Who Struggles After Buying?
Disparities in New-Homeowner Financial Distress*

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Discussions of homeownership and mortgage-access policy often flaunt its benefits while giving limited attention to its costs. Using linked property transactions and credit records, we document race and gender gaps in financial fragility after home purchase. Black and female borrowers show larger increases in 30+ and 90+ day delinquencies than White and male borrowers, even after controlling for individual and neighborhood fixed effects, property characteristics, credit score, and income-at-purchase. They also accumulate more student debt, while credit card balances rise for all borrowers but faster for Black borrowers. These post-purchase disparities inform our understanding of benefits to homeownership.

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1 Introduction

Homeownership is associated with a range of economic and social benefits, while the loss of homeownership can result in reductions in wealth accumulation (Goodman and Mayer 2018; Sodini, Van Nieuwerburgh, Vestman, and von Lilienfeld-Toal 2023; Artigue, Bayer, Ferreira, and Ross 2025). However, becoming a homeowner—especially through a mortgage—entails committing to a long-term, difficult-to-renegotiate contract (Agarwal, Amromin, Ben-David, Chomsisengphet, and Evanoff 2011, 2019; Korgaonkar 2023) that raises the adjustment costs of altering one's housing consumption in response to changing needs or circumstances. When households face income instability or broader negative economic conditions, meeting the fixed obligations of homeownership can become especially challenging. Despite well-documented disparities in wealth and income across households, we have limited evidence on which households are actually able to sustain the substantial shift in their balance sheets' size and composition which arises immediately after purchasing a home. That is, are the challenges of *transitioning into* homeownership unequally borne across households?

Severely distressed homeownership often ends in mortgage foreclosure. Pioneering work by Kermani and Wong (2024) shows that differences in mortgage foreclosure rates and severity can explain group-differences in homeownership returns. However, a mortgage borrower may experience varying degrees of distress across all household liabilities during their homeownership spell, and not end up in foreclosure. As of September 2016, only 11% of mortgage borrowers' non-current household liabilities were in collection, in foreclosure, or in bankruptcy.[1] Exclusively focusing on these outcomes would miss the 89% of non-current balances that were in more intermediate states of delinquency or distress. Moreover, the conditions leading to long-term financial distress need not be equal, either in quality or magnitude, to those leading to immediate financial fragility post-purchase. Rather than focusing on distress at the end of homeownership, we shed light on the fragility of household balance sheets in the near- to medium-term following the transition to homeownership. Such fragility, and its accompanying costs, may potentially erode the wealth creation from homeownership.

In this paper, we document that women and Black homeowners experience an immediate

[1] These statistics were obtained from analysis of a 5% sample of a large credit bureaus consumer credit records.

jump in financial distress while transitioning into homeownership as compared to White male homeowners. This is reflected in higher rates of 30+ and 90+ day delinquency, across all liabilities, and increases in non-mortgage balances immediately following entry into homeownership with a mortgage. Black borrowers experience a 4 percentage point (p.p.) and 2 p.p. increase in the probability of 30+ and 90+ day delinquency, respectively. Women borrowers only experience an increase in 30+ day delinquency of 1.6 p.p. This is accompanied by increased indebtedness, reflected in larger jumps in student debt and credit card balances. These groups appear to become more financially fragile immediately after transitioning into homeownership. These effects subsist after controlling for individual fixed effects, credit score, property characteristics, location, and other stringent sets of controls. We also rule out that income at the time of purchase drives these jumps in financial fragility.

Becoming a homeowner increases the adjustment costs of housing consumption, reducing flexibility and raising the stakes of financial missteps. Consistent with this, survey evidence shows that about a quarter of homebuyers report underestimating the costs of homeownership, and also about a quarter express feelings of regret (Credit Karma 2025). Income volatility and post-purchase economic shocks—such as job loss or wage stagnation—can further raise challenges in servicing fixed housing costs, especially for borrowers with fewer liquid assets. Some populations, such as racial minorities and women, may be more exposed to these dynamics given existing and persistent wealth gaps (Derenoncourt, Kim, Kuhn, and Schularick 2021), disproportionate exposure to unemployment risk, and disadvantages in the labor market (Bayer and Charles 2018). If Black or female borrowers anticipate lower returns to homeownership (Kermani and Wong 2024, Goldsmith-Pinkham and Shue 2023) or face persistently higher ownership costs (e.g., insurance, maintenance, or property taxes), they may rationally allocate repayment toward other obligations, or fall into distress despite their efforts. The results presented here suggest that the unevenly distributed costs of transitioning into homeownership compound structural disparities in income security, wealth accumulation, and housing quality.

We begin with a simple comparison that traces financial outcomes for mortgaged homebuyers relative to majority-group mortgaged buyers around the time of purchase, using an event-time framework with individual, age, tract-by-year, and time fixed effects to isolate differential trajectories by group. While this allows us to measure group-level differences in financial outcomes it does not

permit estimation of baseline behavior of the majority groups. This matters in providing context for the group-level differences. To overcome this challenge, we expand the initial analysis to document changes in financial outcomes as individuals enter homeownership with a mortgage, benchmarking them against those who do so without relying on debt. To improve upon this cash-buyer benchmark, we account for individual-, neighborhood-, age cohort-, property characteristics-, and time fixed effects, as well as for other sources of heterogeneity (e.g., credit scores, income-at-purchase, time-varying neighborhood fixed effects). We show that conditional of fixed effects the differences in pre-ownership outcomes between groups is statistically nonexistent.

To facilitate this analysis, we build a panel consisting of a randomized subsample of (anonymized) North Carolina residents, who enter homeownership between 2007 and 2019. This panel combines credit bureau information on their household liabilities with details about the property transaction, including the acquisition price and the amount of leverage used. In addition, information from voter records added to the data construction allows us to observe each homebuyer's race and gender, regardless of whether they used a mortgage or not. The richness of the property- and individual-level data enables us to absorb various levels of unobserved heterogeneity, and account for several competing explanations. We estimate event-study regressions that assess delinquency and debt balances at annual intervals pre- and post-move and examine how Black and female responses vary from White and male mortgaged homebuyers', respectively. As stated before, our specifications account for a large set of fixed effects, including individual and age fixed-effects to ensure comparison between similar homeowners. Using the granularity of our data, our specifications take into account: variation in local housing-market conditions, time-varying lending standards, time-varying selection into property type, and persistent differences in the cost of credit across groups. We cannot rule out group differences in cost of credit (interest rates, or fees) that change over time.

Relative to the non-mortgaged household benchmark, the baseline mortgaged household in our sample is improving their credit as they enter homeownership, with 30+ and 90+ day delinquent accounts decreasing, and debt balances remaining on trend relative to non-mortgaged homeowners. A likely explanation for this pattern is individuals anticipating the mortgage application. Differences in the delinquency rates begin to emerge following entry into homeownership. While White/male mortgaged households' delinquency rates converge to those of our benchmark, we observe relative increases in the delinquency rate of Black/female mortgaged homeowners. Our event

studies (Figure 2) document that three years following home purchase, Black mortgaged homeowners are 6 p.p. more likely to have accounts that were 30+ days delinquent, and 9 p.p. more likely to have accounts that were 90+ days delinquent, relative to White mortgaged homeowners. Female mortgaged homeowners are also about 5 p.p. more likely to have 30+ day delinquent accounts three years post home purchase, but appear to transition into 90+ day delinquency at rates similar to male mortgaged homeowners. Our most stringent regressions specifications are consistent with these findings.

