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Financialization, Personal Debt Burden, and the Black-White Pay Gap in the United States

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Abstract

This paper examines the Black-White pay gap in the United States from 1989 to 2024 using quarterly data from the Bureau of Labor Statistics and the Federal Reserve's Distributional Financial Accounts. Building on existing political economy research, which suggests that personal debt reduces workers' bargaining power by making them more risk-averse in wage negotiations - particularly when job loss threatens their ability to service debt - this study argues that racial discrimination in both personal credit markets and wage negotiations disproportionately disciplines racialized social groups. Regression analysis shows that rising household debt liabilities-to-assets ratios for Black households and a higher share of white business owners have crucially contributed to the persistent wage gap between Black and White Americans. Interestingly, interacting the two coefficients shows that a higher share of white businesses slightly mitigates the effect of debt held by Black workers on the black-white earnings gap. This potentially implies that, despite discriminatory practices, white businesses might represent a relatively more stable employment option for indebted Black workers, thereby reinforcing a vicious cycle of self-perpetuating racialized economic inequality.

Keywords: Racial Pay Gap; Personal Debt; Household Financialization; United States

JEL Codes: B50; J15; J31; J70

1. Introduction

The history of the United States is a history of racial discrimination. This long-standing legacy has shaped patterns of wealth concentration and persistent racial disparities in the labour market. The abolition of slavery by the 13th Amendment (1865), which marked the beginning of the Reconstruction era, was almost immediately and abruptly interrupted by the despicable Jim Crow laws (late 19th – early 20th centuries). This set of laws formally institutionalized Black Americans as second-class citizens by legislating unfavorable economic, educational, political, and social rules

that delineated a trajectory of inequality that persists until today. The seizure of property, barriers to property ownership, redlining practices, occupational segregation, discriminatory labour rights, unequal access to quality education, and exclusion from the New Deal protections have placed Black Americans at a disadvantage relative to White Americans (Rothstein, 2017). Despite the significant victories of the Civil Rights Movement and more than sixty years since the Civil Rights Act of 1964, which outlaws discrimination based on, inter alia, race, Black Americans are still paid less than their White counterparts. The relevant literature highlights educational attainment disparities, occupational exclusion, and spatial segregation as the principal determinants of racial pay gaps (Krymkowski & Mintz 2011; Aneja & Hu 2022; Childers 2024a). Moreover, the issue of systemic racism in hiring and wage negotiations is increasingly gaining the attention of several scholars (Fryer et al. 2013; Daly et al. 2017). However, what remains highly overlooked is how racial discrimination in personal credit markets exacerbates the racial pay gap, given the increasing financial needs of Black Americans to support everyday necessities, as a result of the shrinkage of the welfare state in the US.

For this purpose, this paper examines the relationship between the financialization of households, racial discrimination in wage negotiations, and the black-white pay gap in the United States between 1989 and 2024, using quarterly data from the Bureau of Labor Statistics and the Distributional Financial Accounts of the Federal Reserve Board of Governors. Regression analysis shows that, independently, the rising household debt burden faced by Black households and the highest share of white business owners have been key positive drivers of the Black-White pay gap. This finding complements existing work, which shows that personal debt makes indebted workers less demanding in wage negotiations to avoid losing their jobs and defaulting on their debt. However, interacting the two coefficients shows that the larger the share of white business owners in the economy, the weaker the positive effect of debt held by Black workers on the black-white wage gap is. We argue that, despite white businesses discriminating against black workers in wage negotiations, a white business might be a safer option for the indebted black workers in terms of financing their debt liabilities since it is less likely to fail and, thus, offers better job stability.

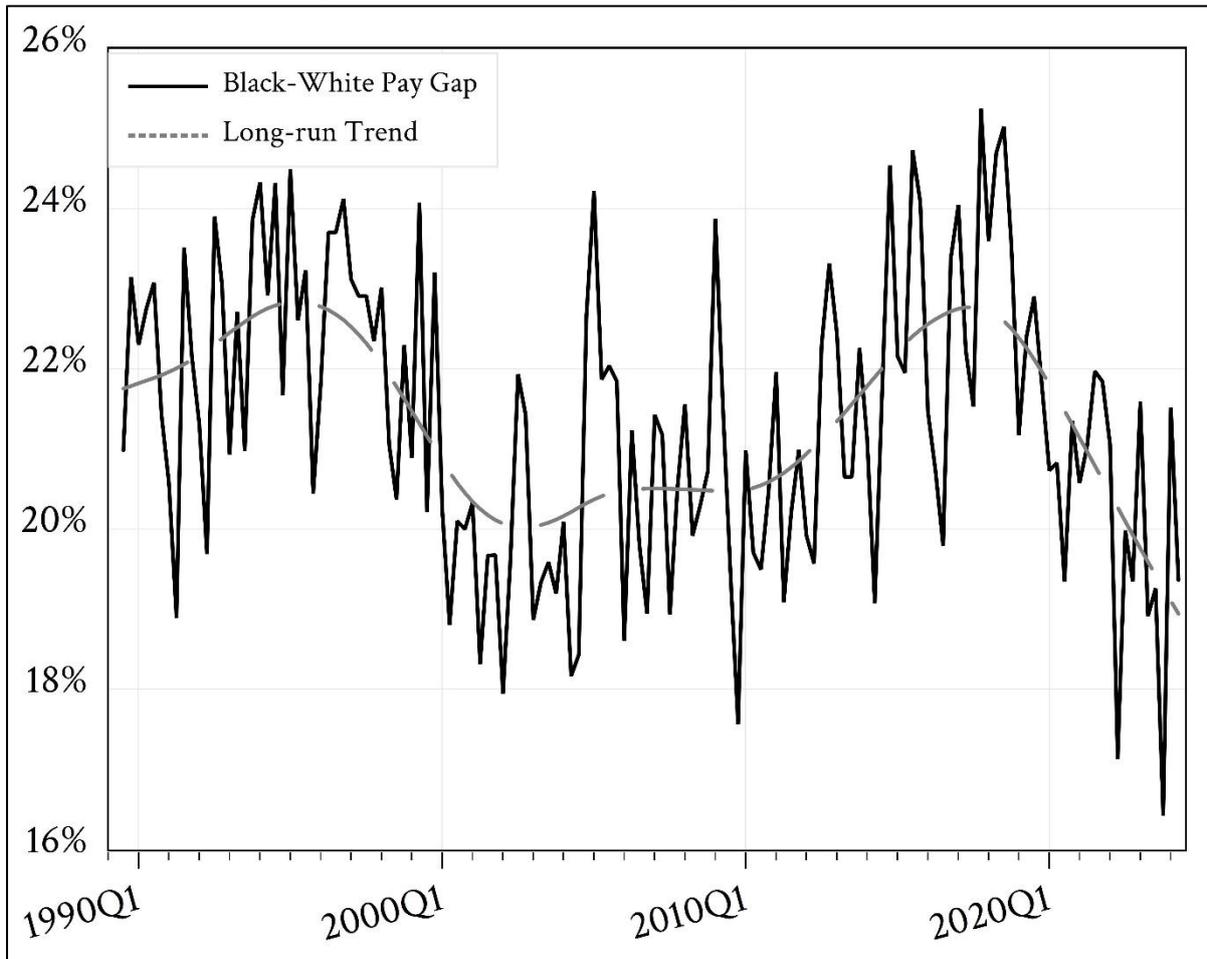
The measures of household debt burden used include total household debt, mortgage, and consumer credit liabilities as a share of the assets held by black and white households, respectively, and our econometric findings are robust for all different measures of personal debt held by Black households. Further experimentation with the *Chicago Fed National Financial Conditions Index* provides some evidence that adverse financial market conditions exacerbate the disciplinary effects of debt for Black workers. At the same time, debt held by White workers does not seem to have any notable effects on the black-white pay gap. Overall, our results contrast mainstream financial literacy/education theories, which argue that giving access to finance to underrepresented social groups can lead to more egalitarian outcomes (Rucks-Ahidiana 2025). Instead, we show that the fear of defaulting on their debt makes Black workers rather more

vulnerable in the labour market. The rest of the paper is structured as follows. Section 2 reviews the existing literature on the determinants of racial pay gaps. Section 3 scrutinizes the impact of the financialization of everyday life on the persistent Black-White earnings disparities. Section 4 includes the econometric design. Section 5 presents the econometric results and discusses the findings. Finally, Section 6 concludes.

2. Inequality of Opportunity, Systemic Racism, & the Persistent Black-White Pay Gap

Despite the achievements of the Civil Rights Movement and decades of formal legal equality, the earnings gap between Black and White Americans remains strikingly wide. Figure 1 shows the evolution of the Black-White pay gap between 1989Q3 and 2024Q2. The average value over this period has been 21.34 percent. There are some evident fluctuations in this trend. Even with the passage of the Civil Rights Act of 1991, signed by President George H. W. Bush, which enabled employees to prove employment discrimination and claim damages, the long-run trend in the Black-White gap kept rising until 1997. Between 1997 and 2002, this trend started to decline, most likely reflecting enhanced enforcement of the Civil Rights Act, a strong economy, and low unemployment. Notably, from the early 2000s to the beginning of the COVID era, the trend of the gap has been steadily increasing. The decline since the early 2020s is likely linked to the universal benefits provided during the pandemic. Regardless of temporary improvements, the Black-White Pay Gap has remained remarkably persistent over the last 35 years, raising the question of the underlying structural conditions that sustain it.

