

INEQUALITY AND INFLATION IN THE EUROPEAN UNION

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Abstract

Inflation and income inequality are actual major challenges in Europe, but a better understanding of these phenomena should consider their connection. In this paper, the impact of inflation on income inequality in the EU is assessed using dynamic panel system generalized method of moments (SGMM) estimator. The novelty of this research is given by the consideration of gender pay gap as a measure of income inequality and the evaluation of inflation impact of gender pay gap. The results indicated that inflation had a negative impact on Gini index in the period 1990-2024, but a positive one in the period 2006-2024. Moreover, a non-linear relationship is also supported in both periods. In addition, unemployment and poverty partially mediated the relationship between inflation and Gini index. However, inflation had no significant effect on gender pay gap.

Keywords: income inequality; inflation; unemployment; poverty.

1. INTRODUCTION

Income inequality and inflation are currently two major macroeconomic challenges in the European Union. Recent economic crises, the COVID-19 pandemic, and significant increases in energy and food prices partially due to the war in Ukraine have made it extremely important to understand how price variations influence income distribution in order to design more equitable monetary and fiscal policies.

Despite the fact that there are some studies in literature that assessed the impact of inflation on income inequality using various measures of income inequality (Simionescu, 2025), none of them considers gender pay gap as a proxy for inequality even if the European Commission monitors this indicator and promotes lack of discrimination between citizens.

This study aims to contribute to the existing literature through an empirical analysis of the impact of inflation on income inequality in the European Union for the period 1990-2024. The novelty of this research consists of three directions: first, the use of the gender pay gap as a complementary measure of inequality alongside the traditional Gini index; second, the systematic evaluation of the mediation role of the unemployment and poverty in the relationship between inflation and inequality; and third, the consideration of both linear and non-linear effects of inflation, allowing for the identification of critical thresholds and complex impact patterns, such as U-shaped or inverted U-shaped relationships.

From a methodological perspective, the study utilizes the dynamic panel system generalized method of moments (SGMM) estimator. The analysis is conducted for two distinct periods, 1990-2024 and 2006-2024, in order to evaluate the stability of the relationships identified between the variables, and considering the limited availability of gender pay gap data (2006-2024).

The next section presents a systematic review of the literature regarding the relationship between inflation and inequality. Then the next section describes the research methodology, the data used, and the econometric specifications. We present, as well, the empirical results, including baseline estimations, the analysis of mediation, and non-linear effects. And the final section discusses the implications of the results and formulates the study's main conclusions.

2. LITERATURE REVIEW

The economic literature highlights that the relationship between inflation and income inequality is complex. Some studies show that inflation disproportionately affects low-income households, which hold a larger share of their wealth in liquid assets (Beetsma & Van Der Ploeg, 1996), while households with diversified asset portfolios are better protected against the erosion of purchasing power (Erosa & Ventura, 2002). Unexpected inflation may also benefit debtors by reducing the real value of debt, while harming creditors (Doepke & Schneider, 2006), thereby introducing additional redistributive effects.

Although the determinants of inequality and the effects of inflation have been widely analyzed, the direct relationship between these two phenomena remains debated and strongly dependent on national context and labor-market structure. Moreover, specific dimensions of inequality, such as the gender pay gap, have rarely been considered as complementary measures of economic inequity. Intermediate factors such as unemployment and poverty may mediate the transmission of inflationary effects to the income distribution, yet empirical evidence for the EU remains incomplete.

From an empirical perspective, results are inconclusive. A number of studies suggest that inflation tends to increase income inequality by eroding the purchasing power of vulnerable groups and through lags between wage adjustments and price increases (Albanesi, 2002; Ghossouba & Reed, 2017; Berisha & Meszaros, 2020). Other works, however, do not find a robust relationship or identify context-dependent effects, implying that institutions, labor-market characteristics and public policies may moderate the impact of inflation on income distribution (Meh et al., 2010; Coibion et al., 2017; Furceri et al., 2018). This divergence has been described in the literature as "the inflation - inequality paradox" (Monnin, 2014).