Households also have the option to borrow additional funds when faced with increased costs. We examine how two categories of household debt change around homeownership: credit-card balances—among the most expensive sources of household debt—and student debt—the second largest component of aggregate household liabilities (Figure 3). Relative to the non-mortgaged benchmark, the baseline mortgaged homeowner increases their bankcard balance, consistent with Benmelech, Guren, and Melzer (2023), who show that households increase consumption when they become homeowners. Black mortgaged homeowners see even greater increases in bankcard balances. Female mortgaged homeowners increase their credit-card debt, but not relative to male mortgaged homeowners. The baseline mortgaged homeowner pays down student debt over time, which is not the case for Black mortgaged homeowners, and only partially so for female mortgaged homeowners.

Overall, our results suggest that particular groups—namely, Black borrowers and female borrowers—face relatively greater difficulty in maintaining their household credit performance following mortgaged homeownership. While these borrowers have historically faced lower access to homeownership and credit, several policies and government programs—such as the Community Reinvestment Act, or low down-payment FHA loans—have attempted to rectify these inequalities. However, certain groups may become more financially fragile when transitioning into homeownership with increased household leverage, perhaps creating a role for programs that increase financial literacy (Lusardi and Mitchell 2014) or provide financial counseling around major decisions, although these approaches may present their own set of challenges (Agarwal, Amromin, Ben-David, Chomsisengphet, and Evanoff 2020).

Contribution. Despite its importance for homeownership and mortgage-lending policy, an individual's financial experience in the process of transitioning into homeownership is yet to be documented. Although prior research has examined the benefits of homeownership (e.g., Goodman and Mayer 2018; Sodini et al. 2023; Derenoncourt et al. 2021; Artigue et al. 2025) and disparities in housing wealth (e.g., Kermani and Wong 2024; Goldsmith-Pinkham and Shue 2023; Derenoncourt et al. 2021), we offer, to the best of our knowledge, the first empirical assessment of racial and gender differences in the financial burden of transitioning into and sustaining homeownership. While Kermani and Wong (2024) find higher foreclosure and 90-day+ delinquency rates for minorities, foreclosures account for only a small share of the broader population experiencing financial distress, and their delinquency analysis does not focus on transition into homeownership.[2]

In our view, the closest paper to ours is Bayer, Ferreira, and Ross (2016) who provide valuable evidence on racial and ethnic disparities in mortgage delinquency and foreclosure during the housing boom and bust, offering an in-depth view of ownership vulnerability in a period of exceptional market stress. Our study, in contrast, focuses on the change in financial distress that is experienced by households right before and after they purchase a home, and on examining disparities in non-mortgage borrowing by households to sustain that homeownership.

2 Data & Empirical Specification

Our analysis evaluates the household balance sheet changes that occur through the transition into homeownership. To do this, we combine data on home purchase transactions with credit and voting records and then take this data to a series of event-study specifications.

2.1 Data

The core data set for our analysis is property-level transaction deeds data gathered by CoreLogic. Each observation in the data reflects details of a single home purchase, including the transaction date, the sale amount, the type of property, the buyer's name, and the seller's name. It also contains indicators of whether the transaction is a foreclosure sale, interfamily related sale, new construction,

[2] Kermani and Wong (2024) provide valuable evidence on delinquency after ARM payment resets, cross-credit-score delinquency rates two years post-purchase, and average (rather than within-individual) non-mortgage debt by race since purchase. These are strengths of their analysis, but do not capture—nor were intended to—the transition into homeownership, which is the focus of this study.

investor purchase, or a corporate purchase. Using these indicators, we limit our observations to arm's-length non-foreclosure secondary residential property transactions. In addition to the transaction details, we also have property-specific static information including property type, FIPS code, ZIP-code and the year of build, that are used to merge the data with additional sources.

We merge this property data to (i) a randomized sub-sample of consumer credit records from a major credit bureau and (ii) public voter registration records for individuals in North Carolina. The merge with voter registration allows us to observe an individual's race, gender, and marital status. The combined dataset includes information on borrowers' credit scores, liabilities (such as auto loans, installment loans, and credit card balances), and measure of performance (such as defaults, foreclosures, and bankruptcy events). In compliance with strict federal privacy regulations, the credit bureau facilitated researcher access while preserving anonymity. Summary statistics are presented in Table A1.

2.2 Simple Empirical Specification

To document group-level differences in financial fragility around the time of a home purchase, our simplest specification compares minority mortgaged homebuyers with majority mortgaged homebuyers:

$$Y_{ith} = \sum_{k=-5}^{10} \beta_k \cdot \mathbb{1}(G_i = 1) \cdot \mathbb{1}(t = k) + CreditScore_{it} + \theta_i + \theta_t + \theta_{hy} + \theta_a + \varepsilon_{ith} \quad (1)$$

In this specification, Y_{ith} denotes the financial outcome of interest of individual i at "year"/event-time t,[3] observed in tract h. The model includes individual (θ_i), event time (θ_t), tract-year (θ_{hy}), and age (θ_a) fixed effects. The term $\mathbb{1}(G_i = 1)$ indicates whether individual i belongs to the minority group, and $\mathbb{1}(t = k)$ is an indicator for being in mortgage-event-time k. We are interested in measuring the full set of group-mortgage-event-time (β_k) indicators for each year k from -5 to $+10$ relative to the time of mortgaged home purchase. Notice that in this simple specification the first-order terms $\mathbb{1}(G_i = 1)$ and $\mathbb{1}(t = k)$ are collinear with individual and event-time fixed effects. Also, notice that in this simple specification event-time fixed effects are collinear with time since

[3]To address well-documented concerns about bias in staggered TWFE designs (e.g., De Chaisemartin and d'Haultfoeuille 2020; De Chaisemartin and D'Haultfoeuille 2022; Goodman-Bacon 2021; Callaway and Sant'Anna 2021), we implement the "stacking" approach proposed by Cengiz, Dube, Lindner, and Zipperer (2019).

purchase, which would not be the case if we had non-mortgaged buyers. For each event time, β_k captures the differential response of mortgaged individuals belonging to group G in event year k. In this specification, we are unable to extract much information about the majority groups, which represent our omitted category.

2.3 Expanded Empirical Specification

Ideally, to fully understand the magnitude of any disparities measured by Equation (1), we would like to also paint a picture of the behavior of majority groups around the time of a home purchase. A key challenge in documenting the majority group's behavior lies in selecting an appropriate benchmark. A meaningful measure should capture empirical regularities—differences in outcomes that persist after accounting for the key features central to shaping the outcomes of interest. For example, benchmarks for gender and racial pay gaps must typically adjust for levels of education and experience that are central to the wage-setting process, while analyses of unequal property taxation should account for exposure to the same taxing entities and amenity-providing institutions.

