

The Relationship of Unemployment and Income Groups: A Descriptive Analysis of The Us Economy

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ABSTRACT

Unemployment in the US economy has led to significant changes in the proportions of people across different income groups. Most notably, recessions have historically prevented many low-income earners from climbing the income ladder. Low-income earners appear to be the most vulnerable to downturns, reflecting their concentration in unstable and low-wage sectors, whereas high-income workers show minimal sensitivity to cyclical conditions. Changes in unemployment can alter employment prospects, reinforce existing inequalities, or reshape the composition of the labour force. This paper examines this connection within the context of the United States by leveraging cross-sectional data on individuals in three social classes. I examine whether unemployment rates affect, if at all, the evolution of households transitioning from various income groups over the 2009-2020 period.

Keywords : Unemployment, recessions, low, middle, high, US economy, households

1. INTRODUCTION

Economic recessions expose the fragility of labor markets and often magnify existing social and economic divides. Their effects, however, are not evenly distributed across workers. Research has consistently shown that downturns disproportionately affect individuals in routine, low-wage, and service-based occupations, while those in secure and high-skilled positions remain relatively insulated (Hoynes, Miller, & Schaller, 2012; Heathcote, Perri, & Violante, 2020). This unequal burden arises from fluctuations in unemployment, which can be decomposed into cyclical and structural components that operate through distinct mechanisms but, together, perpetuate inequality in income distribution.

Cyclical unemployment emerges when declines in aggregate demand compel firms to scale back production and reduce labor expenditures, resulting in temporary job losses (Blanchard &

Wolfers, 2000). These losses are typically concentrated among workers with lower education, less bargaining power, and limited financial buffers (Elsby, Hobijn, & Şahin, 2010). The immediate consequences are income volatility, heightened financial strain, and an increased risk of downward mobility into the lower-income class. In this sense, cyclical unemployment functions as a transitory but potent driver of short-term inequality, amplifying disparities in income and employment security during recessionary periods.

Structural unemployment, by contrast, reflects longer-term mismatches between the skills supplied by workers and the demands of an evolving economy (Pissarides, 2000). Workers displaced from structurally declining industries often face barriers to reemployment without retraining or geographic relocation (Autor, Dorn, & Hanson, 2013; Charles, Hurst, & Notowidigdo, 2016). These mismatches lead to persistent exclusion from high-growth sectors and to the entrenchment of income disparities across occupational and educational lines. Unlike cyclical unemployment, which typically recedes as aggregate demand recovers, structural unemployment endures and generates lasting inequality.