Figure 1: The Black-White Pay Gap, 1989Q3-2024Q2



Notes: The Black-White pay gap is defined as: $1 - (\text{Black employees earnings} / \text{White employees earnings}) \times 100$. The earnings data used in this calculation are drawn from the Bureau of Labor Statistics' "Median usual weekly earnings of full-time wage and salary workers by sex, age, race, and Hispanic or Latino ethnicity (not seasonally adjusted, quarterly averages)" series.

The relevant literature highlights differences in the level of education between Black and White Americans as a principal determinant of the Black-White pay gap. Hence, scholars have frequently argued that racial earnings inequality in the U.S. labour market could be mitigated through increased college attainment among Black Americans (Wilson 1980; Krymkowski & Mintz 2011). This line of reasoning suggests that as soon as Black Americans upgrade their skills via higher education, they will be able to secure a job with higher earnings. As for the existing differentials in qualifications, while some narratives blame Black Americans themselves for making poor educational choices (Jabbar et al. 2022; Podoshen et al. 2014) or for undervaluing education (Hamilton & Darity 2017), a more realistic explanation points to structural inequalities in access to quality education (Walters 2001). For example, recent studies suggest that college education remains less affordable for Black Americans due to wealth disparities and greater reliance on student loans (Levine & Ritter 2024; Nam 2022). Yet these differences in human capital cannot fully account for the persistent racial pay gap.

Even scholars who report a significant racial convergence in educational attainment over the past decades show that racial income disparities persist, as rising returns to education since

the 1980s have disproportionately benefited those with higher education. As a result, earnings gaps have widened for less-educated Black men, who continue to be overrepresented in lower-skilled occupations (Bayer and Charles 2018). Most importantly, Wilson (2016) and Daly et al. (2017) find that Black Americans are paid less than their White counterparts across all levels of education. Interestingly, this disparity is more pronounced amongst the most educated workers.

Similarly, the long-standing occupational segregation between Black and White workers following the egregious ordinances of Jim Crow laws has undoubtedly determined earning disparities (Aneja & Hu 2022). The efforts for integration that were initiated by the civil rights movement in the 1960s stalled over time, restricting Black employees from accessing high-paying, senior roles and occupations. Once again, while some authors contend that occupational segregation could be alleviated through investment in human capital development (Krymkowski & Mintz 2011), relevant research shows that Black employees are confined to a narrow set of occupations that pay less relative to similarly educated White workers (Jardina et al. 2023). Such findings underscore the ongoing and systemic nature of racial discrimination in the labour market.

Another argument, closely related to educational attainment, concerns the accumulation of on-the-job human capital. Rauh and Valladares-Esteban (2023) show that while differences in hours worked contribute to slower experience accumulation for Black workers, the primary driver of the widening earnings gap is unequal pre-market conditions, such as disparities in early-life educational opportunities and access to resources, which shape labour market outcomes over the course of life. These long-term effects are also connected to how initial earnings influence future wage trajectories, as early wages often serve as benchmarks for subsequent raises and promotions. In this regard, studies have found that Black workers tend to have lower reservation wages than White workers (Black 1995; Fryer et al. 2013). Labour supply decisions, combined with unequal opportunities for educational investment, can further exacerbate racial income disparities.

Many authors trace unequal access to quality education and high-paying jobs back to patterns of geographic and spatial segregation (Rothstein, 2017). With 56 percent of the Black American population living in the South in 2019, this geographical concentration has important implications for the racial pay gap (Source: Pew Research Centre). The South has historically experienced lower levels of public investment, in particular in education infrastructure and job creation, following an overall development model that echoes the region's racist past (Childers 2024a). Moreover, most private sector jobs in the South have been in agriculture and manufacturing. However, today, due to de-industrialization, technological change, and globalization, unemployment in these sectors has increased significantly, disproportionately affecting Black workers (Green 2020).

Undoubtedly, educational attainment disparities, occupational exclusion, and spatial segregation can explain part of the racial pay gap, yet not all. For example, McKinney et al. (2022) find that differences in characteristics such as hours worked, education, industry, and geographic location explain much of the Black–White earnings gap at the lower end of the income distribution. However, above the median, the gap is primarily driven by differential returns to these characteristics—rather than the characteristics themselves—suggesting persistent racial discrimination in the labour market.

Outright racial discrimination still persists and is behind the ‘unobserved’ explanatory factors of the Black-White pay gaps (Heywood and Parent 2012; Fryer et al. 2013; Daly et al. 2017). A study by Hernandez et al. (2019) shows that Black candidates are often expected to negotiate less than their White counterparts and face lower salary outcomes when they challenge this expectation, particularly when negotiating with evaluators who hold stronger racial biases. From a different angle, Bond et al. (2017) show that Black jobseekers are more willing to accept lower wages in return for the relative security of being employed under a Black supervisor, in the face of pervasive prejudice. A logical extension of this argument is that Black employees may prefer Black employers. Stoll et al. (2001) provide evidence that Black employers are more likely to hire Black workers than White employers. However, working for a Black-owned business may inadvertently reinforce racial earnings disparities. Due to discrimination in access to business credit and government contracts, these businesses often face higher borrowing costs and lower profits, which in turn can suppress wages (Fairlie & Rob, 2007).

3. The Unequal Financialization of Everyday Life & the Black-White Pay Gap

While systemic racism and discrimination in hiring and wage negotiations have been gradually gaining increasing attention in the ongoing debates about racial income inequalities and labour market outcomes, what has remained relatively unexplored is how discrimination in other domains in the economy maintains or even reinforces such inequalities. In this regard, one potentially fruitful expansion of the ongoing debate on racial earnings inequalities is how rising financial uncertainties faced by working households due to their increasing dependence on debt shape their compliance with poor working conditions, given that systemic racial discrimination is also prominent in personal credit markets (Pager & Shepherd, 2008).

Since the end of the post-WWII reconstruction era and of the Cold War in the late 1980s, governments across the West, with the USA leading the way, started retrenching the welfare state and privatizing key services in the absence of interregime competition. As a consequence, education, housing, healthcare, and transportation, among others, became fully marketized industries with the prices of the respective services rising steadily. At the same time, financial regulations imposed after the 1929 financial crash and during the post-WWII era were gradually

lifted, with the most important among them being the repeal of the 1933 Glass-Steagall Act in 1999, which brought the end of separation between investment and commercial banks, leaving the former to dominate the sector. Parallel to the deregulation of product and financial markets and the decline of public sector spending, attacks on unions and workers' rights were the last pillar of the interventions that gave rise to what is commonly described as neoliberalism. Flexibility in labour markets at almost all costs was promoted since the Reagan administration as a means to keep wages competitive and deal with the heightening international trade competition. The decline in workers' and employees' bargaining power as part of this policy agenda has materialized in the decoupling between productivity and wages and, thus, in the steep decline of labour's income share since at least the early 1980s (see e.g., Alvarez 2015; Stockhammer 2017). Taken together, with wages failing to keep up with rising prices for essential goods and services that have become privatized, a new profitable market has opened up for finance and insurance corporations: financing working households (Setterfield and Kim 2024).

This process of financialization of everyday life, as a result of what Crouch (2009) describes as the 'welfare state-private debt' trade-off, has been manifested in rapidly rising personal debt-to-income ratios across the income distribution in most advanced and developing countries globally, particularly since the early 2000s (van der Zwan 2014). This unsustainable rise in personal debt ratios has important behavioural consequences related to labour market and workplace decisions for indebted workers. As recent research shows, the pressure to repay personal debts and avoid a default often pushes indebted working households to become more compliant with managerial decisions, from accepting flexible working hours to shifting to more precarious job contracts (Gouzoulis et al. 2023). Resisting or organizing against such changes in work arrangements often comes with a high risk of becoming redundant; therefore, both unionization and industrial action have become much more challenging and risky with the spread of personal indebtedness across the majority of the working population (Grady and Simms 2019; Gouzoulis 2023). Even if punitive dismissals remain illegal in many countries, the monetary and time costs of appealing against them are a major obstacle for the affected workers. In this respect, the necessity of securing a steady stream of income in order to repay personal debts or secure refinancing to repay them makes indebted workers more attached to having any job contract over the risk of being more demanding and losing their job (Kim et al. 2019). Consequently, as several studies have shown, the decline in the labour share is explained to a notable extent, not only by globalization and labour market deregulation itself, but also by the disciplinary effects of personal indebtedness (Gouzoulis et al. 2023, 2025; Gouzoulis 2021, 2022; Kohler et al 2019; Wood 2018). Yet, while personal debt has broadly undermined workers' bargaining power, its disciplinary effects vary significantly across different segments of the population, particularly across racial lines.

Revisiting the concept of the 'welfare state-private debt' trade-off, it would be an omission to overlook that redistribution via the welfare state has historically been much more central to

the survival of those worse off in a society. The legacy of slavery and legalized racial segregation has crucially shaped intra-working-class divides in societies like the United States. From slavery and Jim Crow laws to redlining, job segregation, exclusion from the New Deal protections, and discriminatory enforcement of property and labor rights, Black Americans have experienced both the loss of their assets and the denial of the means to accumulate new wealth from scratch (Rothstein 2017). Although racial segregation is not legal anymore, structural racism has been upheld over generations, leaving Black households with a fraction of the wealth and assets held by their White counterparts today. Hence, in the absence of fallback options, Black households have been historically more reliant on welfare programs and, as such, the rollback of the welfare state under neoliberalism has been disproportionately detrimental for them (Soss et al. 2011).¹ Thus, the question that emerges is to what extent welfare state retrenchment has generated disproportionate needs for borrowing for Black households and whether this can explain the persistence of the Black-White pay gap through the disciplinary effects of personal indebtedness.