Cash-buyer Benchmark. By foregoing the mortgage liability, cash buyers face fewer frictions in obtaining their optimal quantity of housing. A natural benchmark takes cash buyers as its point of departure for assessing the behavior of the baseline leveraged homebuyer to assess whether financing the purchase introduces vulnerabilities to the balance sheet. Challenges remain, however. Location, the life-cycle of the individual, and individual traits might play a role in the determination of financial distress. A more complete cash-buyer benchmark must account for these features that shape a household's capacity to service both mortgage and non-mortgage debt. Our complete benchmark thus compares mortgaged against non-mortgaged homebuyers after accounting for individual, time, age, and neighborhood fixed effects, then distinguishes between White/Black homebuyers in one specification, and male/female homebuyers in another.

Empirical Specification. Our expanded specification compares those becoming homeowners using mortgage to those that do not have a mortgage—individuals who are presumably financially unconstrained and not subject to the same rigid financial obligations. We start with the following specification which expands on Equation (1):

$$Y_{ith} = \sum_{k=-5}^{10} \left(\beta_k \cdot \mathbb{1}(G_i = 1) \cdot \mathbb{1}(t = k) + \gamma_k \cdot \mathbb{1}(t = k)\right) + CreditScore_{it} + \theta_i + \theta_t + \theta_{hy} + \theta_{\tau_{buy}} + \theta_a + \varepsilon_{ith} \quad (2)$$

In this specification, Y_{ith} denotes the financial outcome of interest of individual i at "year"/event-time t,[4] observed in tract h. As before, the model includes individual (θ_i), event time (θ_t), tract-year (θ_{hy}), and age (θ_a) fixed effects; but, in contrast, we can now add years since purchase ($\theta_{\tau_{buy}}$) fixed effects. The term $\mathbb{1}(G_i = 1)$ indicates whether individual i belongs to the minority group, and $\mathbb{1}(t = k)$ is an indicator for being in mortgage-event-time k. We are now interested in both measuring the full set of mortgage-event-time (γ_k) and that of group-mortgage-event-time (β_k) indicators for each year k from -5 to $+10$ relative to the time of mortgaged home purchase. For each event time, β_k captures the differential response of mortgaged individuals belonging to group G in event year k, and γ_k accounts for the response common to all mortgaged individuals in year k, including those outside group G (i.e., male or White individuals). In this specification, cash-buyers become the omitted category.

As we previously discussed, drawing inference based on these comparisons is challenging. Homeowners from each group may sort into different types of properties (home age, square-footage, number of bedrooms), or be more or less willing to spend on a home purchase (Columns 1–4 of Table A2). Home buyers also make a choice of how much leverage to use if any. Mortgaged home buyers are simultaneously choosing a property and level of indebtedness (mortgage LTV) (Columns 5–6 of Table A2). Additionally, there may be meaningful unobservable differences in wealth endowment and preferences between mortgaged vs. non-mortgaged homebuyers from different groups. Our empirical approach must contend with these choices, and their subsequent influence on a household's ability to service its existing mortgage and non-mortgage debt.

Our specification accounts for these unobservable differences using an individual-level panel and a rich combination of fixed-effects. Individual fixed-effects (θ_i) control for differences in wealth levels and general static unobserved heterogeneity across homebuyers. Age fixed effects (θ_a) control for life-cycle changes in wealth and income. Together, these fixed-effects might account for the first-order differences between mortgaged and non-mortgaged homebuyers. Appendix Figure A1

[4] To address well-documented concerns about bias in staggered DiD designs (e.g., De Chaisemartin and d'Haultfoeuille 2020; De Chaisemartin and D'Haultfoeuille 2022; Goodman-Bacon 2021; Callaway and Sant'Anna 2021), we implement the "stacking" approach proposed by Cengiz et al. (2019).

validates our approach. It demonstrates that upon controlling for only individual fixed-effects and age fixed-effects, there is little residual variation between mortgaged and non-mortgaged home homeowners, and between Black/female and White/male homebuyers in pre-homepurchase credit scores and financial outcomes. In Figure A3, we show that the trivially expected increase in mortgage balance following origination takes hold and that the event is not canceled by our rich set of fixed effects. Moreover, after including fixed effects, there are no mortgage balance differences across race or gender.

We further expand this specification to include tract-year fixed effects (θ_{hy}) to account for neighborhood changes over time, time $\times$ property characteristics to account for time-varying selection into different types of homes, as well as time $\times$ financial characteristics controls. Standard errors are clustered at the tract level to account for spatial correlation in the residuals.

We consider four outcomes of interest. To assess both moderate to severe financial distress, we examine whether borrowers have any accounts that were 30+ days delinquent in the past two years, and accounts that were 90+ days delinquent in the past two years. Importantly, these variables reflect delinquencies on all types of consumer credit, not just mortgage debt. This would capture any borrowers falling behind on non-mortgage debt in order to remain current on their mortgage. Furthermore, an individual's financial fragility may increase even without changes in delinquency if they take on more debt to avoid distress. Thus, we examine the evolution of bankcard balances—one of the highest cost components of household liabilities—and student debt balances—the second largest liability in aggregate behind mortgage debt.

3 Empirical Patterns about Transitioning into Homeownership

This section documents three empirical patterns about the financial challenges about transitioning into homeownership in the United States. By documenting how delinquency rates and non-mortgage debt evolve after a home purchase—particularly for Black and female borrowers—these patterns provide a clearer picture of the unequal burdens that can emerge following the transition into homeownership. Although we do not aim to draw causal inferences, these patterns offer valuable insight into group-specific dynamics that get overlooked when one focuses on only the most severe outcomes, such as mortgage foreclosure or bankruptcy.

3.1 Disparate Financial Distress Across Race and Gender

Figure 1 presents event-study estimates (following Equation (1)) of 30+ day and 90+ day delinquency rates before and after home purchase. Panels (a) and (b) compare Black mortgaged home-buyers to White mortgaged home-buyers who use a mortgage; emphasizing the difference in outcomes across race for those using leverage. Panels (c) and (d) present similar analyses comparing female to male borrowers. Black/female mortgaged home-buyers experience sharper increases in delinquency in the year of home-purchase, with this effect increasing over the subsequent years.

3.2 Disparate Outcomes in Context: Mortgaged vs. Cash Buyers

To put these prior results into context and examine the role of taking on leverage, Figure 2 follows Equation (2) and brings cash buyers into the analysis, separately by race (Panels a and b) and gender (Panels c and d). In these figures, the "Baseline" coefficients represent outcomes for White/Male mortgaged home-buyers. In each panel, the omitted group is cash-buyers.

3.2.1 Everyone Improving Credit Prior to Purchase

Figures 2a and 2b show that, in the years leading up to home purchase, both Black and White borrowers exhibit a modest downward trend in delinquencies. Importantly, in the year prior to home-purchase Black/female mortgaged borrowers are statistically indistinguishable from White/male mortgaged borrowers and from cash buyers.