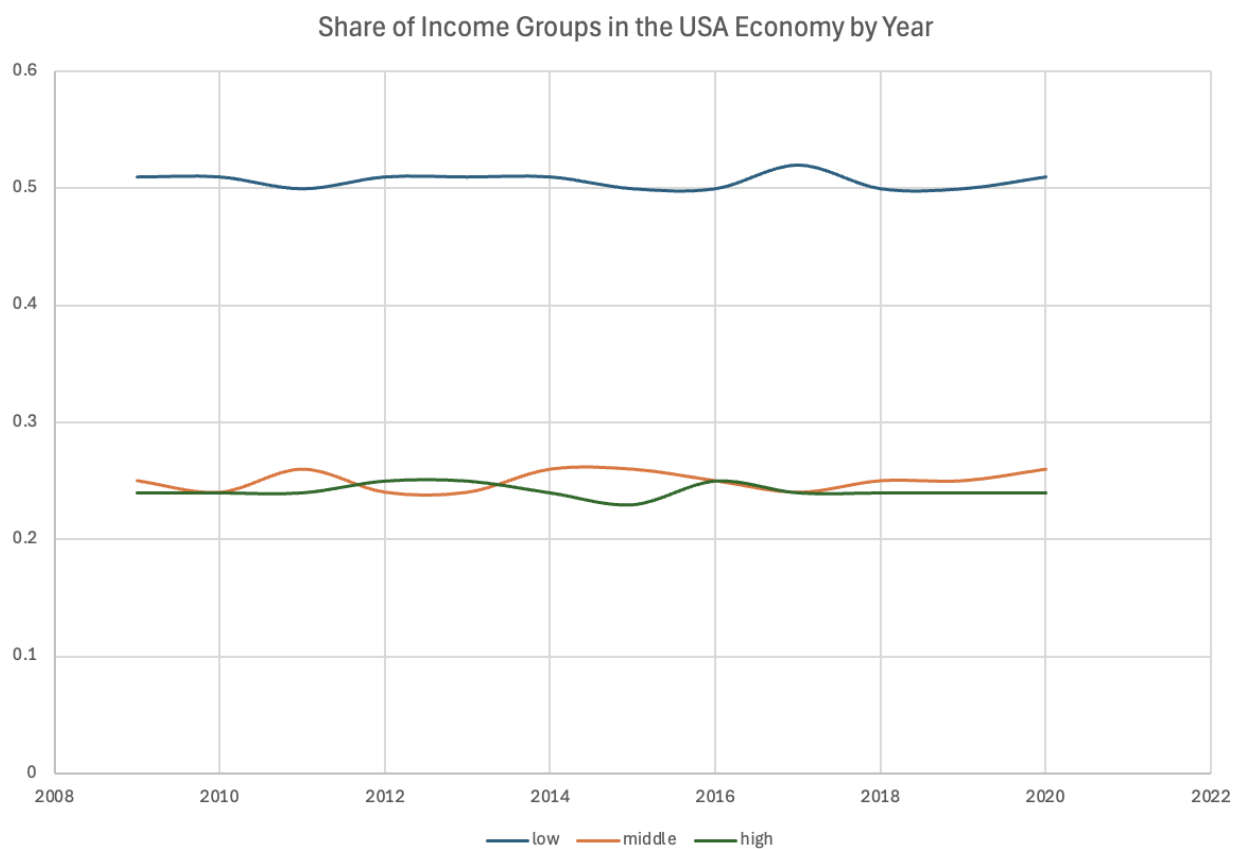
The interaction between cyclical and structural unemployment is crucial to understanding how recessions reshape the income distribution. During recessions, cyclical unemployment causes immediate job losses that disproportionately affect low- and middle-income workers. Yet even after output recovers, structural barriers prevent many of these displaced individuals from reentering stable, high-paying employment (Elsby et al., 2010). As a result, short-term cyclical shocks can harden into long-term income stratification, where individuals who lose employment during recessions remain trapped in lower-income categories. This dynamic links cyclical downturns not only to temporary hardship but also to enduring changes in income mobility and inequality.

Existing evidence suggests that while cyclical unemployment drives the initial widening of inequality during downturns, structural factors determine its persistence over time. Recessions thus operate on two interconnected timescales: they produce immediate income losses through cyclical shocks while simultaneously catalysing structural transformations that sustain those disparities. Understanding this duality is essential for explaining why certain workers fail to recover their pre-recession economic status and how aggregate labor market indicators translate into long-term differences in income distribution.

This paper investigates these mechanisms by analysing how recessions and elevated unemployment levels affect individuals' positions within the income distribution of the U.S. labor market. Most notably, as seen in the figure down below, we can descriptively see that the share of people in the US economy in low, middle, and high income groups changes somewhat over time, but most notably for the high income groups. Therefore, it is imperative to investigate

if economic conditions characterised by unemployment rates, if any, contribute to the changes in these income shares. Specifically, it examines two related questions: first, how the presence of recessionary periods influences the likelihood of an individual belonging to the low-, middle-, or high-income category; and second, whether periods in which the raw unemployment rate exceeds the natural rate of unemployment similarly alter the probability of falling within these income groups. Using data from the American Community Survey (ACS) between 2009 and 2020, merged with macroeconomic indicators from the Federal Reserve Economic Data (FRED), the analysis captures both micro- and macro-level dimensions of labor market behaviour. By linking individual earnings data with aggregate measures of cyclical unemployment, this study provides empirical evidence on how macroeconomic downturns and deviations from full-employment conditions affect the composition of income classes (shown below in Figure 1).

Figure 1 - How macroeconomic downturns and deviations from full-employment conditions affect the composition of income classes



Through this framework, the study aims to disentangle how short-term cyclical fluctuations and broader recessionary dynamics interact to determine who ascends or descends the income ladder

during periods of economic instability. In doing so, it contributes to a growing literature on the distributional consequences of labor market cycles, offering new insights into how deviations from the natural rate of unemployment translate into tangible shifts in income inequality across the U.S. workforce.

2. LITERATURE REVIEW

The relationship between recessions, unemployment dynamics, and income distribution has long been central to macroeconomic theories. Economic downturns not only disrupt aggregate demand and employment but also exacerbate income inequality by altering the likelihood of individuals belonging to different income classes. As the U.S. economy experienced both post-crisis recovery and pandemic-induced contraction between 2009 and 2020, understanding the mechanisms through which cyclical and structural unemployment affect income distribution is critical. The existing literature broadly distinguishes between cyclical unemployment (driven by aggregate demand fluctuations) and structural unemployment, which arises from long-term mismatches in the labor market. A growing body of research also highlights that the distributive consequences of recessions are deeply asymmetric, disproportionately affecting low- and middle-income groups while high-income individuals display greater resilience.