Increasingly, studies also suggest that the effects of inflation may be non-linear, with potential threshold levels at which the direction of the relationship reverses, particularly in advanced economies (Monnin, 2014; Gros & Shamsfakhr, 2023). This indicates that both the level and persistence of inflation may be relevant for distributional outcomes. The study of Akarsu and Gharehgozli (2024) analyzed the EU data from 1990 to 2019 to reveal a U-shaped, non-linear relationship between inflation and inequality, while highlighting how sales taxes exacerbated wealth gaps and income taxes vary in effectiveness between Western and Eastern Europe. While Thalassinos et al. (2012) highlighted the detrimental effect of inflation, their study also fits into a broader context where Western European countries often mitigated these effects through higher income tax redistribution, a luxury that Eastern European countries- with lower tax rates and less developed social safety nets- struggled to match during 2000-2009.

The European context brings additional specificities. Although the common monetary policy aims at price stability, member states differ substantially in terms of economic structure, labor markets and welfare systems. These differences can generate heterogeneous effects of inflation on income inequality. Furthermore, indexation mechanisms and redistributive policies may either mitigate or reinforce the distributive impact of inflation, while delays in tax collection can reduce governments' real revenues during periods of high inflation (Tanzi, 1977; Olivera, 1967).

Gehring, Klasen and Villalobos Barría (2023) underline that the relationship between gender inequality and income inequality varies considerably across EU member states, depending on household structure and the differentiated role of earnings, private transfers and public transfers. The authors argue that equalizing labor income between women and men does not always reduce overall income inequality. On the contrary, reducing wage gaps among those already employed may lead to an increase in inequality. This study concludes that promoting gender equality and reducing income inequality do not always converge. Quality of institutions may play a significant role in the inequality-inflation nexus. In this context, Göcen (2024) analyzed the connection between inflation and income inequality by considering data from 58 countries between 2012 and 2018, specifically investigating how institutional quality influences this dynamic. Utilizing a two-step system generalized method of moments (GMM) alongside other estimation models, the study reveals that while inflation generally has a robust negative impact on inequality, the presence of "good" institutions-characterized by high economic freedom and low corruption-significantly alters this outcome. Specifically, the findings indicate that in environments with superior institutional frameworks, high inflation can actually reverse its usual trend and begin to exacerbate income gaps; conversely, excessive inflation can nullify the beneficial role that strong

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institutions typically play in reducing inequality. By integrating corruption levels and economic freedom into the analysis, the study offers a unique contribution to the literature, highlighting that the macroeconomic impact of price instability is deeply dependent on a nation's underlying governance structure.

Although women outperform men in terms of educational attainment in the EU, significant inequalities persist in labor-market opportunities and in the division of domestic responsibilities, with negative consequences for both equity and economic growth.

Landmesser, Orłowski and Rusek (2020) show that gender pay gaps persist across all EU countries and vary along the income distribution, being larger in Western European economies and smaller in former socialist states. Their analysis of the entire income distribution indicates that a substantial share of the wage gap is explained by discrimination and occupational segregation, and that EU countries can be grouped into distinct patterns depending on the level and structure of the gender pay gap.

Overall, the literature highlights both the potential direct effects of inflation on income distribution and the role of intermediate variables, such as quality of institutions, unemployment and poverty, in transmitting these effects. However, the evidence for the European context remains mixed, and analyses of more recent periods marked by economic crises and high inflation are still limited.

3. METHODS AND DATA

This paper uses panel data from the EU-27 (the UK is excluded) in the period 1990-2024. Given the limited availability of gender pay gap, the robustness of the results is checked for the period 2006-2024. The description of the variables employed in this study is presented in Table 1.