The enduring legacy of slavery and segregation has crucially shaped not only the labour market and the real estate market of the United States, but also its financial system and, particularly, personal credit markets. Creditworthiness and projections about future economic success are far from objective, and racial biases play a key role in determining who is creditworthy, what is the “fair” interest rate premium to be paid, and who should qualify for bankruptcy protection schemes (Pang 2025). Indeed, recent studies show that Black households across the income distribution are being offered primarily subprime loans and, thus, pay significantly higher interest rates than their White counterparts (Rothstein, 2017; Faber 2019; Baek and Cho 2023; Loya 2024). While arguments stemming from conservative think tanks and institutes suggest that personal debt is not a pressing issue since highly indebted individuals are commonly richer, the reality is that when personal debt *burden* is properly measured, the picture changes dramatically.² Indeed, the level of personal debt held by richer households is higher. Particularly in the case of the United States, the income divide between high and lower income individuals coincides closely with the racial divide; thus, indeed, the level of personal debt owed by White households is substantially higher than that of Black households (see Figure A1 in the appendix)³. However, understanding the extent to which debt becomes a constraint for households that pushes them into becoming more attached to their job and accept deterioration in pay and/or working conditions requires looking at the relationships between their debt liabilities and their personal safety nets, i.e., the assets they hold.

Figure 3 reports the household debt liabilities-to-assets ratio for Black American households between 1989Q3 and 2024Q1 as a stacked graph that distinguishes between mortgages

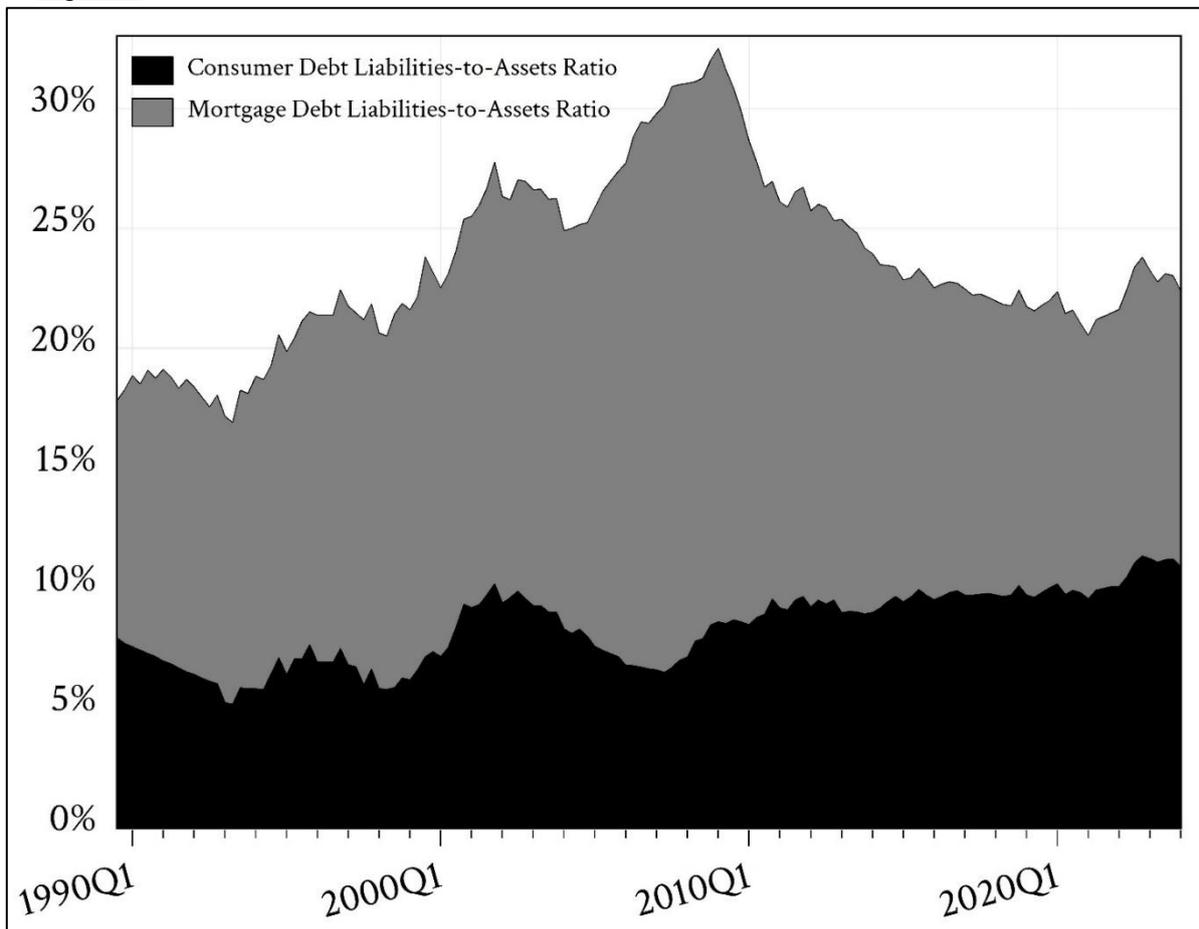
¹ Even if these social transfers have been important, the nature of them was highly racialized with time-limited, workfare programs being prominent among people of color (Hancock 2004).

² See, for example, the argument of Akers and Chingos (2016) regarding student loans.

³ According to Moore (2015), 96.1 percent of households that belong to the top one percent income share are White.

and consumer debt using data from the Distributional Financial Accounts of the Federal Reserve Board of Governors. Since the beginning of the dataset, which is around the period that the intensification of the financialization of everyday life began, the personal debt liabilities-to-assets ratio of Black Americans rose steeply until right after the 2008 Global Financial Crisis triggered by the collapse of the subprime mortgage market. At that point, Black households had liabilities that reached over one-third of the total assets they held (32.5 percent), including illiquid assets like pension entitlements. As subprime loans have been discriminatorily offered to Black households, the corresponding defaults affected them significantly. Despite the decline of the ratio as a result of the post-2008 defaults, it does remain over 20 percent with an increasing trend since early 2021. Here, it is also worth noting that the consumer debt liabilities ratio, which includes healthcare, student, auto, and payday loans, has followed a distinct, steadily increasing trajectory over the whole period.

Figure 3: Household Debt Liabilities-to-Assets Ratios – Black Households, 1989Q3-2024Q1

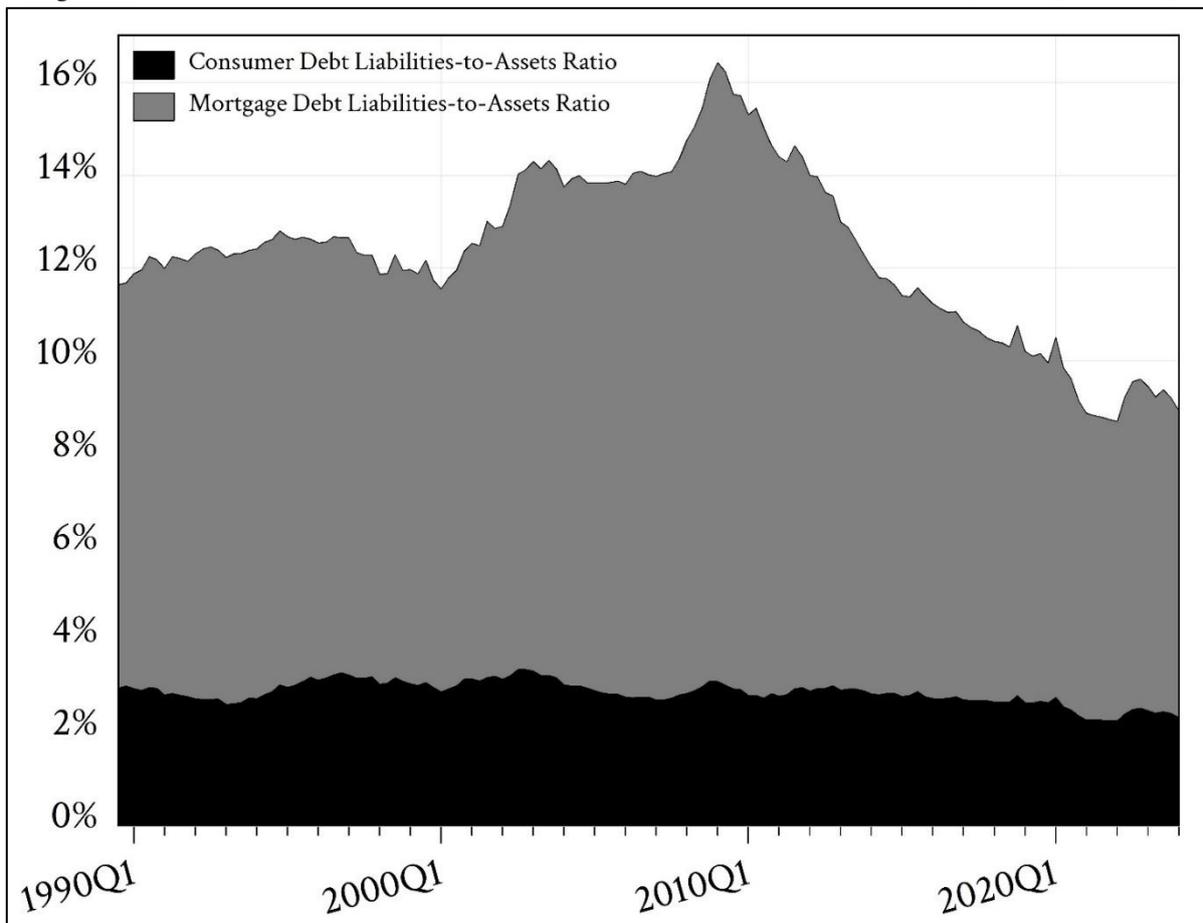


Notes: The household debt-to-assets ratio is defined as: $(\text{Total Liabilities}/\text{Total Assets}) \times 100$. The liabilities and assets data used in this calculation are drawn from the Distributional Financial Accounts of the Federal Reserve Board of Governors. The assets series include real estate, consumer durable goods, corporate equities and mutual fund share, defined benefit pension entitlements, defined contribution pension entitlements, private businesses, and other assets. Series presented as a stacked area chart.