The existing literature examines the extent to which unemployment during and after recessions is cyclical rather than structural. Rothstein (2012) argues that the persistently high unemployment observed after the Great Recession was largely due to weak aggregate demand rather than labor-market mismatches. Using U.S. labor market data from 2007 to 2011, he finds little evidence supporting structural explanations and instead attributes the lack of movement of the labor market to insufficient demand for labor. Diamond (2013) provides complementary evidence using Beveridge Curve analysis, suggesting that most of the post-crisis rise in unemployment can be explained by business cycle fluctuations. According to his findings, the outward shift in the Beveridge Curve, often interpreted as evidence of structural unemployment, primarily reflects cyclical inefficiencies in matching workers to jobs, implying that stimulus policies remain effective tools for recovery. Chen, Kannan, Loungani, and Trehan (2011) provide cross-country validation of this conclusion, estimating that roughly 75 percent of unemployment variance is cyclical and caused by economic downturns, while only 25 percent is structural.

While these studies highlight cyclical dominance, some evidence suggests that repeated cyclical shocks can generate structural persistence. Estevão and Tsounta (2011) estimate that structural unemployment in the United States rose by approximately 1.5 to 1.75 percentage points following the 2008 recession, due largely to housing market immobility and skill mismatches. Farooq and Kugler (2015) similarly conclude that while cyclical shocks drove the initial rise in unemployment, the long-term unemployed faced enduring scarring effects, reducing their future

employability and income potential. Parker and Rothman (1998) reinforce this view, finding that unemployment responds asymmetrically to recession depth—rising sharply during downturns but falling slowly during recoveries. This asymmetry suggests that periods when raw unemployment exceeds the natural rate can have long-lasting effects on income mobility, even if the underlying cause is cyclical.

He discovers that the low-income class is the most affected by recessions. Similarly, Bell and Blanchflower (2010) examine OECD countries during the 2008–2009 financial crisis and find that unemployment increases were most severe for temporary, low-wage, and youth workers, while higher-income individuals remained relatively insulated. Using U.K. household data, Howell, Leaker, and Barrett (2010) show that between 2007 and 2009, the proportion of workless households rose by over 300,000, with job losses concentrated among lower-income and single-parent households. These findings demonstrate that recessions amplify inequality primarily through employment channel effects, consistent with the notion that cyclical unemployment disproportionately pushes low-income individuals out of the labor market. *Less is known if these results generalise to non-recessionary periods. My research paper aims to explore this by also examining how non-recessionary years further contribute to inequality.

At a broader level, Taft (2012) provides a class-based analysis of Ireland’s Great Recession, illustrating how economic crises redistribute income from labor to capital. Between 2007 and 2011, aggregate wages fell by over 13 percent, while profits rebounded rapidly—a dynamic he attributes to fiscal austerity and weakened labor protections. This “class impact” of recession underscores the asymmetric burden borne by wage earners relative to capital owners, challenging narratives that depict economic crises as evenly shared social hardships.

Similar patterns emerge in the United States. Davis and von Wachter (2011) use longitudinal Social Security data from 1974 to 2008 and find that workers displaced during recessions lose an average of 2.8 years of pre-displacement earnings, with effects persisting for more than two decades. These long-term income losses, combined with the limited mobility of low-income households, contribute to widening inequality and the persistence of poverty beyond the recession itself.

Recent studies have also explored the micro foundations of unemployment heterogeneity to better understand why certain groups remain trapped in lower income categories after recessions. Ahn and Hamilton (2018) develop a dynamic model that accounts for unobserved heterogeneity across workers and show that inflows into unemployment are the main drivers of recessionary unemployment spikes. They find that newly unemployed individuals have a significantly higher probability of reemployment than those unemployed for longer durations, implying that long-term unemployment contributes to persistent downward income mobility. The authors conclude

that unobserved heterogeneity and genuine duration dependence—loss of human capital and employer discrimination against the long-term unemployed—explain much of the post-recession income stratification. Other theoretical and empirical contributions reinforce these findings. Bhowmik (2020) identifies cyclical unemployment as the most policy-relevant component of total unemployment, emphasising its strong correlation with economic downturns. Justiniano and Michelacci (2011) incorporate search and matching frictions into real business cycle models, showing that wage rigidities and slow adjustment mechanisms exacerbate cyclical unemployment fluctuations. Together, these models suggest that macroeconomic volatility not only affects overall employment but also amplifies disparities between income groups through asymmetric adjustment processes.