For 30+ day delinquencies (panel a), Black borrowers' downward trend is larger in magnitude but not statistically distinguishable from the baseline effect. For 90+ day delinquencies (panel b), Black borrowers exhibit an additional downward trend in delinquencies beyond White mortgaged homeowners. The pattern is consistent with borrowers improving their credit profiles prior to entering the mortgage market. In both figures, the slope of the decline is similar across groups, and confidence intervals for both series overlap, suggesting no differential trend prior to home-ownership. In contrast, Figures 2c and 2d show virtually no gender differences in downward trend prior to a home purchase relative to male mortgaged homeowners.[5] That is, men and women both decrease delinquencies prior to a home purchase and follow a similar pattern in doing so.

[5] In Figure A5, we exclude Black and female non-mortgaged homeowners from the sample, and show our estimates remain virtually unchanged.

3.2.2 Financial Distress for Black/Female Buyers, but not for White/Male Buyers

Panel (a) displays estimates for 30+ day delinquency by race. In the pre-purchase period, delinquency rates decline gradually and similarly for Black and White mortgaged homeowners. Following the mortgaged home purchase, delinquency rates remain flat for White homeowners but increase for Black homeowners. Panel (b) shows similar patterns for 90+ day delinquency, with post-purchase increases concentrated among Black mortgaged homeowners.

Panels (c) and (d) present corresponding results by gender. As with race, female and male mortgaged homeowners show parallel declines in delinquency prior to purchase. After the mortgaged home purchase, female homeowners experience an increase in both 30+ day and 90+ day delinquency, while rates remain largely unchanged for male homeowners.

Panels A and B of Table 1 uses alternative specifications to present estimates of group differences in 30+ day delinquency rates after mortgaged homeownership. Across multiple specifications, Panel A confirms our previous finding that Black mortgaged homeowners experience significantly higher post-purchase delinquency relative to their White counterparts. Across all model specifications, the interaction term $Post \times Black$ is positive and statistically significant, with coefficients ranging from 2.8 to 4.7 percentage points. We find directionally similar effects of smaller magnitude for female mortgaged homeowners.

These effects are robust to controls for credit score, age, and fixed-effects at the individual and neighborhood-time levels. They are also not explained by time-varying selection into property type, or by time-varying lending standards ($LTV \times Time$ and $CreditScore \times Time$ fixed-effects). Importantly, the coefficient on *Post* is indistinguishable from zero, indicating that the increase in delinquency is specific to Black mortgaged homeowners and not a general consequence of homeownership.

Panels C and D of Table 1 more carefully examines whether Black/female mortgaged homeowners experience different 90+ day delinquency rates following home purchase compared to White/male mortgaged homeowners. Across all specifications, the $Post \times Black$ interaction term is positive and statistically significant, with coefficients ranging from 1.5 to 2.4 percentage points. These effects are substantial when compared to the average 90+ day delinquency rate of 6% across the entire sample. Our estimates indicate that Black mortgaged homeowners experience higher rates of

serious delinquency after a purchase relative to White mortgaged homeowners. The baseline $Post$ coefficient is close to zero and not statistically significant, suggesting that White mortgaged homeowners do not experience an increase in post-purchase delinquency compared to non-mortgaged homeowners. Once again, the results are robust to employment of a battery of fixed-effects, similar to those in Panels A and B of Table 1. When considering gender, there are no economically meaningful differences between male and female mortgaged borrowers following home purchase. These 90+ days delinquencies are not innocuous, may impair credit records for longer periods (up to 7 years), and generally indicate financial distress that lasts for an extended period, even if it does not end in a foreclosure.

Why take on financial distress by purchasing a suboptimal housing bundle when renting or buying elsewhere is possible? Standard spatial equilibrium models (Rosen 1979; Roback 1982) predict that migration arbitrages regional advantages, allowing home prices to adjust and equalizing welfare across households. In practice, frictions prevent "first best" homeownership. Supply constraints limit available bundles (Han and Strange 2015). Persistent disparities in opportunity (Chetty and Hendren 2018; Bilal and Rossi-Hansberg 2021), combined with financial constraints, create spatial misallocation (Gupta, Hansman, and Mabille 2024). Households may still buy despite the additional financial distress—for children's outcomes (Green and White 1997) or wealth accumulation (Sodini et al. 2023). Yet financial distress can erode homeownership's benefits, reduce homeownership itself, and deepen misallocation.

3.3 Disparate Financial Fragility Extends to Non-Mortgage Borrowing Patterns

Figure 3 presents event-study estimates of non-mortgage debt balances around the time of home purchase, disaggregated by both race and gender.[6]

Panel (a) shows trends in student debt balances for Black and White mortgaged homeowners. For both these groups, there is a modest increase in balances during the pre-purchase period. After the purchase event, student debt balances decline for White mortgaged homeowners. For Black mortgaged homeowners, baseline declines are are completely offset, creating a gap in student loan debt between groups that widens over time. Panel (b) reports patterns for bankcard balances.

[6]Figure A2 presents a comparison of Black/Female mortgaged home-buyers to their White/Male counterparts. Figure A6 excludes Black and female non-mortgaged homeowners from the sample, and shows our estimates remain virtually unchanged.

Here, in contrast, post-purchase increases are evident for both groups, but again Black mortgaged homeowners exhibit an increase in bankcard debt that extends beyond White mortgaged homeowners. Confidence intervals indicate that these differences are statistically meaningful in most years following the home purchase.

Panels (c) and (d) present analogous results by gender instead of race. Panel (c) shows that student debt balances for female mortgaged homeowners decrease more gradually after home purchase compared to male mortgaged homeowners, whose balances consistently decline. This indicates that, for women, homeownership delays successful payment of their student loans. In contrast, Panel (d) reveals that bankcard balances do not increase more for female mortgaged homeowners than for males in the years following a home purchase, although both men and women see a significant increase in their bankcard balance.

Black/Female Borrowers and Accumulating Student Loans. Panels A and B of Table 2 reports group-specific differences in log student debt balances for Black and female mortgaged homeowners compared to White and male mortgaged homeowners, respectively. Across all specifications, $Post \times Black$ and $Post \times Female$ interaction terms are positive and statistically significant, with coefficients ranging from 0.11 to 0.19 for Black mortgaged homeowners and 0.06 to 0.11 for female mortgaged homeowners. These estimates are robust to the inclusion of individual, neighborhood, and time fixed effects, as well as controls for borrower credit characteristics and loan attributes. In contrast, the baseline $Post$ coefficient is negative and statistically significant, indicating that White and male mortgaged homeowners decrease their student loan debt at a faster rate than non-mortgaged homeowners. When we account for baseline effects, Black and female mortgaged homeowners' student loan burden appears to stay put or increase slightly instead of following the secular decrease observed at baseline, which is consistent with either a slowdown in repayment or the accumulation of negative amortization through forbearance or deferral.