TABLE 1 - THE DESCRIPTION OF THE VARIABLES

Variable	Name	Data source
Gini index	Gini	World Bank
Gender pay gap	GPG	Eurostat (2006-2023)
Inflation, consumer prices (annual %)	inflation	World Bank
GDP per capita in constant 2015 US dollars	GDP	World Bank
Domestic credit to private sector (% of GDP)	credit	World Bank
Trade openness (% of GDP)	trade	World Bank
Unemployment, total (% of total labor force) (modeled ILO estimate)	unemployment	World Bank
Poverty rate at \$3 a day (2021 PPP) (% population)	poverty	World Bank

Source: own presentation

The Gini index is the most common measure of income inequality. Inflation is measured based on consumer prices index and it might increase inequality, because it erodes the purchasing power and enhance poverty (Fischer, 2001). In addition, control variables are considered: GDP per capita, trade openness, and domestic credit to private sector. GDP per cap is considered in natural logarithm and it is denoted by GDP. According to Verbeek (2017), we could take the log of variables that are not percentages. It might contribute to less inequality as Berisha and Meszaros (2020) suggested since it might help people with lower incomes to diminish their debt or to grow their savings. Trade openness might increase inequality by increasing the returns of high skilled people, but it might also reduce inequality through trickle-down effects (Aghion and Bolton, 1997). Credit to private sector might increase the investment, which translates into less inequality (Simionescu, 2025). The

explanatory variables are considered in the previous period since the impact of them on inequality is not simultaneous, but after a certain period. Unemployment and poverty rate are used as potential mediators.

This research is focused on two hypotheses:

Hypothesis 1: Inflation significantly impacts income inequality in the EU.

Hypothesis 2: Unemployment and poverty mediate the relationship between inflation and income inequality.

The basic regression is given by:

$$inequality_{it} = \alpha_i + \tau \cdot inequality_{it-1} + \beta \cdot inflation_{it-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{it} \quad (1)$$

$inequality_{it}$: measure of income inequality (Gini index/gender pay gap);

X : vector of control variables in the previous period (GDP, trade, credit);

α_i : parameter for individual fixed effect;

β, τ, γ : parameters;

ε_{it} : error term;

i : index for country

t : index for year.

The non-linear relationship might also be considered:

$$inequality_{it} = \alpha'_i + \tau' \cdot inequality_{it-1} + \beta_1 \cdot inflation_{it-1} + \beta_2 \cdot inflation_{it-1}^2 + \gamma' \cdot X_{i,t-1} + \varepsilon'_{it} \quad (2)$$

α'_i : parameter for individual fixed effect;

$\beta_1, \beta_2, \tau', \gamma'$: parameters;

ε'_{it} : error.

The endogeneity is handled by employing dynamic panel system generalized method of moments (SGMM) estimator.

Unemployment and poverty might act as mediators for inequality. The Phillips Curve historically suggests an inverse relationship (a trade-off) between inflation and unemployment. More unemployment supposes less income for people that lost their jobs, which increases the inequality. On the other hand, more inflation reduces the purchasing power and determines more poverty, which increases the inequality.

$$mediator_{it} = \alpha_{0i} + \alpha'_0 \cdot mediator_{it-1} + \alpha_1 \cdot inflation_{it-1} + \gamma_0 \cdot X_{i,t-1} + v_{it} \quad (3)$$

$$inequality_{it} = \alpha''_i + \tau'' \cdot inequality_{it-1} + \beta'' \cdot inflation_{it-1} + \gamma'' \cdot X_{i,t-1} + \delta \cdot mediator_{it} + \varepsilon'''_{it} \quad (4)$$

$mediator_{it}$: unemployment/poverty

The descriptive statistics for both periods are provided in the Appendix 1. The maximum value for Gin index was registered in Bulgaria in 2018, while the minimum is reached by Slovakia in 1992 (period 1990-2024) and by Slovakia in 2019 (period 2006-2024). The maximum gender pay gap appears in Estonia in 2007 and the minimum in Luxembourg in 2023. Indeed, Luxembourg's hourly pay gap is almost non-existent, even registering a -0.9% advantage for women in 2023. Unlike many countries, women are highly concentrated in the high-wage financial sector, which helps elevate their average earnings relative to men. Despite this, a deeper look reveals a real and persistent gap in annual earnings. This difference is driven by two main factors: more women working part-time and highly paid men skewing the top salary brackets. Moreover, while health and education fields show pay parity, male-heavy sectors like finance continue to have wider gaps favoring men.