Collectively, this literature establishes that cyclical unemployment—particularly during recession years—plays a central role in shaping income inequality and class composition. While some structural persistence exists through scarring effects and skill mismatches, the majority of unemployment variation and subsequent income disparities are driven by cyclical labor market fluctuations. These findings have direct implications for the present study, which examines how periods when the raw unemployment rate exceeds the natural rate and formal recession years influence the likelihood that individuals belong to lower, middle, or upper income classes in the U.S. between 2009 and 2020. Despite the extensive empirical literature on the macroeconomic determinants of unemployment, relatively few studies have explicitly connected cyclical unemployment and recessionary dynamics to income-class transitions using micro data integrated with aggregate indicators. This research, therefore, addresses a significant gap by empirically linking macro-level labor market shocks to shifts in the U.S. income distribution during a decade characterised by both post-crisis recovery and renewed economic contraction.

3. MATERIALS AND METHODS

This study uses micro data from the American Community Survey (ACS) accessed through the Integrated Public Use Micro data Series (IPUMS) spanning 2009–2020. The ACS provides a nationally representative dataset of individuals residing in the United States, including detailed demographic, educational, and labor market information. To complement this micro-level data, I merge individual-level records with annual macroeconomic indicators from the Federal Reserve Economic Data (FRED) database, which includes official statistics such as the national unemployment rate. This integration enables the examination of how aggregate labor market fluctuations interact with individual income distributions across economic cycles.

The analysis focuses on individuals aged 25 to 50, representing the core working-age population while minimising confounding effects from early-career entry or late-career retirement transitions. Observations with missing or implausible income values are excluded to ensure data

reliability. The resulting sample accurately represents the U.S. working population during the post-2008 recovery period and the onset of the COVID-19 pandemic.

To study income inequality dynamics, individuals are classified into three income groups—lower, middle, and upper class—based on their position in the annual wage distribution. Specifically, individuals earning below the 50th percentile in a given year are categorised as lower class, those between the 50th and 75th percentiles as middle class, and those between the 75th and 100th percentiles as upper class. These classifications are based on nominal annual earnings for each year. For each year from 2009 to 2020, I compute macro-level averages of the number of individuals within each income group, thereby constructing a time series of income-class composition.

Two key explanatory variables are constructed for the analysis: cyclical unemployment and the natural rate of unemployment (NAIRU). The NAIRU, obtained from the OECD Economic Outlook and supplemented with U.S. estimates from FRED, represents the unemployment rate consistent with stable inflation and incorporates both structural and cyclical labor-market components. Cyclical unemployment is calculated as the difference between the observed raw unemployment rate and the NAIRU, capturing short-term labor market fluctuations around this equilibrium rate. In addition, I use cyclical unemployment calculations to construct a binary variable indicating recessionary years. Any year with a cyclical unemployment rate above 3 identifies a recessionary year.

Nevertheless, periods when raw unemployment surpasses the natural rate still reflect heightened labor market distress and can contribute to persistent poverty and income inequality, even in the absence of formal recession classification. Therefore, I construct a treatment variable to identify years when the raw unemployment rate dominates the natural rate. I did this because it's part of one of my treatment variables.

All data cleaning, percentile calculations, and variable construction were conducted in Stata, while data visualisation and summary statistics were generated in Microsoft Excel. The final dataset thus combines micro-level individual characteristics with macroeconomic labor market indicators, facilitating an integrated analysis of the relationship between unemployment dynamics and income inequality.

While the ACS offers a rich and representative dataset, certain limitations persist. Income measures are self-reported and may contain reporting errors or underestimation, particularly at the top of the income distribution. Additionally, because the ACS is cross-sectional, individual mobility across income groups over time cannot be directly observed. Nonetheless, the dataset's large sample size, consistent methodology, and integration with reliable macroeconomic

indicators make it well-suited for examining how the natural rate and cyclical unemployment have influenced income inequality in the U.S. labor market between

2009 and 2020. Furthermore, concerns about underestimating top earners are mitigated, as the data were truncated at the 99th percentile; thus, extreme high-income outliers do not distort the representation of the upper-income group, ensuring accurate measurement of the earnings distribution across classes.

Empirical Approach

To analyse how recessionary periods and instances when the raw unemployment rate exceeds the natural rate of unemployment affect different income groups, I have run three separate regressions for each outcome variable — one for the low-income group, one for the middle-income group, and one for the high-income group.