Looking at the personal debt liabilities ratio of White households, the differences are stark. First and foremost, over the period under examination, the overall ratio is approximately half of the respective ratio of Black households, reaching only 16.4 percent right after the 2008

GFC in early 2009. As with every major financial crisis, safe assets are in high demand; therefore, the wealth of those holding them rises. That is reflected in the steep decline of the ratio since 2009, which largely reflects an increase in the values of the denominator of the ratio, since the numerator has been rising during that time (see Figure A1 in the appendix). Another sharp contrast can be observed in the case of consumer debt, where the ratio of the respective liabilities of White households has been slowly but steadily decreasing over the whole period. This trend also potentially suggests that personal indebtedness for White households is a means to residential investment via mortgages rather than a way to finance essential expenditures.

Figure 4: Household Debt Liabilities-to-Assets Ratios – White Households, 1989Q3-2024Q1



Notes: The household debt-to-assets ratio is defined as: $(\text{Total Liabilities}/\text{Total Assets}) \times 100$. The liabilities and assets data used in this calculation are drawn from the Distributional Financial Accounts of the Federal Reserve Board of Governors. The assets series include real estate, consumer durable goods, corporate equities and mutual fund share, defined benefit pension entitlements, defined contribution pension entitlements, private businesses, and other assets. Series presented as a stacked area chart.

On top of the major differences between the personal debt liabilities ratios of Black and White households outlined above, it is also important to understand how even similar amounts of liabilities might generate differing disciplinary effects. The key to understanding these is to look at the racialized practices of the debt collection industry. The recent study of LaVoice and Vamossy (2024) provides novel empirical evidence that American households of colour are 52 percent more likely to face a debt collection judgement compared to their White counterparts, even after controlling for credit scores, income levels, and outstanding debt balances. In that

regard, racial profiling in debt collection and judgments further reinforces the disciplinary effects of personal debt. Returning to the starting point of the discussion, it is reasonable to hypothesize that:

H1: *The personal debt liabilities ratio of Black households will be positively associated with the Black-White Pay Gap*

H2: *The personal debt liabilities ratio of White households will not be closely associated with the Black-White Pay Gap*

Regarding the potential interactions between employer and creditor discrimination against Black households, it is important to explore the extent to which they may generate explosive or some form of dampening dynamics. The obvious answer would be that being in debt and employed by a white business as a black worker can generate a downward spiral of accepting a lower wage out of the fear of not getting or losing a job, getting deeper into debt, and then experiencing even stronger disciplinary effects. However, due to discrimination in business credit markets and government contracting, black businesses tend to be less successful and have higher rates of default (Fairlie and Robb 2007). Accordingly, even if being employed by a white business as a black worker comes with significant wage discrimination, this might be a “safer” long-term option, as the lower rates of defaults for white businesses provide more certainty in terms of securing a steady flow of income and repaying your debts. In summary, our third hypothesis is the following:

H3: *The interaction between the personal debt liabilities ratio of Black households and the share of white businesses will be negative*

4. Econometric Specification & Estimation Approach

To formally assess whether there is an association between credit and labour discrimination, and the dynamics of the black-white pay gap in the United States since 1989, we proceed with time series regression analysis. Following the hypotheses presented in the previous sections, our main regressors include the personal debt burden of black households, the share of white businesses in the economy, as well as the interaction between the two. Accordingly, our baseline equation is of the following form:

$$\text{Black – White Pay Gap} = f(\text{Black Debt}, \text{White Businesses Share}, \text{Black Debt} \times \text{White Businesses Share}, \text{Controls})$$

where *Black Debt* is the household debt liabilities-to-assets ratio of black households, and *White Businesses Share* is the percentage share of white private businesses over total private businesses (see Figure A2 in the Appendix). The control variables include fundamental labour market indicators related to labour market tightness and labour supply for white and black

workers, respectively. Derived from the database of the Bureau of Labor Statistics, we include the unemployment rates of white (LNU04000003Q) and black workers (LNU04000006Q), and also the respective labour force participation rates (LNU01300003Q and LNU01300006Q).⁴ The former is included as a measure of labour market tightness, which is expected to exhibit a negative association with the earnings of the respective sub-group. The latter indicator that captures the labour supply of the respective groups can be a response to either better quality jobs available at certain times or people seeking any kind of job out of financial hardship. Thus, its association with changes in the black-white pay gap is less clear, yet important to be accounted for.

Given the available breakdowns of the personal debt liabilities series in FED's *Distributional Financial Accounts*, we first estimate an equation that looks at the effects of total household liabilities ratio (Specification 1), then we look separately at the impacts of mortgage and consumer debt liabilities ratios (Specifications 2 and 3), and, finally, we include both ratios of household debt liabilities together in a single equation (Specification 4). In addition, as a further step, we also include as regressors the household debt liabilities-to-assets ratio of white households and their respective breakdowns in a similar fashion to evaluate their potential disciplinary impact on white workers' earnings and re-estimate all four equations.

To evaluate the robustness of our eight baseline equations, we perform two additional rounds of estimation. First, we include a time dummy variable for periods of economic recession and re-estimate all specifications. This variable is a binary time dummy from the Federal Reserve Economic Data (FRED) of the St. Louis FED (JHDUSRGDPBR), where 1 indicates that the economy is in recession and 0 that it is not.⁵ Second, instead of the recession dummy, we alternatively include the *Chicago Fed National Financial Conditions Index* (NFCI). This is an unbounded, composite, z-score-based index of 105 financial market indicators that captures the risk conditions of all aspects of the US's financial markets (both bank- and market-based). Positive index values suggest that financial conditions are tighter than average, and negative values that they are looser than average. As such, increases in the index's values imply higher financial risks in the economy. As financial risks are directly linked to the potential disciplinary effects of personal debt burden, we interact all the components of personal debt held by both black and white households, with the NFCI. Overall, these additional rounds of robustness checks aim to assess the stability of the baseline findings, but also to examine whether recessions and economy-wide increases in financial risks disproportionately affect workers that have already in a more precarious position (positive coefficients) or those who have been better off in the past (negative coefficients). Taken together, our full dataset covers the period between 1989Q3 and 2024Q1, i.e.,

⁴ The (civilian) unemployment rate refers to the share of unemployed persons (% labor force over 16 years old; unadjusted) and the (civilian) labor force participation rate is defined as the percentage of the population that is either working or actively looking for work (% civilian noninstitutional population; unadjusted).

⁵ According to FRED, dates of U.S. recessions as inferred by GDP-based recession indicator.

it includes a total of 137 observations. Descriptive statistics for all variables can be found in Table A1 of the appendix.

The next step is to choose the appropriate estimation approach, subject to the order of integration of our variables. Following the standard practice in time series analysis, we proceed with unit root tests for each variable. As reported in Table A2 of the appendix, the Augmented Dickey-Fuller (ADF) unit root tests indicate that our dataset includes a mixture of variables that are integrated of order zero (stationary at levels) and integrated of order one (stationary at first differences). Given that, estimating the equations in levels would yield spurious point estimates, while estimating only differenced equations would potentially omit crucial information about long-run relationships between key variables. Therefore, the next step is to assess whether the combination of independent variables included in each specification is cointegrated with the dependent variable. To do so, we use the standard Engle and Granger (1987) two-step procedure: First, we estimate a stationary regression in levels between our dependent variable and our predictors for each equation; Second, we perform unit root tests for the residuals of each level-stationary regression. Following the procedure, we find that indeed the residuals of each level-stationary regression are integrated of order zero, i.e., stationary at levels, and, thus, a long-run, cointegrating relationship exists for each specification.

