Structural and ideological roots of public expenditures*. Berkeley: University of California Press.

Wilkinson, R.G. & **Pickett, K.E.** (2009). Income inequality and social dysfunction. *Annual Review of Sociology*, *35*, 493–511. https://doi.org/10.1146/annurev-soc-070308-115926.

Appendix

Table A1. The mean of variables

Year	Country	QNT	DEC	CRM	GIN	MPI
2022	Azerbaijan	2.9	3.7	361	NA	NA
	Armenia	7.1	13.2	1267	0.352	0.001
	Belarus	4.0	5.9	960	0.268	NA
	Kazakhstan	4.0	5.7	810	0.285	0.002
	Kyrgyzstan	8.5	13.6	647	0.422	0.001
	Moldova	6.2	10.8	1057	0.347	0.004
	Russia	8.0	13.8	1341	0.396	NA
	Uzbekistan	4.6	7.0	295	0.283	0.006
2021	Azerbaijan	2.6	3.4	310	NA	NA
	Armenia	7.8	14.3	1021	0.364	0.001
	Belarus	4.1	6.2	943	0.276	NA
	Kazakhstan	4.2	6.0	831	0.294	0.002
	Kyrgyzstan	6.9	11.3	565	0.372	0.001
	Moldova	6.6	12.2	1946	0.359	0.004
	Russia	8.7	15.2	1374	0.408	NA
	Uzbekistan	4.5	6.8	246	0.273	NA
2020	Azerbaijan	2.6	3.4	260	NA	NA
	Armenia	7.7	14.7	894	0.266	0.002
	Belarus	3.8	5.7	1018	0.291	NA
	Kazakhstan	4.2	5.9	870	0.344	0.002
	Kyrgyzstan	5.9	9.2	474	0.346	0.001
	Moldova	6.4	11.2	1000	0.406	0.004
	Russia	8.6	14.9	1396	0.276	NA
	Uzbekistan	4.5	6.9	181	NA	NA

(continued)

Table A1. *Continued*

| Year	Country	QNT	DEC	CRM	GIN	MPI
2019	Azerbaijan	2.6	3.4	266	0.381	NA
	Armenia	8.2	17.4	906	0.272	0.001
	Belarus	4.0	6.0	934	0.290	NA
	Kazakhstan	4.2	6.0	1315	0.364	0.002
	Kyrgyzstan	6.6	10.6	645	0.340	NA
	Moldova	6.2	10.4	1190	0.412	NA
	Russia	8.9	15.6	1379	0.262	NA
	Uzbekistan	4.1	6.0	137	NA	NA
2018	Azerbaijan	2.6	3.3	265	NA	NA
	Armenia	8.3	15.4	831	0.360	0.001
	Belarus	4.0	6.0	884	0.275	NA
	Kazakhstan	4.2	6.0	1599	0.289	0.002
	Kyrgyzstan	7.1	11.7	470	0.378	0.008
	Moldova	5.8	10.4	1184	0.334	0.004
	Russia	8.9	15.7	1356	0.413	NA
	Uzbekistan	4.1	6.1	149	0.262	NA
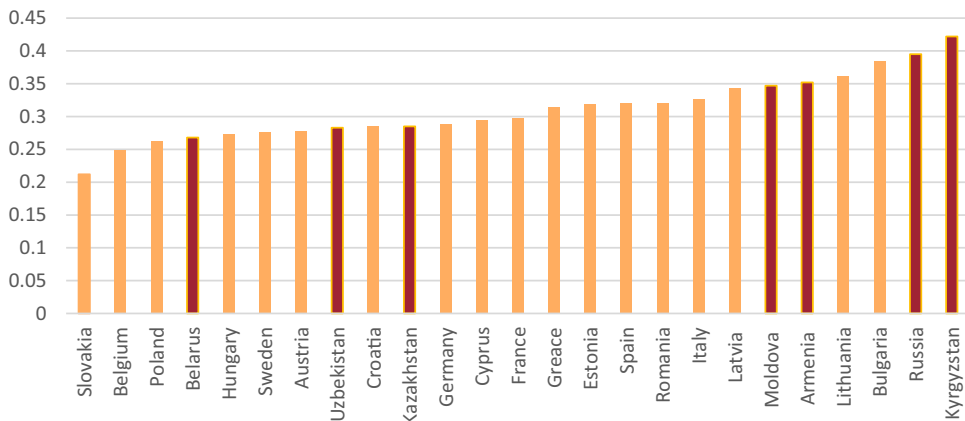
Figure A1. The Gini index values for the EU and CIS countries, 2022.
Source: composed by the author based on the World Population Review official website.