The decision to run three distinct regressions rather than a single combined model was made primarily to avoid the issue of multicollinearity, given that the outcome variables — the proportions of individuals in low, middle, and high income categories — inherently sum to one. Including all three in a single regression would create perfect collinearity, rendering it statistically impossible to isolate the unique effects of recessionary periods or unemployment deviations within each group.

Moreover, running separate regressions allows for a more nuanced understanding of how economic downturns and unemployment shocks impact each income group differently. This approach enables identification of which segment of the population experiences the greatest change in income distribution during recessionary years or when the actual unemployment rate exceeds the natural rate.

Thus, for both sets of analyses — one focusing on recessionary periods and the other on times when raw unemployment dominates the natural rate — three regressions are estimated to capture income-specific effects. This method ensures statistical validity and provides clearer insights into the distributional impact of adverse labor market conditions across income levels.

The first set of regressions examines how recessionary periods influence the likelihood of individuals belonging to low-, middle-, and high-income groups. Recession years are identified by contractions in real GDP growth, which represent periods of broad economic slowdown. These regressions aim to capture how income distribution shifts in response to macroeconomic downturns — specifically, whether recessions disproportionately affect lower-income groups or lead to upward or downward mobility across income categories.

To achieve this, three separate regressions are estimated—one for each income class—allowing for the assessment of differential impacts across income levels while avoiding multicollinearity arising from the interdependence among income categories.

Recessions and low class individuals

$$LOW = \beta_0 + \beta_1 \text{RecessionYear} + \epsilon$$

Equation 1

The variable Low is a percentage variable and represents the share of individuals whose income falls between the 1st and 50th percentile in a given year. Essentially, this share captures the proportion of the U.S. population considered low-income. RecessionYear is a dummy variable indicating whether an economic downturn occurred in that year. In the regression model, β_0 denotes the intercept, while β_1 is the coefficient of interest. Specifically, β_1 measures the change in the share of individuals being classified as low-income during a recessionary year, providing insight into how economic downturns affect income distribution within the U.S. economy (shown above in Equation 1).

Recessions and middle class individuals

$$MIDDLE = \beta_0 + \beta_1 \text{RecessionYear} + \epsilon$$

Equation 2

The variable Middle is a percentage variable and represents the share of individuals whose income falls between the 50th percentile and the 75th percentile in a given year. Essentially, this share captures the proportion of the U.S. population considered middle-income. RecessionYear is a dummy variable indicating whether an economic downturn occurred in that year. In the regression model, β_0 denotes the intercept, while β_1 is the coefficient of interest. Specifically, β_1 measures the change in the share of individuals being classified as middle-income during a recessionary year, providing insight into how economic downturns affect income distribution within the U.S. economy (shown above in Equation 2).

Recessions and high class individuals

$$HIGH = \beta_0 + \beta_1 \text{RecessionYear} + \epsilon$$

Equation 3

The variable High is a percentage variable and represents the share of individuals whose income falls between the 75th and the 100th percentile in a given year. Essentially, this share captures the proportion of the U.S. population considered high-income. RecessionYear is a dummy variable indicating whether an economic downturn occurred in that year. In the regression model, β_0 denotes the intercept, while β_1 is the coefficient of interest. Specifically, β_1 measures the change in the share of individuals being classified as high-income during a recessionary year, providing insight into how economic downturns affect income distribution within the U.S. economy (shown above in Equation 3)

The second set of regressions explores the relationship between labor market slack and income distribution by analysing years when the actual (raw) unemployment rate exceeds the natural rate of unemployment. Such periods typically indicate underutilisation, not excessive use of labor resources, or cyclical unemployment pressures.

By running three separate regressions for the low-, middle-, and high-income groups, this analysis seeks to determine which segments of the population are most affected when the economy operates below its full employment level. This approach provides insight into the distributional effects of elevated unemployment, highlighting whether income inequality tends to widen during periods of excessive unemployment, not just in recessionary years.

Raw rate of unemployment dominating natural rate and low class individuals

$$LOW = \beta_0 + \beta_1 \text{RawDominates} + \epsilon$$

Equation 4

The variable Low is a percentage variable and represents the share of individuals whose income falls between the 1st and 50th percentile in a given year. Essentially, this share captures the proportion of the U.S. population considered low-income. RawDominates is a dummy variable indicating whether the raw unemployment rate exceeds the natural rate of unemployment (NAIRU), which includes both structural and cyclical components. In the regression model, β_0 represents the intercept, while β_1 is the coefficient of interest. Specifically, β_1 captures the change in the share of individuals classified as low-income when the raw unemployment rate surpasses the natural rate in a given year, providing insight into the relationship between cyclical economic conditions, even healthy ones, and income distribution (shown above in Equation 4) .