The standard time-series estimation approach for datasets where the variables are a combination of stationary series in levels or first differences and cointegration is present is the Unrestricted Error-Correction Model (UECM) (Sargan 1964; Davidson et al. 1978; Lin and Tomaskovic-Devey 2013). The UECM includes the explanatory variables in both first-differenced form and in levels, which reflect short- and long-term relationships, respectively. To mitigate potential simultaneity bias, it is also standard practice in the literature to lag all level terms.⁶ As elaborated by Wood and Stockhammer (2024), this approach creates a unidirectional formula operating similarly to the Granger causality test. As a dynamic model, in the UECM, the dependent variable also appears in both first-differenced and lagged level form, with the latter serving as the error correction term. Since this study focuses on long-term dynamics between personal debt burden, employer discrimination, and earnings gaps, our primary interest lies in the level coefficients rather than the short-run effects that capture only temporary adjustments to the long-run equilibrium. Consequently, the econometric specification that we use is the standard UECM equation:

$$\Delta(\text{Black} - \text{White Pay Gap})_t = \beta_0 + \beta_1(\text{Black} - \text{White Pay Gap})_{t-1} + \sum_{n=2}^N \beta_n x_{t-1} +$$

⁶ For the sake of completeness, we also report results for all baseline regressions with the level coefficients in non-lagged form which yields almost identical estimates and confirms the overall robustness of our findings (see Table A3 in the appendix).

$$\gamma_1 \Delta(\text{Black} - \text{White Pay Gap})_{t-1} + \sum_{n=2}^N \gamma_n \Delta x + u_t$$

where the vector x includes the explanatory variables. The terms β_0 and u_t are the constant and the error terms, respectively. Since the residuals of time series regressions are typically not independently and identically distributed, i.e., serial correlation and heteroskedasticity are usually present, we choose to estimate our UECM-based specifications via the Newey-West (1987) estimator (Heteroskedasticity and Autocorrelation Consistent (HAC) standard errors). Given the characteristics of time series data, this estimating approach has largely become the standard estimating strategy in different strands of industrial relations research, quantitative sociology of work, and inequality studies in recent years (e.g., Checchi and Visser 2005; Bengtsson 2014; Vachon et al. 2016; Kollmeyer and Peters 2019; Gouzoulis 2021, 2022; Gouzoulis et al. 2023; Papadopoulou 2025).

Lastly, focusing on the economic interpretation of our findings, since all key variables are in the form of shares/ratios, the coefficients reported are practically standardized and can be interpreted in a straightforward way (Ziliak and McCloskey 2004). In other words, each coefficient shows the association between the percentage-point change in the dependent variable subject to a one percentage point change in the respective independent variable. As a final step in our interpretation of the key findings, we also calculate the long-run multiplier or cumulative effects. The UECM-based, lagged-level coefficients reported show to what extent an increase in each dependent variable is associated with a change in the dependent variable in the following quarter. However, in practice, the impact of a change in an independent variable might be long-lasting and have additive effects over time. Therefore, following De Boef and Keele (2008), one can estimate the long-run multiplier/cumulative coefficient for each variable by dividing the respective lagged-level coefficient by the coefficient of the lagged dependent variable (β_i).

5. Results & Discussion

Table 1 reports the baseline regressions. The first striking finding is that all coefficients for the personal debt liabilities ratios of Black households are strongly positive and statistically significant in eight out of ten cases. Total and mortgage debt liabilities ratios are statistically significant in every equation they have been included. In terms of the magnitude of these coefficients, our results suggest that a one percent increase in the respective debt liabilities ratio is associated with positive changes in the Black-White pay gap that vary between 4.75 and 9.13 percentage points. Regarding the share of white businesses in the economy, all coefficients for this indicator are positive and statistically significant. The size of these coefficients suggests that a one percent increase in the share of white businesses is associated with positive changes in the Black-White pay gap that range from 0.64 to 1.51 percentage points. Overall, these results confirm both Hypotheses 1 and 2. However, to capture the overall effects of personal debt liabilities of Black

households, we also need to take into account the interaction coefficient. The interactions between all different measures of debt liabilities of Black households and the share of White businesses are found to be negative and mostly statistically significant, but the size of these coefficients is fairly small (-0.05 to -0.11). Consequently, we find partial support for Hypothesis 3, i.e., while a higher share of white businesses is associated with a reduction in the disciplinary effect of personal debt for Black households, this is quite moderate. Regarding the control variables, there is some evidence that the unemployment rate for black workers exhibits a positive association with the Black-White pay gap in two out of eight regressions, while the labour force participation rate of Black workers does not seem to be associated with the dependent variable. Last, concerning the debt liabilities ratios of White households, these are positive and mostly statistically significant, a result potentially linked to residential investments and a lower negative impact on their wage bargaining power.

Table 1: Black-White Pay Gap, 1989Q3-2024Q1 – Level Coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Total Household Debt (Black)_{t-1}</i>	5.39*** (0.00)				4.90** (0.02)			
<i>Mortgages (Black)_{t-1}</i>		7.58*** (0.00)		5.72** (0.03)		6.56** (0.02)		4.79* (0.09)
<i>Consumer Credit (Black)_{t-1}</i>			6.62* (0.10)	4.75 (0.28)			9.13* (0.06)	6.02 (0.20)
<i>White Business Share_{t-1}</i>	1.51*** (0.00)	1.35*** (0.00)	0.64* (0.06)	1.47*** (0.01)	1.44*** (0.01)	1.17** (0.02)	0.76* (0.07)	1.40** (0.04)
<i>Total Household Debt (Black)*White Business Share_{t-1}</i>	-0.06*** (0.00)				-0.06*** (0.01)			
<i>Mortgages (Black)*White Business Share_{t-1}</i>		-0.09*** (0.00)		-0.07** (0.02)		-0.08*** (0.01)		-0.06* (0.07)
<i>Consumer Credit (Black)*White Business Share_{t-1}</i>			-0.08* (0.08)	-0.05 (0.25)			-0.11** (0.04)	-0.07 (0.15)
<i>Unemployment (Black)_{t-1}</i>	0.05 (0.43)	0.11* (0.10)	-0.05 (0.40)	0.05 (0.51)	0.06 (0.85)	0.27 (0.34)	0.48** (0.02)	0.05 (0.87)
<i>Labor Force Participation (Black)_{t-1}</i>	-0.03 (0.73)	0.12 (0.24)	-0.21 (0.25)	-0.01 (0.94)	0.16 (0.63)	-0.02 (0.94)	-0.07 (0.85)	0.27 (0.50)
<i>Total Household Debt (White)_{t-1}</i>					0.95** (0.02)			
<i>Mortgages (White)_{t-1}</i>						0.48 (0.15)		0.87** (0.05)
<i>Consumer Credit (White)_{t-1}</i>							2.52* (0.08)	3.43** (0.02)
<i>Unemployment (White)_{t-1}</i>					-0.47 (0.24)	-0.67* (0.09)	-1.02*** (0.00)	-0.44 (0.30)
<i>Labor Force Participation (White)_{t-1}</i>					-0.59* (0.06)	-0.04 (0.89)	-0.49 (0.28)	-0.89* (0.06)
<i>Lagged Dependent Variable</i>	-0.74*** (0.00)	-0.63*** (0.00)	-0.65*** (0.00)	-0.73*** (0.00)	-0.85*** (0.00)	-0.71*** (0.00)	-0.81*** (0.00)	-0.92*** (0.00)
<i>Obs</i>	137	137	137	137	137	137	137	137
<i>Adj. R²</i>	0.32	0.30	0.27	0.30	0.35	0.31	0.31	0.35
<i>Unadj. R²</i>	0.37	0.35	0.33	0.37	0.43	0.40	0.40	0.45
<i>BG Test</i>	0.80	0.35	0.14	0.48	0.46	0.22	0.11	0.06
<i>Harvey Test</i>	0.97	0.87	0.90	0.98	0.92	0.25	0.98	0.62

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values in parentheses. The dependent variable is the Black-White Pay Gap in first differences. Breusch-Godfrey (BG) test at second lag (p-values reported). Constant terms and short-run (first-differenced) coefficients are included, but not reported. Equation estimated via the Newey-West estimator (HAC standard errors).

Table 2 reports the first round of robustness checks, which include the recession time dummy. Overall, all coefficients remain almost entirely unchanged in terms of sign, magnitude, and statistical significance. On top of these, Table 3 reports the second round of robustness checks, which includes the NFCI and its interaction with personal debt liabilities ratios of both Black and White households. Once again, all main coefficients remain largely similar to the baseline results, confirming the robustness of our key findings regarding Hypotheses 1, 2, and 3. The coefficient for NFCI itself is moderately negative and statistically significant in six out of eight equations, while its interaction with the debt liabilities ratios is mostly positive, both for Black and White households. A potential explanation behind these results is that deteriorations in general financial conditions disproportionately affect those better off (i.e., White households), while the positive interactions suggest that they simultaneously mildly exacerbate the disciplinary effects of personal debt liabilities of Black households. Table A3 in the appendix also reports results for our baseline findings with the level variables in non-lagged form, which also confirm the baseline results of Table 1.