Among non-mortgage liabilities, student debt plays a particularly important role in shaping household financial vulnerability. As the second largest category of household debt after mortgages (Federal Reserve Bank of New York 2025), student loans represent a critical margin through which financial distress may manifest following homeownership. Moreover, recent work shows that student debt reduces housing debt capacity (Mezza, Ringo, Sherlund, and Sommer, 2020) and

reshapes demand and access to other forms of credit (Mezza, Ringo, and Sommer, 2024). Black borrowers increases in student debt balances after purchase suggest the trade-off between housing and non-housing debt capacity extends beyond the point of purchase. This pattern contrasts with White borrowers, who continue to pay down student debt after acquiring a home.

Credit Card Borrowing Across All Mortgaged Homeowners. Panels C and D of Table 2 reports analogous estimates for log bankcard balances. The $Post \times Black$ interaction term is consistently positive and statistically significant across specifications, with coefficients between 0.12 and 0.16. The $Post$ coefficient is also positive and significant in all models, reflecting a general increase in bankcard balances following homeownership. As with Panels A and B of Table 2, these results hold after accounting for individual fixed effects, time-varying selection into property types, time-varying lending standards, and neighborhood-level controls.

Some of this increase in credit card balances is consistent with households financing increased expenditure on durable goods and home improvement—as documented by Benmelech et al. (2023)—using these lines of credit. Post home purchase, households may also use credit cards to cover unexpected costs now that part of their income is committed to the mortgage payment. As Figure 3 and Table 2 make clear, Black mortgaged homeowners increase their balances over and above the White mortgaged homeowners. This increases the difficulty of accessing credit markets in the event of future cash flow shocks. The implications of these findings are important given the fact that these groups tend to have tighter financial constraints to begin with (Derenoncourt et al. 2021; Gupta et al. 2024).

4 Discussion of Potential Channels

Multiple channels that operate simultaneously and non-exclusively can drive these differences we document in the difficulty of transitioning into homeownership. We discuss four potential channels: (i) differences across groups in the cost of debt, (ii) borrower decisions regarding the prioritization of debt repayment, (iii) variation in ownership cost exposure related to broader patterns of economic inequality, and (iv) differences in post-purchase income availability; and explain why the evidence is inconsistent with the first three channels, but not inconsistent with the last.

Cross-Group Differences in Cost of Debt. We do not observe interest rates or detailed mortgage contract terms in our data. Instead, we observe only the aggregate mortgage balance. This limits our ability to directly measure differences in the cost of borrowing across demographic groups. Some existing research on racial differences in borrowing costs—particularly for Black and Hispanic borrowers—finds that minority borrowers do not face significant differences in total borrowing fees (Bhutta and Hizmo 2020). In contrast, Ambrose, Conklin, and Lopez (2020) find that, for a large subprime lender during the period leading to the Great Recession minorities paid between 3% and 5% more than their White counterparts in fees. To partially account for this in our analysis, our most saturated specifications include fixed effects for LTV quartile × race or credit score quartile × race (columns 7–8 of Tables 1–2). These controls allow for group-specific differences in pricing that are stable over time within given LTV and credit score bins. All results remain virtually unchanged; this should not be the case if disparities are driven by persistent group differences in borrowing costs.

Strategic Repayment Decisions. Another potential mechanism relates to differences in the perceived or realized returns to homeownership (Kermani and Wong 2024; Goldsmith-Pinkham and Shue 2023). If property values or housing appreciation differ systematically across groups, the financial incentives to remain current on mortgage payments may also differ. Borrowers expecting limited equity accumulation may have weaker incentives to prioritize mortgage repayment relative to other debts. In this case, differences in delinquency patterns could reflect underlying variation in the expected value of maintaining homeownership rather than uniform repayment behavior across borrowers. However, such a mechanism may be difficult to reconcile with existing evidence (e.g., Ganong and Noel 2023) that most residential mortgage default is not driven by strategic motives, but rather by negative life events, or the interaction of such events and negative equity (which corresponds to lower house price returns). Moreover, Figures 2a and 2b show that these effects appear immediately following origination—in housing markets, asset prices are sticky and slow to decline (Case and Quigley 2010), making this inconsistent with strategic default that is driven by declining asset values.

Differential Ownership Cost Burdens. A third channel involves variation in the costs associated with ownership. Even conditional on observable characteristics, borrowers may face different expenses related to property maintenance, transaction costs, insurance, or neighborhood services (e.g., Avenancio-León and Howard 2022). To the extent that these costs vary systematically across groups, they may contribute to the post-purchase financial patterns documented above. Persistent group differences in multiple financial outcomes, including student debt and credit card balances, may be consistent with this possibility. However, all these cost burdens have a strong neighborhood- and property-specific component. To a large degree, as shown in Tables 1–2, our inclusion of (and robustness to) tract-by-time and property-characteristics-by-time fixed effects accounts for such neighborhood- and property-level variation in cost burdens.

Post-Purchase Income Constraints. We rule out that income at the time of purchase drives the disparities we document (Figure A4). But another possibility is that borrowers differ in their income trajectories *after* the home purchase. Although credit profiles improve similarly across groups prior to purchase, post-purchase patterns diverge. These patterns may reflect differential exposure to income volatility, differences in employment security, or variation in the ability to adjust to the recurring costs of ownership. The increase in credit card borrowing—particularly among Black borrowers—may be consistent with a greater need for liquidity after purchase. Table A1 shows that both Black homeowners' income relative to White's and female homeowners' income relative to male's is 76% is at the time of a mortgaged home purchase. While Figure A4 shows that income at the time of purchase does not explain our findings, it is well documented that gender and racial pay gaps increase over the life cycle (Canon, Golan, and Smith 2021; Rauh and Valladares-Esteban 2023). Thus, accounting for income at the time of purchase does not rule out the role of post-purchase income constraints due to unequal exposure to income volatility or income growth in explaining these findings.

5 Conclusion

This paper documents that the financial challenges of transitioning into homeownership are not evenly distributed across demographic groups. While homeownership is often associated with wealth accumulation and financial stability, we find that Black and female borrowers face a dis-

proportionately higher burden following the purchase of a home with a mortgage. These borrowers exhibit significantly greater increases in delinquency rates and non-mortgage debt balances—particularly student and credit card debt—relative to similarly situated White and male borrowers. These findings suggest that the transition into homeownership, far from being a uniform economic step, can amplify financial fragility for historically marginalized groups.

The unequal cost of transitioning into homeownership raises important questions for policy. Efforts to expand access to homeownership and mortgage-access may fall short if they fail to address the post-purchase vulnerabilities that affect borrowers' ability to maintain their financial health. While homeownership is promoted as a pathway to economic stability, its benefits are contingent on borrowers' capacity to navigate the long-term financial obligations it enters. For historically marginalized groups, in particular, the transition into homeownership may entail an important trade-off between participating in wealth-building investments and amplifying financial fragility. Recognizing and mitigating these vulnerabilities is essential if the goal is not merely to expand homeownership, but to ensure it is sustainable and equitable.