Raw rate of unemployment dominating natural rate and middle class individuals

$$\text{MIDDLE} = \beta_0 + \beta_1 \text{RawDominates} + \epsilon$$

Equation 5

The variable Middle is binary and identifies individuals whose income falls between the 50th and 75th percentiles in a given year, representing the portion of the U.S. population classified as middle-income. RawDominates is a dummy variable indicating whether the raw unemployment rate exceeds the natural rate of unemployment (NAIRU), which includes both structural and cyclical components. In the regression model, β_0 represents the intercept, while β_1 is the coefficient of interest. Specifically, β_1 captures the change in the likelihood of an individual being classified as middle-income when the raw unemployment rate surpasses the natural rate in a given year, providing insight into the relationship between labor market conditions and income distribution (shown above in Equation 5).

Raw rate of unemployment dominating natural rate and high class individuals

$$\text{HIGH} = \beta_0 + \beta_1 \text{RawDominates} + \epsilon$$

Equation 6

The variable High is binary and identifies individuals whose income falls above the 75th percentile in a given year, representing the portion of the U.S. population classified as high-income. RawDominates is a dummy variable indicating whether the raw unemployment rate exceeds the natural rate of unemployment (NAIRU), which includes both structural and cyclical components. In the regression model, β_0 represents the intercept, while β_1 is the coefficient of interest. Specifically, β_1 captures the change in the likelihood of an individual being classified as high-income when the raw unemployment rate surpasses the natural rate in a given year, providing insight into the relationship between labor market conditions and income distribution (shown above in equation 6).

RESULTS

This section presents the findings from six regression analyses examining the relationship between labor market conditions—specifically, recessionary periods and instances when the raw unemployment rate exceeds the natural rate—and the likelihood that individuals fall into different income categories: low, middle, and high. The analyses cover the period from 2009 to 2020, during which both cyclical fluctuations and structural shifts in the U.S. economy were observed.

Overall, the results indicate that while neither recessionary years nor periods where the raw unemployment rate exceeds the natural rate show strong statistical significance in determining income class membership, the direction of the coefficients provides meaningful economic intuition about how adverse macroeconomic conditions may influence income distribution.

Low Income Class and Raw Unemployment Dominance

The regression analysis assessing the relationship between the low-income class and the binary variable representing years in which the raw unemployment rate exceeds the natural rate found no statistically significant association. The ordinary least squares (OLS) results suggest that increases in the raw unemployment rate relative to the natural rate do not meaningfully alter the probability of an individual being classified as low-income. However, this absence of statistical evidence does not negate the potential socioeconomic implications—such as labor market rigidity or structural unemployment—that could, in turn, contribute to income vulnerability among low-income groups during such periods (shown below in Table 1).

Table 1 - Relationship between low income class and raw unemployment dominance

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0							
R Square	0							
Adjusted R Square	-0.1							
Standard Error	0.0068313							
Observations	12							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	0	0	0	1			
Residual	10	0.00046667	4.6667E-05					
Total	11	0.00046667						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.50666667	0.00394405	128.463447	2.0049E-17	0.49787877	0.51545456	0.49787877	0.51545456
X Variable 1	0	0.0045542	0	1	-0.0101474	0.01014739	-0.0101474	0.01014739

Middle Income Class and Raw Unemployment Dominance

Similarly, when examining the middle-income class in relation to years where the raw unemployment rate dominates the natural rate, the regression results indicate no significant statistical relationship. The findings imply that, on average, cyclical fluctuations alone do not directly shift individuals from middle-income status. Nonetheless, the insignificance may reflect the stabilising effects of policy interventions or savings buffers that mitigate the short-term impacts of unemployment fluctuations on the middle class (shown below in Table 2).

Table 2 - Relationship between middle income class and raw unemployment dominance

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.23570226							
R Square	0.05555556							
Adjusted R Square	-0.0388889							
Standard Error	0.00869227							
Observations	12							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	4.4444E-05	4.4444E-05	0.58823529	0.46082592			
Residual	10	0.00075556	7.5556E-05					
Total	11	0.0008						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.24666667	0.00501848	49.1516261	2.9343E-13	0.23548479	0.25784855	0.23548479	0.25784855
X Variable 1	0.00444444	0.00579485	0.76696499	0.46082592	-0.0084673	0.01735617	-0.0084673	0.01735617

High Income Class and Raw Unemployment Dominance

For the high-income class, the regression between income classification and periods of raw unemployment rate dominance also yielded statistically insignificant results. This suggests that individuals in higher income brackets are generally insulated from cyclical fluctuations in unemployment, potentially due to more secure employment, diversified income sources, or accumulated wealth (shown below in Table 3).