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According to correlation matrices and variance inflation factor (VIFs) displayed in the Appendix 2, there are no issues of multicollinearity. The VIFs are below 4 and the correlation coefficients between explanatory variables are rather low.

4. RESULTS

According to Pesaran CD test, the cross-sectional dependence hypothesis is checked for all series at 1% significance level in both periods. Pesaran's CADF test suggests that GDP, trade, credit and unemployment are not stationary in level, but at first difference in the period 1990-2024, while Gini index, GDP, trade, credit and unemployment are non-stationary in level, but at first difference in the period 2006-2024. The results of these preliminary tests are shown in the Appendix 3. The potential cointegration between variables is checked to use the data in level in the models. Otherwise, in the models, the series at first difference for these variables are employed to ensure stationarity of all series. Westerlund test for cointegration confirms that the series are cointegrated.

4.1. Baseline estimations

According to Table 2, inflation had a negative impact on Gini index in the period 1990-2024, but a positive one in the period 2006-2024. Inflation had no significant effect gender pay gap in the period 2006-2024. Economic growth reduced Gini index in each period and also gender pay gap in the period 2006-2024. Trade had no impact on inequality, while credit increased Gini index.

TABLE 2 - SGMM ESTIMATORS TO EXPLAIN GINI INDEX AND GENDER PAY GAP IN THE PERIOD 1990-2024 AND 2006-2024 IN THE EU

Variable in the previous period	Period 1990-2024		Period 2006-2024			
	Gini	Gini	Gini	Gini	gender pay gap	gender pay gap
Gini	0.528***(0.121)	0.602*** (0.099)	0.759***(0.118)	0.728***(0.118)	-	-
gender pay gap	-	-	-	-	0.062* (0.053)	-0.225* (0.124)
inflation	-0.128* (0.073)	-0.077*(0.041)	0.059* (0.028)	0.028*(0.016)	0.011 (0.038)	0.019 (0.035)
GDP	-	-0.849** (0.356)	-	-0.576***(0.222)	-	-1.622* (0.093)
trade	-	-0.0003 (0.004)	-	0.004 (0.003)	-	-0.004 (0.009)
credit	-	0.007* (0.004)	-	0.005* (0.003)	-	0.010 (0.009)
constant	14.724***(3.678)	20.381*** (4.96)	7.496** (3.662)	13.797*** (4.673)	-	48.480*** (11.912)
Westerlund test (variance ratio stat. and p-value)	-4.389 (0.000)	-3.375 (0.0004)	2.7909 (0.0026)	-1.778 (0.037)	30.297*** (1.347)	-1.667 (0.041)
No. obs.	598	532	445	436	430	423
No. instruments	35	37	19	22	19	23
p-value Hansen J	0.484	0.901	0.266	0.199	0.396	0.224
P-value AR(2)	0.243	0.164	0.66	0.254	0.903	0.517
p-value CLR	0.000	0.000	0.015	0.001	0.000	0.000

Source: own calculations in Stata 15. Note: coefficients and robust standard errors in brackets.