References

Agarwal, S., G. Amromin, I. Ben-David, S. Chomsisengphet, and D. Evanoff (2019). Mitigating investor losses due to mortgage defaults: Lessons from the global financial crisis. *Cambridge, MA: MIT Press, forthcoming*.

Agarwal, S., G. Amromin, I. Ben-David, S. Chomsisengphet, and D. D. Evanoff (2011). The role of securitization in mortgage renegotiation. *Journal of Financial Economics 102*(3), 559–578.

Agarwal, S., G. Amromin, I. Ben-David, S. Chomsisengphet, and D. D. Evanoff (2020). Financial education versus costly counseling: How to dissuade borrowers from choosing risky mortgages? *American Economic Journal: Economic Policy 12*(1), 1–32.

Ambrose, B. W., J. N. Conklin, and L. A. Lopez (2020, 08). Does borrower and broker race affect the cost of mortgage credit? *The Review of Financial Studies 34*(2), 790–826.

Artigue, H., P. Bayer, F. V. Ferreira, and S. Ross (2025). Does homeownership matter? the long-term consequences of losing a house during the great recession. Technical report, National Bureau of Economic Research.

Avenancio-León, C. F. and T. Howard (2022). The assessment gap: Racial inequalities in property taxation. *The Quarterly Journal of Economics 137*(3), 1383–1434.

Bayer, P. and K. K. Charles (2018). Divergent paths: A new perspective on earnings differences between black and white men since 1940. *The Quarterly Journal of Economics 133*(3), 1459–1501.

Bayer, P., F. Ferreira, and S. L. Ross (2016, February). The vulnerability of minority homeowners in the housing boom and bust. *American Economic Journal: Economic Policy 8*(1), 1–27.

Benmelech, E., A. Guren, and B. T. Melzer (2023). Making the house a home: The stimulative effect of home purchases on consumption and investment. *The Review of Financial Studies 36*(1), 122–154.

Bhutta, N. and A. Hizmo (2020, 04). Do minorities pay more for mortgages? *The Review of Financial Studies 34*(2), 763–789.

Bilal, A. and E. Rossi-Hansberg (2021). Location as an asset. *Econometrica 89*(5), 2459–2495.

Callaway, B. and P. H. Sant'Anna (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics 225*(2), 200–230.

Canon, M. E., L. Golan, and C. A. Smith (2021). Understanding the gender earnings gap: Hours worked, occupational sorting, and labor market experience. *FRB of St. Louis Review*.

Case, K. E. and J. M. Quigley (2010). How housing busts end: home prices, user cost, and rigidities during down cycles. *The Blackwell companion to the economics of housing: The housing wealth of nations*, 459–480.

Cengiz, D., A. Dube, A. Lindner, and B. Zipperer (2019). The effect of minimum wages on low-wage jobs. *Quarterly Journal of Economics 134*(3), 1405–1454.

Chetty, R. and N. Hendren (2018). The impacts of neighborhoods on intergenerational mobility ii: County-level estimates. *The Quarterly Journal of Economics 133*(3), 1163–1228.

Credit Karma (2025). Beyond the white picket fence: Redefining the american dream and home-ownership. Technical report.

De Chaisemartin, C. and X. D'Haultfoeuille (2022). Two-way fixed effects and differences-in-differences with heterogeneous treatment effects: A survey. Technical report, National Bureau of Economic Research.

De Chaisemartin, C. and X. d'Haultfoeuille (2020). Two-way fixed effects estimators with heterogeneous treatment effects. *American Economic Review 110*(9), 2964–2996.

Derenoncourt, E., C. H. Kim, M. Kuhn, and M. Schularick (2021). The racial wealth gap, 1860-2020. *Manuscript, Princeton University and University of Bonn*.

Federal Reserve Bank of New York (2025). Quarterly report on household debt and credit 2025 q1. Technical report, Federal Reserve Bank of New York.

Ganong, P. and P. Noel (2023). Why do borrowers default on mortgages? *The Quarterly Journal of Economics 138*(2), 1001–1065.

Goldsmith-Pinkham, P. and K. Shue (2023). The gender gap in housing returns. *The Journal of Finance 78*(2), 1097–1145.

Goodman, L. S. and C. Mayer (2018). Homeownership and the american dream. *Journal of Economic Perspectives 32*(1), 31–58.

Goodman-Bacon, A. (2021). Difference-in-differences with variation in treatment timing. *Journal of Econometrics 225*(2), 254–277.

Green, R. K. and M. J. White (1997). Measuring the benefits of homeowning: Effects on children. *Journal of urban economics 41*(3), 441–461.

Gupta, A., C. Hansman, and P. Mabille (2024). Financial constraints and the racial housing gap.

Han, L. and W. C. Strange (2015). The microstructure of housing markets: Search, bargaining, and brokerage. *Handbook of regional and urban economics 5*, 813–886.

Kermani, A. and F. Wong (2024). Racial disparities in housing returns. *Working Paper*.

Korgaonkar, S. (2023). The agency costs of tranching: Evidence from rmbs. *Journal of Financial Intermediation 54*, 101030.

Lusardi, A. and O. S. Mitchell (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature 52*(1), 5–44.

Mezza, A., D. Ringo, S. Sherlund, and K. Sommer (2020). Student loans and homeownership. *Journal of Labor Economics 38*(1), 215–260.

Mezza, A., D. Ringo, and K. Sommer (2024). Student loans, access to credit, and consumer credit demand. *The Review of Financial Studies 37*(12), 3761–3801.

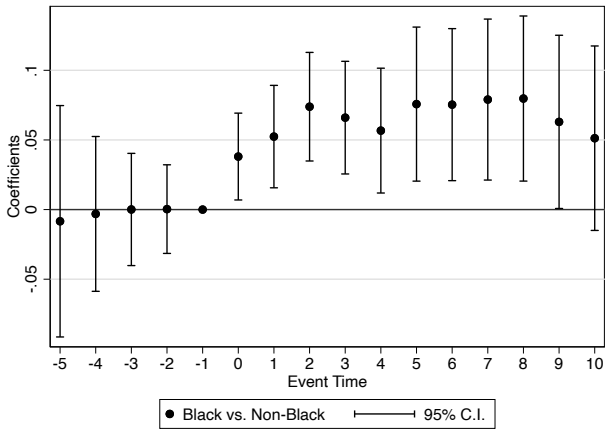
Rauh, C. and A. Valladares-Esteban (2023). On the black-white gaps in labor supply and earnings over the lifecycle in the us. *Review of Economic Dynamics 51*, 424–449.

Roback, J. (1982). Wages, rents, and the quality of life. *Journal of political Economy 90*(6), 1257–1278.