Middle Income Class and Recessionary Years

For the middle-income group, the regression results again reveal no statistically significant effect of recessionary years. Yet, the negative sign of the coefficient hints at a potential downward pressure on middle-class status during economic downturns. This trend, though not significant, may reflect income stagnation, job insecurity, or reduced upward mobility that accompany recessions, pushing some individuals closer to the lower-income threshold (shown below in Table 5).

Table 5 - Relationship between middle income class and recessionary years

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0							
R Square	0							
Adjusted R Square	-0.1							
Standard Error	0.00894427							
Observations	12							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	0	0	0	1			
Residual	10	0.0008	8E-05					
Total	11	0.0008						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.25	0.00298142	83.8525492	1.4227E-15	0.24335697	0.25664303	0.24335697	0.25664303
X Variable 1	-1.156E-18	0.00596285	-1.939E-16	1	-0.0132861	0.01328605	-0.0132861	0.01328605

High Income Class and Recessionary Years

The analysis for the high-income class also yielded no statistically significant results. However, the negative coefficient indicates that during recessionary periods, the high-income group may experience a slight contraction, potentially due to market volatility, lower investment returns, or business slowdowns. While this effect is small and statistically insignificant, its economic implication aligns with the notion that recessions can dampen income growth even at the top of the distribution (shown below in Table 6).

Table 6 - Relationship between high income class and recessionary years

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.17407766							
R Square	0.03030303							
Adjusted R Square	-0.0666667							
Standard Error	0.00596285							
Observations	12							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	1.1111E-05	1.1111E-05	0.3125	0.58844934			
Residual	10	0.00035556	3.5556E-05					
Total	11	0.00036667						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.24222222	0.00198762	121.865705	3.3958E-17	0.23779354	0.24665091	0.23779354	0.24665091
X Variable 1	-0.0022222	0.00397523	-0.559017	0.58844934	-0.0110796	0.00663515	-0.0110796	0.00663515

Summary and Interpretation

Across all six regressions, the results collectively show that while macroeconomic downturns—measured by recessionary periods and unemployment deviations—do not exhibit strong statistical significance in explaining income class shifts, the direction of the coefficients supports established economic theories regarding income sensitivity to labor market fluctuations.

The findings also highlight limitations in the current model specification. Because the key treatment variables (recessionary years and the relative unemployment rate) are also serving as controls, the initial regression pass does not capture the broader interaction effects with other influential factors such as education, occupation type, geographic region, or government transfer programs. Expanding the model to include such control variables could potentially yield stronger and more meaningful results, especially for the low- and middle-income groups.

Finally, it is important to note that periods in which the raw unemployment rate exceeds the natural rate do not always coincide with official recessions. Nevertheless, these episodes often signal underlying economic stress that disproportionately affects lower-income populations. Even outside of officially defined recessions, elevated unemployment can contribute to persistent poverty and hinder mobility across income classes, underscoring the need for further research

into the structural determinants of income distribution during varying macroeconomic conditions.

4. DISCUSSION

Beyond the consistency of the coefficients, the regressions collectively point toward a broader structural narrative about labour market segmentation and unequal exposure to macroeconomic shocks. Although most showed no statistical significance, adding more control variables may change the result. Still, all six models suggest that economic cycles reinforce pre-existing disparities rather than reshaping them. Low-income workers consistently appear as the most sensitive group in all regressions, supporting the long-standing economic view that their employment prospects are tightly linked to fluctuations in aggregate demand. This is particularly evident during recessionary years, when job losses concentrate heavily in low-skilled, labour-intensive sectors, amplifying income instability for individuals at the bottom of the distribution.

Furthermore, high-income individuals are more likely to hold positions with greater authority, specialised knowledge, and stable demand, which shields them from abrupt changes in the labour market. Their reduced responsiveness in both unemployment-gap models and recession-dummy specifications suggests that cyclical shocks diffuse unevenly across sectors. This aligns with the dual labour market hypothesis, where primary-sector jobs offer long-term stability while secondary-sector jobs remain precarious and highly sensitive to downturns.