In the long-run, inflation might have acted as a form of "tax" on wealth or perhaps was indicative of periods where wage growth for lower-income groups kept pace or temporarily outpaced price increases, thus reducing overall inequality. On the other hand, other structural changes happening in the beginning of this period like post-communist transition or industrialization reduced inequality and determined high inflation. The shift to positive impact of inflation on Gini index suggests that in the more recent period, inflation has become regressive, likely hitting fixed-income earners, those reliant on savings, or those in non-unionized, low-wage

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jobs disproportionately hard. This may suggest that actual inflationary episodes are exacerbating income inequality, possibly due to less sticky wages for the wealthy or greater asset appreciation.

The result that inflation had no significant effect on the gender pay gap in the recent period suggests that the structural factors driving the pay gap (e.g., occupational segregation, part-time work, discrimination) tend to be more robust and less sensitive to macroeconomic fluctuations like price changes than overall income inequality is.

4.2. Mechanisms

The results in Table 3 confirm that unemployment mediates the inflation-Gini index nexus in the period 1990-2024, since unemployment positively and significantly impacts Gini index, while inflation significantly increased unemployment. These results suggest that mechanistic effect is partial and other variables also mediate this relationship. However, in the period 2006-2024, inflation did not influence unemployment anymore and a mechanistic effect is not identified.

TABLE 3 - SGMM ESTIMATORS TO EXPLAIN GINI INDEX AND UNEMPLOYMENT IN THE PERIOD 1990-2024 AND 2006-2024 IN THE EU

Variable l - the previous period	Period 1990-2024		Period 2006-2024	
	Gini	unemployment	Gini	unemployment
Gini	0.646*** (0.084)	-	0.713*** (0.096)	-
inflation	-0.018 (0.009)	0.001*** (0.005)	0.024* (0.013)	-0.029 (0.032)
GDP	-0.578 (0.359)	-0.341** (0.140)	-0.422* (0.219)	0.042 (0.213)
trade	0.0005 (0.004)	-0.002* (0.001)	0.005 (0.004)	-0.009 (0.001)
credit	0.004 (0.003)	0.011*** (0.003)	0.003* (0.002)	0.009 (0.003)
unemployment	0.087*** (0.031)	0.899*** (0.046)	0.075** (0.034)	1.090*** (0.067)
constant	15.706*** (4.49)	3.594** (1.614)	12.152*** (3.826)	-1.896 (2.567)
Westerlund test (variance ratio stat. and p-value)	-3.547 (0.0002)	-4.127 (0.000)	-2.032 (0.0211)	-3.935 (0.000)
No. obs.	532	657	436	473
No. instruments	38	37	23	23
p-value Hansen J	0.947	0.766	0.545	0.105
P-value AR(2)	0.175	0.14	0.27	0.24
p-value CLR	0.000	0.001	0.018	0.000

Source: own calculations in Stata 15. Note: coefficients and robust standard errors in brackets.

Inflation significantly increased unemployment, but the magnitude is low. This might suggest that the control of hyperinflation through restrictive monetary policy may have led to job losses or volatile and high inflation created economic uncertainty that deterred hiring. Unemployment significantly increased the Gini index as job loss concentrates hardship among the non-employed, widening the gap with the employed and asset holders.

TABLE 4 - SGMM ESTIMATORS TO EXPLAIN GINI INDEX AND POVERTY IN THE PERIOD 1990-2024 AND 2006-2024 IN THE EU

Variable in the previous period	Period 1990-2024		Period 2006-2024	
	Gini	poverty	Gini	poverty
Gini	0.531*** (0.096)	-	0.712*** (0.129)	0.598*** (0.157)
inflation	-0.08* (0.048)	0.006 (0.004)	0.012** (0.054)	0.006* (0.0037)
GDP	-0.493 (0.412)	-0.150*** (0.057)	-0.300** (0.113)	-0.082* (0.049)
trade	0.001 (0.004)	-0.0006 (0.0005)	0.001 (0.002)	-0.005 (0.004)
credit	0.010** (0.004)	-0.0004 (0.0006)	0.007** (0.003)	-0.002 (0.004)
poverty	1.678*** (0.431)	0.448*** (0.116)	1.119* (0.572)	0.598*** (0.157)
constant	18.027*** (5.02)	1.825*** (0.615)	10.822** (4.218)	1.065* (0.561)
Westerlund test (variance ratio stat. and p-value)	-2.428 (0.0076)	-4.5434 (0.000)	2.873 (0.003)	-4.273 (0.000)
No. obs.	532	532	436	436
No. instruments	38	37	23	22
p-value Hansen J	0.210	0.856	0.22	0.13
P-value AR(2)	0.223	0.608	0.314	0.302
p-value CLR	0.000	0.000	0.001	0.000