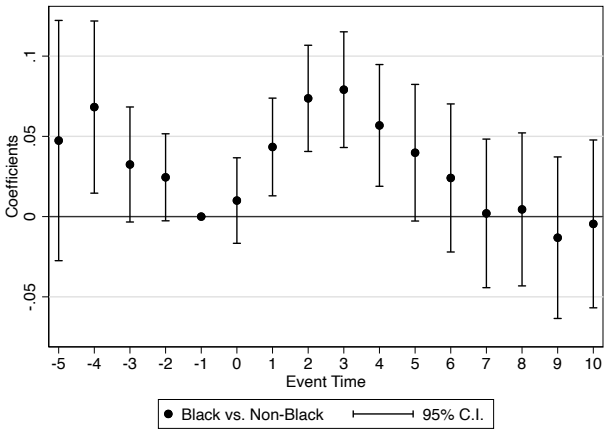
Rosen, S. (1979). Wage-based indexes of urban quality of life. *Current issues in urban economics*, 74–104.

Sodini, P., S. Van Nieuwerburgh, R. Vestman, and U. von Lilienfeld-Toal (2023). Identifying the benefits from homeownership: A swedish experiment. *American Economic Review 113*(12), 3173–3212.

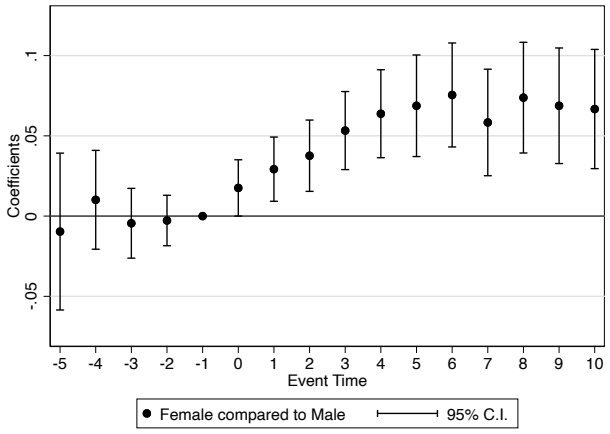
Figure 1. Group Differences in Delinquency - Mortgaged Homebuyers



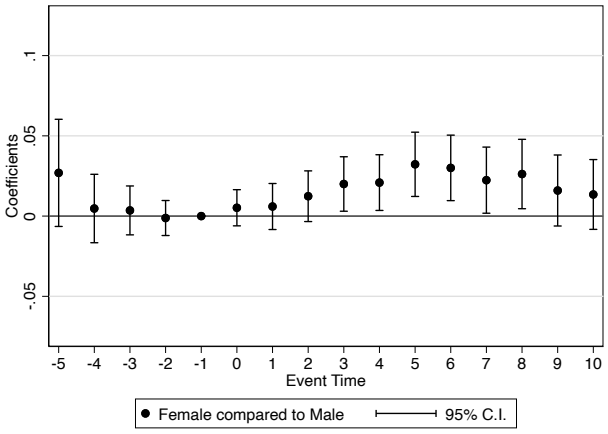
(a) Racial Differences in Delinquency – 30 Days



(b) Racial Differences in Delinquency – 90 Days



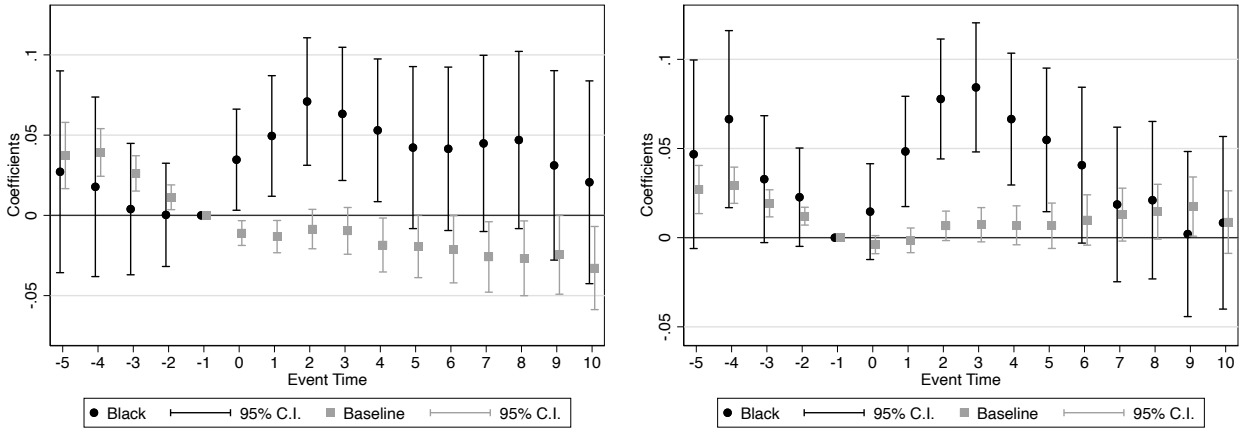
(c) Gender Differences in Delinquency – 30 Days



(d) Gender Differences in Delinquency – 90 Days

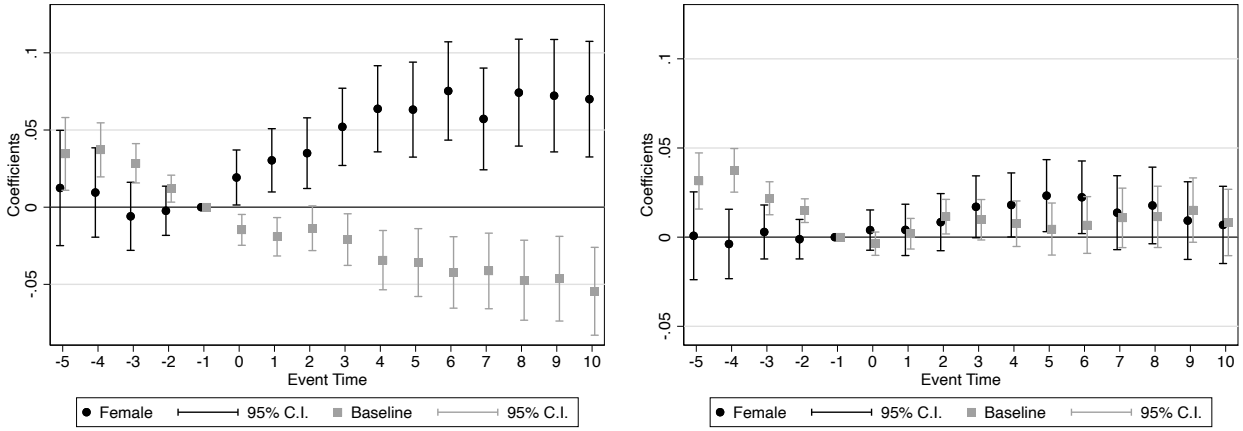
This figure illustrates the heterogeneity across gender and race of event study estimates of the response of delinquency rates following a leveraged home purchase following Equation (1). Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). Panel (a) and (b) report racial differences in the response of 30+ and 90+ day delinquencies, respectively. Panel (c) and (d) report gender differences in 30+ and 90+ day delinquency rates, respectively. 95% confidence intervals are clustered by tract.