Table 2: Black-White Pay Gap, 1989Q3-2024Q1 w/ Recession Dummy – Level Coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Total Household Debt (Black)_{t-1}</i>	5.42*** (0.00)				4.90** (0.02)			
<i>Mortgages (Black)_{t-1}</i>		8.21*** (0.00)		6.64** (0.03)		6.99*** (0.01)		5.41* (0.09)
<i>Consumer Credit (Black)_{t-1}</i>			6.64* (0.10)	4.74 (0.28)			9.38* (0.06)	6.44 (0.19)
<i>White Business Share_{t-1}</i>	1.49*** (0.00)	1.42*** (0.00)	0.62* (0.07)	1.59*** (0.01)	1.44*** (-0.01)	1.23** (0.02)	0.76* (0.08)	1.50** (0.04)
<i>Total Household Debt (Black)*White Business Share_{t-1}</i>	-0.06*** (0.00)				-0.06*** (0.01)			
<i>Mortgages (Black)*White Business Share_{t-1}</i>		-0.09** (0.05)		-0.08** (0.03)		-0.08*** (0.00)		-0.07* (0.07)
<i>Consumer Credit (Black)*White Business Share_{t-1}</i>			-0.08* (0.09)	-0.05 (0.27)			-0.11** (0.05)	-0.08 (0.15)
<i>Unemployment (Black)_{t-1}</i>	0.06 (0.34)	0.12** (0.05)	-0.04 (0.53)	0.08 (0.29)	0.16 (0.63)	0.01 (0.99)	0.47** (0.03)	0.06 (0.84)
<i>Labor Force Participation (Black)_{t-1}</i>	-0.01 (0.95)	0.17* (0.06)	-0.17 (0.40)	0.08 (0.75)	-0.59* (0.06)	-0.02 (0.930)	-0.08 (0.82)	0.25 (0.54)
<i>Total Household Debt (White)_{t-1}</i>					0.95** (0.02)			
<i>Mortgages (White)_{t-1}</i>						0.46 (0.17)		0.81* (0.08)
<i>Consumer Credit (White)_{t-1}</i>							2.56* (0.08)	3.50** (0.02)
<i>Unemployment (White)_{t-1}</i>					-0.47 (0.24)	-0.57 (0.18)	-1.01*** (0.01)	-0.42 (0.33)
<i>Labor Force Participation (White)_{t-1}</i>					-0.59* (0.06)	-0.02 (0.93)	-0.44 (0.37)	-0.78 (0.14)
<i>Recession_{t-1}</i>	-0.47 (0.25)	-0.74** (0.05)	-0.34 (0.38)	-0.53 (0.28)	-0.01 (0.99)	-0.44 (0.29)	-0.19 (0.65)	-0.33 (0.51)
<i>Lagged Dependent Variable</i>	-0.73*** (0.00)	-0.64*** (0.00)	-0.64*** (0.00)	-0.72*** (0.00)	-0.85*** (0.00)	-0.70*** (0.00)	-0.80*** (0.00)	-0.91*** (0.00)
<i>Obs</i>	137	137	137	137	137	137	137	137
<i>Adj. R²</i>	0.32	0.31	0.27	0.30	0.35	0.31	0.31	0.35

<i>Unadj. R²</i>	0.38	0.37	0.33	0.38	0.43	0.40	0.40	0.46
<i>BG Test</i>	0.80	0.30	0.18	0.62	0.46	0.24	0.12	0.07
<i>Harvey Test</i>	0.97	0.82	0.98	0.99	0.94	0.69	0.96	0.53

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values in parentheses. The dependent variable is the Black-White Pay Gap in first differences. Breusch-Godfrey (BG) test at second lag (p-values reported). Constant terms and short-run (first-differenced) coefficients are included, but not reported. Equation estimated via the Newey-West estimator (HAC standard errors).

Table 3: Black-White Pay Gap, 1989Q3-2024Q1 w/ Financial Conditions Index – Level Coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Total Household Debt (Black)_{t-1}</i>	4.57*** (0.00)				4.91** (0.03)			
<i>Mortgages (Black)_{t-1}</i>		7.93*** (0.00)		6.44* (0.06)		6.94** (0.05)		10.98*** (0.00)
<i>Consumer Credit (Black)_{t-1}</i>			7.48* (0.09)	5.78 (0.20)			12.53** (0.03)	11.67** (0.04)
<i>White Business Share_{t-1}</i>	1.30*** (0.00)	1.38*** (0.00)	0.68** (0.05)	1.67** (0.02)	1.47** (0.02)	1.22** (0.05)	0.98** (0.02)	2.87*** (0.00)
<i>Total Household Debt (Black)*White Business Share_{t-1}</i>	-0.05*** (0.00)				-0.06** (0.02)			
<i>Mortgages (Black)*White Business Share_{t-1}</i>		-0.09*** (0.00)		-0.07** (0.05)		-0.08** (0.04)		-0.13*** (0.00)
<i>Consumer Credit (Black)*White Business Share_{t-1}</i>			-0.09* (0.07)	-0.07 (0.19)			-0.14** (0.02)	-0.00*** (0.00)
<i>Unemployment (Black)_{t-1}</i>	0.02 (0.69)	0.11* (0.07)	-0.05 (0.56)	0.09 (0.23)	0.08 (0.81)	0.26 (0.40)	0.42* (0.02)	0.05 (0.87)
<i>Labor Force Participation (Black)_{t-1}</i>	-0.07 (0.50)	0.21** (0.03)	-0.15 (0.51)	0.16 (0.52)	0.23 (0.51)	0.06 (0.88)	-0.08 (0.82)	0.47 (0.25)
<i>Total Household Debt (White)_{t-1}</i>					1.16** (0.02)			
<i>Mortgages (White)_{t-1}</i>						0.52 (0.26)		0.60 (0.30)
<i>Consumer Credit (White)_{t-1}</i>							5.46*** (0.01)	6.86*** (0.00)
<i>Unemployment (White)_{t-1}</i>					-0.49 (0.29)	-0.61 (0.20)	0.98** (0.02)	-0.23 (0.65)
<i>Labor Force Participation (White)_{t-1}</i>					-0.61** (0.05)	-0.01 (0.98)	-0.43 (0.43)	-0.60 (0.28)
<i>NFCI_{t-1}</i>	-0.07*** (0.00)	-0.06*** (0.00)	-0.01 (0.68)	-0.03 (0.19)	-0.10*** (0.00)	-0.07*** (0.00)	-0.15** (0.02)	-0.21*** (0.00)
<i>Total Household Debt (Black)*NFCI_{t-1}</i>	0.25*** (0.00)				-0.00 (0.96)			
<i>Mortgages (Black)*NFCI_{t-1}</i>		0.00*** (0.00)		0.01*** (0.00)		0.00 (0.35)		0.00 (0.14)
<i>Consumer Credit (Black)*NFCI_{t-1}</i>			0.00 (0.76)	-0.01* (0.07)			0.00 (0.64)	-0.00 (0.13)
<i>Total Household Debt (White)*NFCI_{t-1}</i>					0.01* (0.08)			
<i>Mortgages (White)*NFCI_{t-1}</i>						0.00 (0.40)		-0.00 (0.47)
<i>Consumer Credit (White)*NFCI_{t-1}</i>							0.05*** (0.01)	0.07*** (0.00)
<i>Lagged Dependent Variable</i>	-0.83*** (0.00)	-0.75*** (0.00)	-0.65*** (0.00)	-0.84 (0.00)	-0.96*** (0.00)	-0.82*** (0.00)	-0.88*** (0.00)	-1.00*** (0.00)
<i>Obs</i>	137	137	137	137	137	137	137	137
<i>Adj. R²</i>	0.37	0.37	0.25	0.37	0.40	0.37	0.33	0.42
<i>Unadj. R²</i>	0.44	0.43	0.33	0.46	0.49	0.47	0.44	0.54
<i>BG Test</i>	0.95	0.64	0.13	0.97	0.71	0.42	0.06	0.56
<i>Harvey Test</i>	0.50	0.06	0.91	0.11	0.29	0.51	0.97	0.23

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values in parentheses. The dependent variable is the Black-White Pay Gap in first differences. Breusch-Godfrey (BG) test at second lag (p-values reported). Constant terms and short-run (first-differenced) coefficients are included, but not reported. Equation estimated via the Newey-West estimator (HAC standard errors).

Regarding the final step in our analysis, in Table 4 we report the long-run multipliers of our key variables, i.e., the debt liabilities ratios of Black households, the share of White businesses, and their interactions, across all sets of regressions, following Boef and Keele (2008). These calculations show that the associations reported previously showing the level/immediate relationship between the key independent variables and the Black-White pay gap slightly grow in magnitude over time. This suggests that the disciplinary effects of personal indebtedness for Black households have a lasting impact on the Black-White pay gap, leading to a new long-run equilibrium relationship between the two. The same holds for the share of White businesses.

Table 4: Long-Run Multiplier Effects – Main Regressors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Baseline Models (Table 1)</u>								
<i>Total Household Debt (Black)_{t-1}</i>	7.28***				5.76**			
<i>Mortgages (Black)_{t-1}</i>		12.03***		7.84**		9.24**		5.21*
<i>Consumer Credit (Black)_{t-1}</i>			10.18*	6.51			11.27*	6.54
<i>White Business Share_{t-1}</i>	2.04***	2.14***	0.98*	1.97***	1.69***	1.65**	0.94*	1.52**
<i>Total Household Debt (Black)*White Business Share_{t-1}</i>	-0.08***				-0.07***			
<i>Mortgages (Black)*White Business Share_{t-1}</i>		-0.14***		-0.09**		-0.11***		-0.06*
<i>Consumer Credit (Black)*White Business Share_{t-1}</i>			-0.12*	-0.07			-0.14**	-0.08
<u>Models with Recession Dummy (Table 2)</u>								
<i>Total Household Debt (Black)_{t-1}</i>	7.42***				5.76**			
<i>Mortgages (Black)_{t-1}</i>		12.83***		7.22**		9.99***		5.94*
<i>Consumer Credit (Black)_{t-1}</i>			10.37*	6.58			11.72*	7.08
<i>White Business Share_{t-1}</i>	2.04***	2.22***	0.97*	2.21***	1.69***	1.76**	0.95*	1.65**
<i>Total Household Debt (Black)*White Business Share_{t-1}</i>	-0.08***				-0.07***			
<i>Mortgages (Black)*White Business Share_{t-1}</i>		-0.14**		-0.11**		-0.11***		-0.08*
<i>Consumer Credit (Black)*White Business Share_{t-1}</i>			-0.12*	-0.07			-0.14**	-0.09
<u>Models with Financial Conditions Index (Table 3)</u>								
<i>Total Household Debt (Black)_{t-1}</i>	5.51***				5.11**			
<i>Mortgages (Black)_{t-1}</i>		10.57***		7.67*		8.46**		10.98***
<i>Consumer Credit (Black)_{t-1}</i>			11.51*	6.88			14.24**	11.67**
<i>White Business Share_{t-1}</i>	1.57***	1.03***	1.05**	1.99**	1.53**	1.49**	1.11**	2.87***
<i>Total Household Debt (Black)*White Business Share_{t-1}</i>	-0.06***				-0.06**			
<i>Mortgages (Black)*White Business Share_{t-1}</i>		-0.13***		-0.08**		-0.10**		-0.13***
<i>Consumer Credit (Black)*White Business Share_{t-1}</i>			-0.14*	-0.08			-0.16**	-0.00***
<i>Notes:</i> As per the underlying regressions reported in Table 1-3, the dependent variable is the Black-White Pay Gap in first differences.								