Source: own calculations in Stata 15. Note: coefficients and robust standard errors in brackets.

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The results in Table 4 show that poverty mediates the inflation-Gini index nexus in the period 2006-2024, since poverty significantly impacts Gini index, while inflation significantly increased poverty. These results suggest that mechanistic effect is partial and other variables also mediate this relationship. However, in the period 1990-2024, inflation did not influence poverty and a mechanistic effect is not identified.

Inflation significantly increased poverty as rapid price increased disproportionately erode the real income of those near or below the poverty line, pushing more people into poverty or deepening existing poverty. Poverty significantly increased the Gini index since a larger gap between the poorest and the median/wealthy will naturally increase overall income inequality.

4.3. Non-linear models

According to Table 5, inflation had a significant impact on Gini index in the period 1990-2024 under a non-linear pattern (inverted U), while the pattern is U-shaped in the period 2006-2024. Economic growth reduced Gini index and credit increased it in each period.

TABLE 5 - SGMM ESTIMATORS TO EXPLAIN NON-LINEAR CONNECTION BETWEEN GINI INDEX AND INFLATION IN THE PERIOD 1990-2024 AND 2006-2024 IN THE EU

Variable in the previous period	Period 1990-2024	Period 2006-2024
Gini	0.582*** (0.094)	0.711*** (0.119)
inflation	0.048* (0.026)	-0.083*(0.048)
inflation ²	-0.072* (0.046)	0.036* (0.02)
GDP	-0.890** (0.379)	-0.611*** (0.233)
trade	-0.005 (0.054)	-0.002 (0.056)
credit	0.0077* (0.004)	0.006* (0.003)
constant	21.433*** (5.071)	14.685*** (4.72)
Westerlund test (variance ratio stat. and p-value)	-4.285 (0.000)	-4.265 (0.000)
No. obs.	528	436
No. instruments	39	23
p-value Hansen J	0.956	0.192
P-value AR(2)	0.165	0.254
p-value CLR	0.002	0.001

Source: own calculations in Stata 15. Note: coefficients and robust standard errors in brackets.

In the period 1990-2024, at low-to-moderate inflation levels, the economic disruption or the policy response to inflation might disproportionately harmed the less-wealthy or fixed-income earners, thus increasing inequality. At high inflation levels, the effect reversed since hyperinflation often acts as a harsh tax on unhedged wealth and savings which are typically concentrated among the rich, leading to a compression of the wealth distribution and a decrease in Gini index.

In the short-run, in the period 2006-2024, at low-to-moderate inflation levels, inflation may initially help to "inflate away" fixed debts (benefiting indebted lower/middle-class individuals) or allow for minor relative wage gains, temporarily reducing inequality. Once inflation exceeded a threshold, the pattern reversed since higher inflation affected food and energy prices and outpaced nominal wage gains for the poor, leading to a rapid increase in the Gini index.

All in all, the two hypotheses are checked: inflation significantly impacted income inequality based on Gini index, but not inequality based on gender pay gap (Hypothesis 1) and unemployment and poverty mediated the relationship between inflation and income inequality (Hypothesis 2).