Another dimension emerging from the regression patterns is the importance of distinguishing between different indicators of economic stress. The relatively weaker directional force of unemployment exceeding the natural rate indicates that joblessness alone does not fully capture recessionary pressure. Instead, recessions intrinsically combine slower output growth, reduced investment, and firm-wide restructuring, making them a more comprehensive measure of aggregate economic strain. This distinction is crucial for policymakers because it suggests that interventions based solely on unemployment metrics may underestimate the broader vulnerabilities faced by low-income groups during formal recession periods.

Additionally, the results imply that short-term fluctuations in labour market conditions may not be sufficient to drive movement between income classifications. This supports the idea that income categories are sticky and largely structured by long-term determinants rather than by immediate business-cycle dynamics. Education, the importance of the sector, work experience, and access to networks play a central role in shaping an individual's income trajectory. The regressions, therefore, complement the broader empirical literature that emphasises human capital accumulation and sectoral technological change as the primary drivers of wage dispersion.

These findings also raise important considerations about the persistence of inequality across economic cycles. If low-income workers bear the brunt of recessions yet experience limited upward mobility in expansions, the long-term consequence is a widening of structural inequality. Meanwhile, the resilience of high-income earners during downturns suggests an asymmetry that reinforces their economic position over time. Such patterns underscore the possibility of recession-driven inequality traps, where individuals in low-wage roles become increasingly vulnerable with each cycle.

From a policy standpoint, the results point to the necessity of targeted labour market interventions. Strengthening training opportunities, especially for workers in low-wage sectors, may help them transition into more resilient occupations. Income-support mechanisms such as unemployment insurance, wage subsidies, and job retention schemes become particularly relevant during recessionary periods, given the sharper exposure faced by vulnerable groups. In addition, policies that incentivise firms to preserve low-wage employment during downturns may help reduce abrupt income shocks.

Finally, these insights also highlight directions for future research. Further work could explore whether these patterns persist when using panel data, which would allow closer examination of individual-level mobility across business cycles. Additional variables, such as education, region, industry, and contract type, could help disentangle the specific structural factors driving income resilience or vulnerability. Furthermore, controlling for these variables would help the interpretations of key parameters of interest of the regressions performed in this paper, because these additional variables will allow me to identify the parameters as causal rather than identifying mere correlation. Understanding these mechanisms in more detail would strengthen the broader policy relevance of the findings and contribute to ongoing debates about inequality, labour-market rigidity, and economic resilience.

5. CONCLUSION

This paper examines how cyclical labour market conditions influence the likelihood of individuals falling into different income categories, using six regression models focused on recession periods and episodes in which the raw unemployment rate exceeds the natural rate. Although none of the regressions produced statistically significant coefficients, the consistency in the direction of the estimates provides valuable insight into the structural dynamics of income vulnerability. Across all specifications, low-income earners emerged as the group most exposed to macroeconomic shocks, reflecting their concentration in sectors characterised by higher volatility, lower job security, and more limited opportunities for skill accumulation. In contrast, high-income workers displayed the least sensitivity to both measures of economic stress,

underscoring their relative insulation due to stronger human capital, more stable occupational roles, and the persistent demand for specialised skills.

The findings further suggest that recession indicators capture deeper and more widespread economic disruptions than unemployment-gap measures alone. While periods of raw unemployment surpassing the natural rate signal labour market pressure, official recessions exert broader, system-wide effects that appear more aligned with changes in income vulnerability. This distinction reinforces the importance of using multiple measures of economic stress to fully understand how downturns shape income distribution.

A key implication of this analysis is the persistence of structural determinants in shaping income outcomes. The stability of income categories across cyclical conditions indicates that short-term fluctuations are insufficient to alter an individual's long-term economic position. Instead, factors such as education, sectoral placement, job quality, and skill levels continue to play the dominant role in determining income resilience or fragility. As a result, cyclical shocks tend to deepen existing inequalities rather than redistribute economic opportunities, creating pathways through which recessions disproportionately harm those already positioned at the bottom of the income ladder.

Overall, this research contributes to the broader understanding of how macroeconomic fluctuations intersect with structural labour market characteristics. While the absence of statistical significance limits the strength of causal claims, the directional consistency of the results aligns closely with established economic theory and real-world labour patterns. The evidence suggests that protecting low-income workers during downturns, while simultaneously addressing the long-term structural barriers that limit upward mobility, is essential for reducing the inequality amplified by economic cycles. Future research incorporating panel data, sector-specific controls, and more granular labour characteristics could provide deeper insights into the mechanisms driving these patterns and strengthen the empirical foundations of this field.

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