6. Conclusions

The US's racist past has profound implications for wealth concentration and labour market inequalities today. Centuries of systemic discrimination, including restrictions on property ownership, redlining, occupational segregation, unequal labour rights, limited access to quality education, and exclusion from the New Deal protections, have entrenched structural disadvantages for Black Americans relative to White Americans. Despite the tenacious efforts

and significant victories of the Civil Rights Movement, racial discrimination still persists, to the detriment of Black Americans, particularly in the job hiring and wage negotiations settings. In that regard, several scholars have identified educational attainment differentials, occupational and geographical segregation, and outright racial discrimination as the key determinants of the persistent racial pay gaps in the US. What has received little to no attention is how racial inequalities related to wealth concentration can fuel the earnings gap between racialized groups.

The main contribution of this paper is that it theorizes and empirically evaluates the relationship between the financialization of households and racial earnings disparities by stressing how creditworthiness is a racialized concept that disadvantages historically discriminated racialized groups who own little to no assets. As such, we argue that the disciplinary labour market effects of personal debt liabilities burden are disproportionately large for such social groups, who become more risk-averse and accept lower pay jobs out of the fear of unemployment and default. Accordingly, the unequal distribution of household debt pressures is fuelling the wage gap between the politically dominant racialized group(s) and the historically discriminated parts of the population.

To examine our hypotheses, we provide an empirical examination of the impact of personal debt and racial discrimination in wage negotiations on the persistent Black-White pay gap in the United States between 1989 and 2024, using time-series regression analysis based on the UECM approach. Drawing on quarterly data from the BLS and the DFAs of the Federal Reserve, our econometric results demonstrate that the rising debt burden carried by Black households and the high share of white business ownership are significant positive drivers of the earnings gap. This finding is consistent with previous research suggesting that personal indebtedness constrains workers' bargaining power, as the risk of job loss and debt default discourages them from pressing for higher wages. However, our interaction effects suggest that the presence of white-owned businesses may offer greater job stability, mitigating to small extent the wage-suppressing effect of debt for Black workers. We argue that although White-owned businesses may discriminate against Black workers in wage negotiations, they can be a safer choice for indebted Black workers in managing their debt obligations, as such firms are less prone to failure and therefore provide greater employment and income stability. The findings remain robust across various measures of household debt, including mortgage and consumer credit liabilities as a share of assets. Additional tests using the Chicago Fed's NFCI further indicate that tightening financial conditions amplify the disciplining effects of debt for Black workers, whereas White workers' debt burdens do not appear to be consistently associated with the Black-White pay gap. These results challenge the dominant financial literacy and inclusion narratives by revealing that, rather than empowering marginalized groups, expanded access to credit may increase their vulnerability in the labour market.

This paper makes a first step towards theorizing the interaction between financial and labour market discrimination and earnings inequality. In doing so, it offers empirical evidence that the personal debt burden disproportionately affects Black Americans since it is robustly associated with the persistent Black-White pay gap over the last 35 years. Building on the framework of this paper and the econometric findings, future studies on racial and ethnic pay gaps should explicitly incorporate credit market discrimination as a principal driver. Moving beyond statistical associations, future research should utilize micro-level data from labour force and financial conditions surveys to evaluate the causal link between personal indebtedness and racial and ethnic earnings inequalities through experimental designs.

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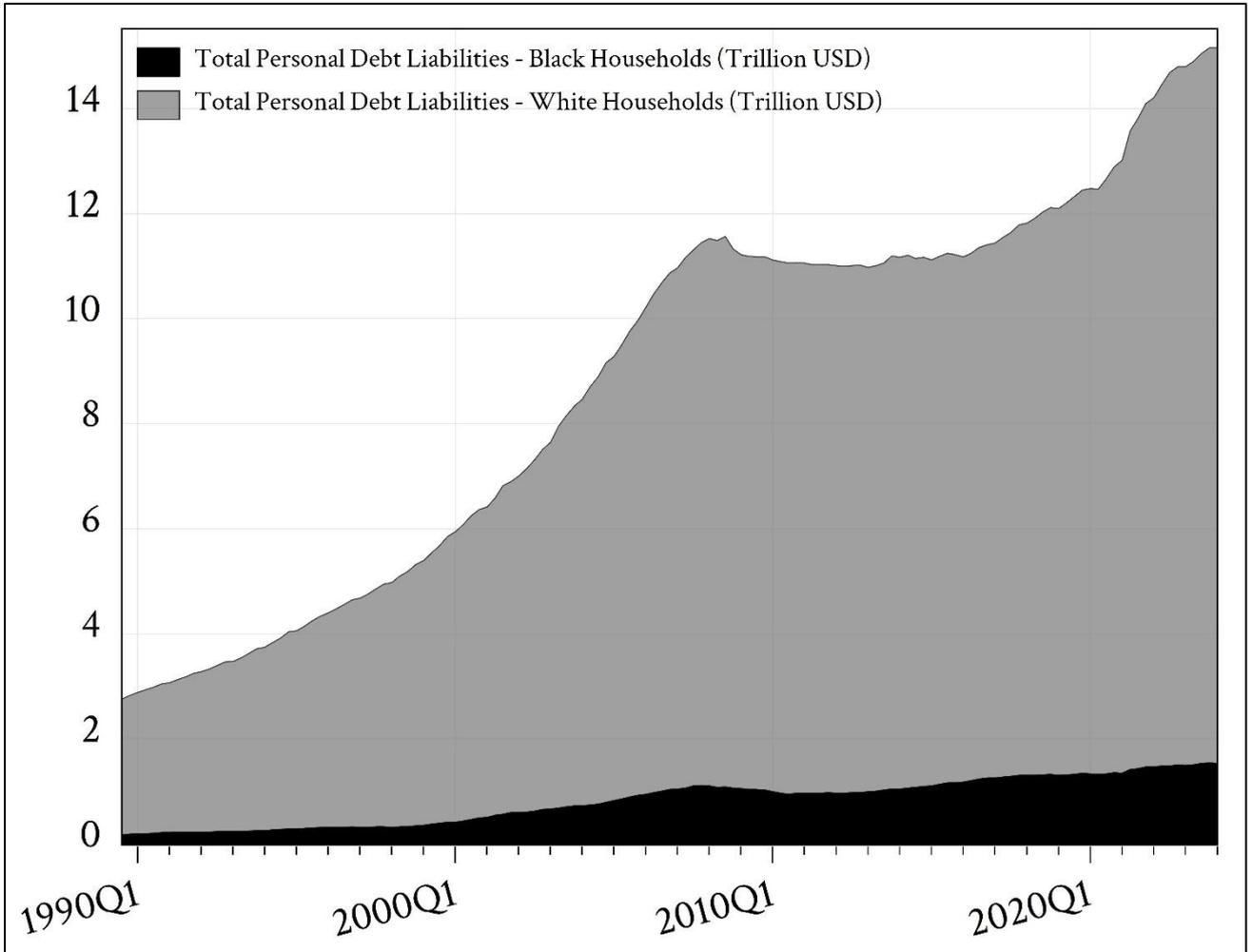
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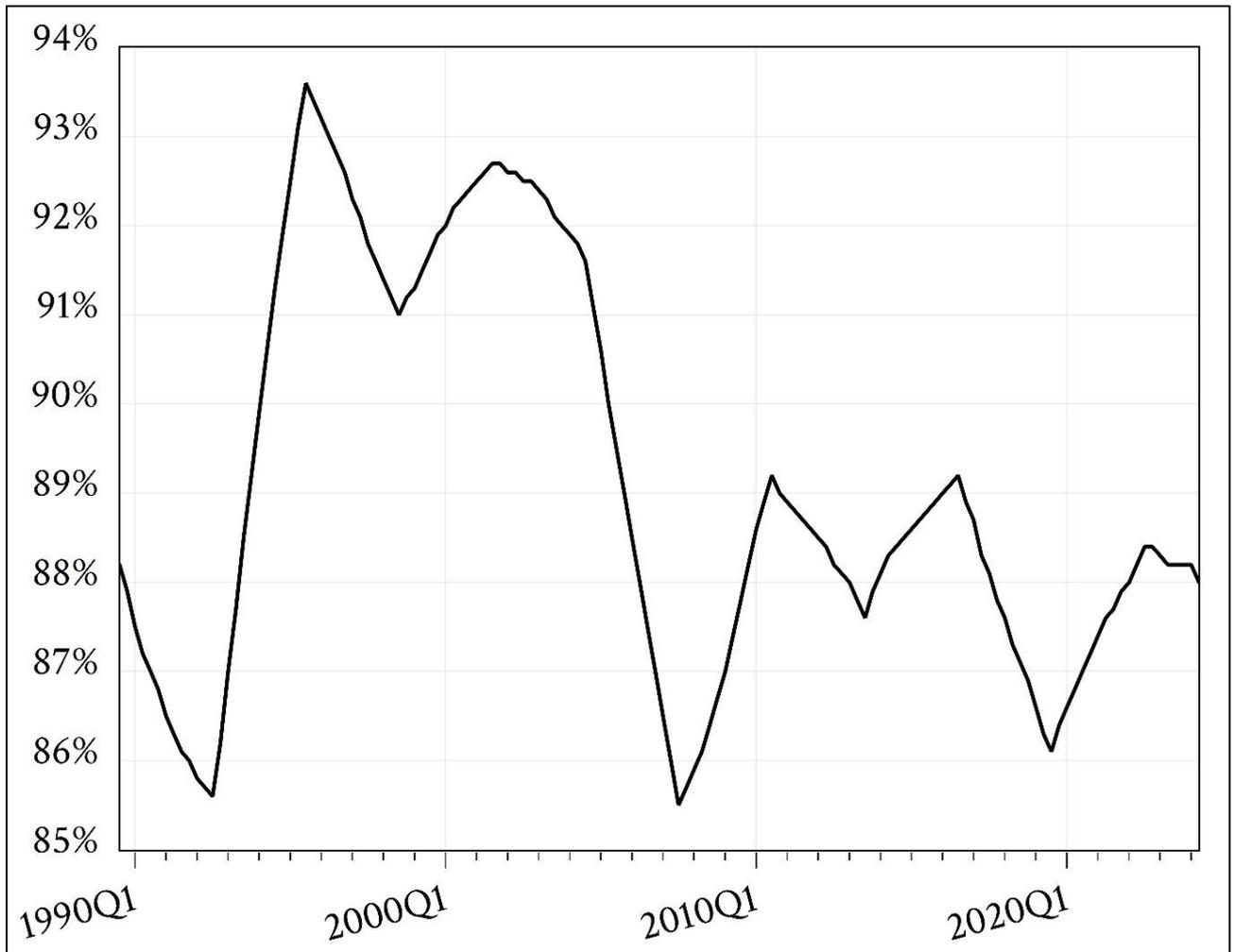
Appendix