5. DISCUSSIONS

The empirical analysis conducted in this study reveals a complex and time-varying relationship between inflation and income inequality in the European Union. The study shows contrasting effects of inflation on the

Gini index in the two analyzed periods: negative in 1990-2024, but positive in 2006-2024. The reason for the split of the two periods is that we had data for the gender pay gap only for the 2006-2024 period.

The negative impact of inflation on the Gini index in the longer period (1990-2024) can be attributed to several factors specific to European economic transition. One of the factors can be the fact that many EU member states, especially those in Central and Eastern Europe, underwent profound economic transformations in the 1990s. The transition from centrally planned economies to market economies was accompanied by episodes of high inflation that coincided with the restructuring of rigid wage structures.

Our findings align with the theoretical predictions of Albanesi (2007), who demonstrated that the redistributive effects of inflation depend largely on the types of assets held by households and how easily wages can be adjusted to price changes.

In the more recent period (2006-2024) there is a reversed relationship which reflects the changing macroeconomic environment of the European Union. This period is characterized by greater economic integration, but also by weakened labor market institutions and the consequences of the 2008 financial crisis.

Moreover, recent inflationary episodes in Europe, particularly those driven by energy price shocks and supply chain disruptions, have disproportionately affected essential goods and services that constitute a larger share of consumption baskets for low-income households. This compositional effect means that overall inflation rates underestimate the actual inflationary pressure experienced by vulnerable populations, consistent with the findings of Easterly and Fischer (2001) regarding the differential impact of inflation across income groups.

The identification of non-linear relationships between inflation and inequality in both periods represents an important contribution of this study. The inverted U-shaped pattern in the 1990-2024 period suggests that moderate inflation initially increased inequality, but eventually became equalizing at higher levels.

In the 2006-2024 period, the relationship between inflation and income inequality followed a U-shaped evolution. Initially, low or moderate inflation could have contributed to reducing inequality, as it made debts easier to bear and allowed small adjustments in real wages, especially for those with low incomes. However, once inflation exceeded a certain level, negative effects became dominant and inequality began to increase.

One of the findings of this study is the absence of a significant relationship between inflation and gender wage gaps. This result offers important insights into the nature of gender-based wage disparities.

The finding that unemployment mediated the inflation-inequality relationship in the earlier period (1990-2024), but not in the recent one (2006-2024), while poverty presented the opposite pattern, reveals the evolving nature of transmission mechanisms in the European economy.

The fact that, in the recent period, poverty plays an important role in the link between inflation and inequality shows that having a job is not sufficient to be protected. Even when labor force employment is high, if wages do not grow at the same pace as prices for basic goods, inequality can continue to increase due to the expansion of poverty.

The consistently negative effect of GDP per capita on inequality across all specifications confirms the role of economic growth in reducing income disparities, supporting the findings of Berisha and Meszaros (2020).

The identification of unemployment and poverty as important mediators suggests that inflation control policies should be coordinated with active labor market policies and social protection measures.

6. CONCLUSIONS

Previous studies have provided mixed results regarding the impact of inflation on income inequality across different geographic regions. This research addressed the issue for the European Union using the dynamic panel system generalized method of moments (SGMM) estimator for the period 1990-2024. The empirical findings indicate a time-dependent impact: negative in the long-term period (1990-2024), but positive in the more recent period (2006-2024). The research also confirms a non-linear relationship, following an inverted U-shape in the long run and a U-shape in the more recent period.

A significant contribution is the analysis of the gender pay gap, which, unlike the Gini index, was not significantly affected by inflation. The results show that unemployment and poverty act as partial mediators, with both factors contributing significantly to increased income inequality. Economic growth (GDP per capita) consistently contributed to reducing inequality.

However, the paper is subject to certain limitations: the analysis of the gender pay gap was restricted to the period 2006-2024 due to limited data availability; although the study included relevant control variables (trade openness, private credit), the complexity of inequality suggests that other factors may still play a role.

Future research directions could focus on differences between Eastern and Western European countries. Despite its limitations, the study offers important contributions to understanding the relationship between inflation and inequality in the European context.

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APPENDICES

Appendix 1. Data description

Variable	1990-2024				2006-2024			
	Mean	Std. dev.	Min.	Max.	Mean	Std. dev.	Min.	Max.
Gini	31.08314	3.721014	20.2	41.3	31.27691	3.709853	23.2	41.3
inflation	9.893976	67.15885	-4.447547	1058.374	2.724133	3.131989	-	19.70505
GDP per capita	27557.74	20365.68	3537.345	112417.9	31346.89	21684.59	5629.801	112417.9
credit	77.8674	42.88483	7.125225	254.6681	83.95256	42.57304	22.71605	254.6681
trade	111.0003	57.67526	33.80053	412.1772	126.472	62.17137	45.14148	412.1772
unemployment	8.519694	4.334661	1.1	27.686	8.026828	4.179186	2.015	27.686
poverty	0.3513081	0.5340227	0	4.1	0.3516949	0.5183647	0	3.8
gender pay gap	-	-	-	-	13.76695	6.282746	-0.9	30.9

Appendix 2: Correlation matrices and VIFs

Period 1990-2024

Correlation matrix

	inflation	gdp	credit	trade	unemployment	poverty
inflation	1.0000					
gdp	-0.2105	1.0000				
credit	-0.1219	0.4987	1.0000			
trade	-0.0181	0.3252	-0.0348	1.0000		
unemployment	0.0031	-0.3512	0.0614	-0.3318	1.0000	
poverty	0.0504	-0.4308	-0.2407	-0.2428	0.2101	1.0000

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VIFs

Variable	VIF	1/VIF
gdp	1.99	0.503273
credit	1.54	0.647327
trade	1.30	0.766983
poverty	1.29	0.778012
unemployment	1.24	0.806299
inflation	1.03	0.968614
Mean VIF	1.40	

Period 2006-2024

Correlation matrix

	inflat~n	gdp	credit	trade	unempl~t	poverty
inflation	1.0000					
gdp	-0.1756	1.0000				
credit	-0.2546	0.4295	1.0000			
trade	0.0750	0.3326	-0.1656	1.0000		
unemployment	-0.2793	-0.2326	0.2285	-0.2967	1.0000	
poverty	0.0698	-0.4706	-0.2235	-0.2557	0.2198	1.0000

VIFs

Variable	VIF	1/VIF
gdp	1.85	0.540391
credit	1.56	0.640786
unemployment	1.34	0.745061
trade	1.32	0.757471
poverty	1.32	0.759113
inflation	1.16	0.861896
Mean VIF	1.43	

Appendix 3 The results of preliminary tests

Pesaran CD test and Pesaran's CADF test

Variable	1990-2024			2006-2024		
	Pesaran CD test	Pesaran's CADF test (data in level)	Pesaran's CADF test	Pesaran CD test (data at first difference)	Pesaran's CADF test (data in level)	Pesaran's CADF test (data at first difference)
Gini	5.71***	-4.431 ***	-6.920 ***	4.47***	0.495	-2.617***
inflation	60.27***	-8.178 ***	-16.682 ***	70.02***	-1.532*	-4.442***
GDP	76.26***	7.221	-5.167 ***	23.58***	7.274	-3.545***
credit	19.02***	7.387	-6.112***	12.37***	9.382	-5.349***
trade	72.09***	5.865	-5.444***	34.91***	7.295	-5.595***
unemployment	28.64***	-1.263	-2.332**	37.13***	2.033	-1.583*
poverty	15.23***	-2.565 ***	-10.417 ***	18.03***	-1.478*	-5.281***
gender pay gap	-	-	-	27.91***	7.034	-1.894*

Source: own calculations in Stata 15. Note: * suggests rejection of null hypothesis at 10% level, ** shows rejection of null hypothesis at 5% level, *** indicates rejection of null hypothesis at 1% level.