Figure A1: Household Debt Liabilities Levels by Race, 1989Q3-2024Q1



Notes: The level of liabilities (Trillion USD) are drawn from the Distributional Financial Accounts of the Federal Reserve Board of Governors. Series presented as a stacked area chart.

Figure A2: Private Businesses Owned by White Households (% Private Businesses), 1989Q3-2024Q2



Notes: The share is defined as: $(\text{White Private Businesses} / \text{Total Private Businesses}) \times 100$. The data on business ownership by race used in this calculation are drawn from the Distributional Financial Accounts of the Federal Reserve Board of Governors.

Table A1: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
<i>Black-White Pay Gap</i>	21.35	21.33	25.25	16.42	1.83	140
<i>Total Household Debt (Black)</i>	23.96	23.23	32.52	17.65	3.63	139
<i>Mortgages (Black)</i>	15.26	14.74	24.23	9.90	3.62	139
<i>Consumer Credit (Black)</i>	8.35	8.68	11.34	5.15	1.55	139
<i>White Business Share</i>	89.10	88.45	93.60	85.50	2.26	140
<i>Unemployment (Black)</i>	10.23	10.10	16.70	5.40	2.84	143
<i>Labor Force Participation (Black)</i>	63.21	63.20	66.50	59.40	1.51	143
<i>Total Household Debt (White)</i>	13.15	13.14	17.14	9.47	1.80	139
<i>Mortgages (White)</i>	9.52	9.42	13.34	6.46	1.64	139
<i>Consumer Credit (White)</i>	2.85	2.83	3.35	2.24	0.25	139
<i>Unemployment (White)</i>	5.03	4.60	12.00	2.90	1.60	143
<i>Labor Force Participation (White)</i>	65.21	66.20	67.80	61.00	2.03	143
<i>NFCI</i>	-38.75	-52.47	265.72	-110.44	48.79	143
<i>Recession</i>	0.13	0.00	1.00	0.00	0.33	141

Notes: One-sided p-values reported. Optimal lag length selected automatically based on the Akaike Information Criterion (AIC) with a maximum lag of 13.

Table A2: Unit Root Tests – Augmented Dickey-Fueller (ADF) Test

	ADF Levels	ADF Levels (w/ intercept)	ADF Levels (w/ trend & intercept)	ADF 1 st Diff.	ADF 1 st Diff. (w/ intercept)	ADF 1 st Diff. (w/ trend & intercept)
<i>Black-White Pay Gap</i>	0.47	0.05	0.14	0.00	N/A	0.00
<i>Total Household Debt (Black)</i>	0.76	0.29	0.81	0.00	0.00	0.01
<i>Mortgages (Black)</i>	0.53	0.53	0.79	0.00	0.00	0.00
<i>Consumer Credit (Black)</i>	0.85	0.55	0.00	0.00	0.00	N/A
<i>White Business Share</i>	0.58	0.39	0.08	0.02	0.17	N/A
<i>Unemployment (Black)</i>	0.31	0.16	0.27	0.00	0.00	0.00
<i>Labor Force Participation (Black)</i>	0.66	0.52	0.41	0.00	0.00	0.01
<i>Total Household Debt (White)</i>	0.40	0.89	0.92	0.00	0.00	0.00
<i>Mortgages (White)</i>	0.39	0.82	0.89	0.00	0.01	0.03
<i>Consumer Credit (White)</i>	0.46	0.63	0.28	0.00	0.00	0.00
<i>Unemployment (White)</i>	0.32	0.04	0.15	0.00	N/A	0.00
<i>Labor Force Participation (White)</i>	0.13	0.94	0.42	0.00	0.00	0.00
<i>NFCI</i>	0.00	0.00	0.01	N/A	N/A	N/A
<i>Recession</i>	0.00	0.00	0.00	N/A	N/A	N/A

Notes: One-sided p-values reported. Optimal lag length selected automatically based on the Akaike Information Criterion (AIC) with a maximum lag of 13.

Table A3: Black-White Pay Gaps, 1989Q3-2024Q1 – No Lags

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Total Household Debt (Black)</i>	5.07*** (0.00)				4.40** (0.03)			
<i>Mortgages (Black)</i>		6.85*** (0.00)		4.01 (0.18)		5.52* (0.07)		3.67 (0.26)
<i>Consumer Credit (Black)</i>			8.90* (0.03)	8.47* (0.06)			11.12** (0.02)	8.85* (0.07)
<i>White Business Share</i>	1.43*** (0.00)	1.23*** (0.00)	0.83*** (0.01)	1.49** (0.02)	1.31** (0.02)	0.99* (0.07)	0.92** (0.03)	1.42* (0.07)
<i>Total Household Debt (Black)*White Business Share</i>	-0.06*** (0.00)				-0.05** (0.02)			
<i>Mortgages (Black)*White Business Share</i>		-0.09*** (0.00)		-0.05 (0.17)		-0.07* (0.06)		-0.05 (0.21)
<i>Consumer Credit (Black)*White Business Share</i>			-0.10** (0.02)	-0.10** (0.05)			-0.13*** (0.01)	-0.11** (0.02)
<i>Unemployment (Black)</i>	0.05 (0.44)	0.10* (0.13)	-0.04 (0.53)	0.06 (0.45)	0.03 (0.93)	0.24 (0.39)	0.52*** (0.01)	0.08 (0.80)
<i>Labor Force Participation (Black)</i>	-0.03 (0.73)	0.12 (0.26)	-0.17 (0.34)	0.02 (0.92)	0.17 (0.60)	-0.04 (0.90)	-0.06 (0.86)	0.20 (0.61)
<i>Total Household Debt (White)</i>					0.96** (0.02)			
<i>Mortgages (White)</i>						0.49 (0.16)		0.79* (0.08)
<i>Consumer Credit (White)</i>							2.29 (0.11)	3.49** (0.02)
<i>Unemployment (White)</i>					-0.40 (0.31)	-0.64 (0.11)	-1.08*** (0.00)	-0.49 (0.25)
<i>Labor Force Participation (White)</i>					-0.59* (0.06)	-0.03 (0.92)	-0.43 (0.35)	-0.76 (0.12)
<i>Lagged Dependent Variable</i>	-0.73*** (0.00)	-0.62*** (0.00)	-0.66*** (0.00)	-0.74*** (0.00)	-0.83*** (0.00)	-0.69*** (0.00)	-0.81*** (0.00)	-0.92*** (0.00)
<i>Obs</i>	137	137	137	137	137	137	137	137
<i>Adj. R²</i>	0.31	0.29	0.27	0.30	0.35	0.30	0.32	0.35
<i>Unadj. R²</i>	0.37	0.35	0.34	0.37	0.43	0.39	0.41	0.45
<i>BG Test</i>	0.59	0.23	0.21	0.46	0.43	0.15	0.10	0.04
<i>Harvey Test</i>	0.96	0.91	0.89	0.99	0.92	0.29	0.87	0.50

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. P-values in parentheses. The dependent variable is the Black-White Pay Gap in first differences. Breusch-Godfrey (BG) test at second lag (p-values reported). Constant terms and short-run (first-differenced) coefficients are included, but not reported. Equation estimated via the Newey-West estimator (HAC standard errors).