Figure 2. Group Differences in Delinquency - All Homebuyers



(a) Racial Differences in Delinquency – 30 Days

(b) Racial Differences in Delinquency – 90 Days

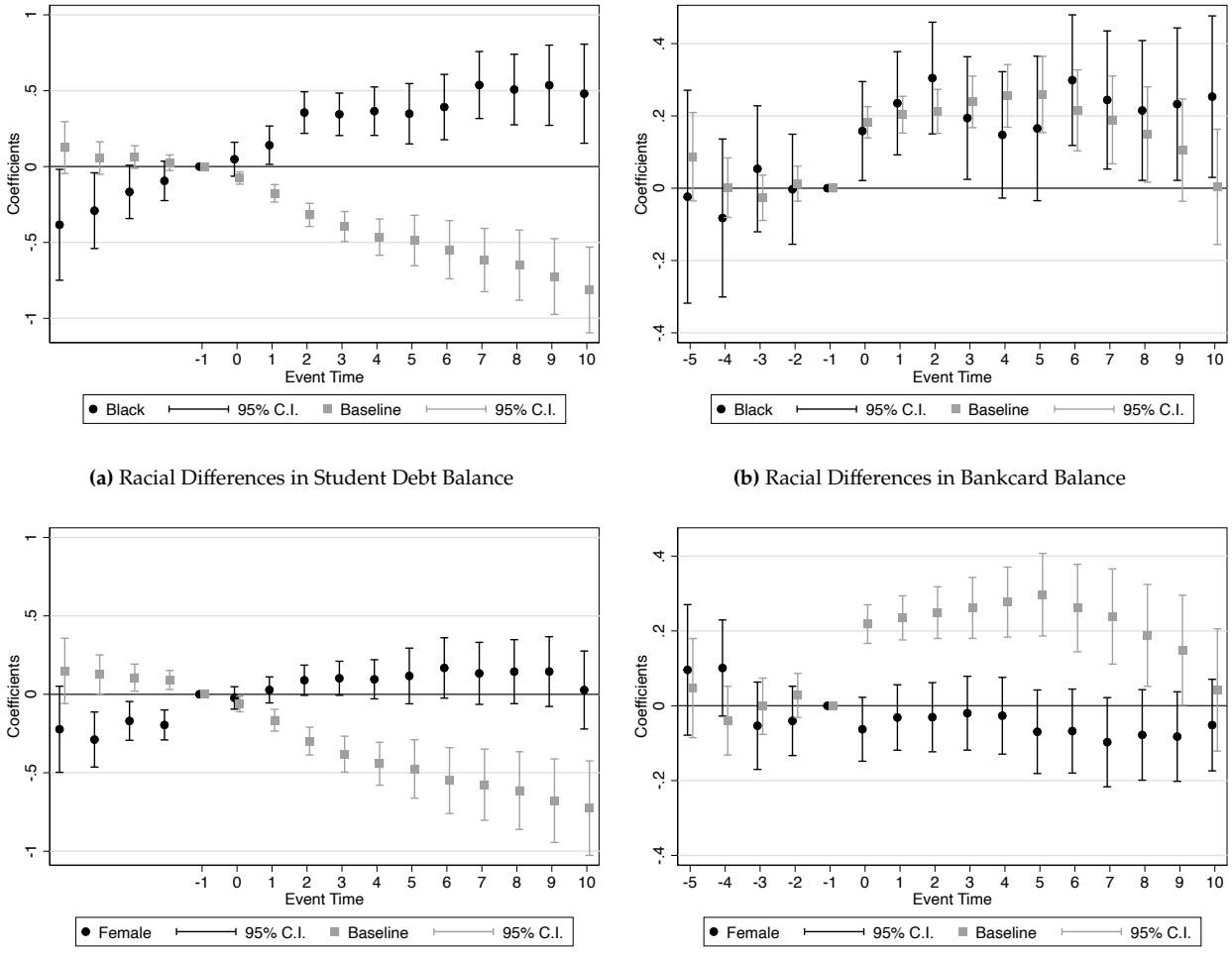


(c) Gender Differences in Delinquency – 30 Days

(d) Gender Differences in Delinquency – 90 Days

This figure illustrates the heterogeneity across gender and race of event study estimates of the response of delinquency rates following a leveraged home purchase relative to a cash-homebuyer benchmark following Equation (2). Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). The baseline leveraged home purchase estimates are illustrated with gray labels and can be interpreted as the baseline effect on all leveraged homebuyers, as well as the estimates for White/male leveraged homebuyers. The relative race- or gender-specific estimates are illustrated by the black labels. Panel (a) and (b) report racial differences in the response of 30+ and 90+ day delinquencies, respectively. Panel (c) and (d) report gender differences in 30+ and 90+ day delinquency rates, respectively. 95% confidence intervals are clustered by tract.

Figure 3. Group Differences in Handling Non-Mortgage Debt



(a) Racial Differences in Student Debt Balance

(b) Racial Differences in Bankcard Balance

(c) Gender Differences in Student Debt Balance

(d) Gender Differences in Bankcard Balance

This figure illustrates the heterogeneity across gender and race of event study estimates of the response of non-mortgage debt following a leveraged home purchase. Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). The baseline estimates are illustrated with gray labels while the race- or gender-specific estimates are illustrated by the black labels. Panel (a) and (b) report racial differences in the response of student and bankcard debt, respectively. Panel (c) and (d) report gender differences in student and bankcard debt, respectively. 95% confidence intervals are clustered by tract.

Table 1. Group Differences in Delinquency

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: 30+ Day Delinquency Differences by Race								
Post x Black	0.031	0.047	0.038	0.037	0.037	0.028	0.037	0.036
	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)	(0.015)
Post	-0.003	-0.004	-0.001	-0.001	-0.000	0.008	-0.001	0.000
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)
Panel B: 30+ Day Delinquency Differences by Gender								
Post x Female	0.014	0.018	0.016	0.015	0.014	0.013	0.015	0.015
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Post	-0.006	-0.006	-0.003	-0.003	-0.002	0.006	-0.003	-0.002
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
Married × Time FE	-	Y	Y	Y	Y	Y	Y	Y
Panel C: 90+ Day Delinquency Differences by Race								
Post x Black	0.021	0.029	0.018	0.018	0.019	0.016	0.018	0.015
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Post	0.003	0.004	0.005	0.006	0.005	0.009	0.006	0.007
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Panel D: 90+ Day Delinquency Differences by Gender								
Post x Female	0.001	0.001	-0.002	-0.003	-0.001	-0.004	-0.003	-0.005
	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Post	0.005	0.006	0.007	0.008	0.006	0.011	0.008	0.010
	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Married × Time FE	-	Y	Y	Y	Y	Y	Y	Y
Observations	397,861	397,861	396,294	396,294	396,294	362,461	396,294	362,461
Credit Score (Vantage)	Y	Y	Y	Y	Y	Y	Y	Y
Individual FE	Y	Y	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y	Y	Y
Age FE	-	Y	Y	Y	Y	Y	Y	Y
Tract by Time FE	-	-	Y	Y	Y	Y	Y	Y
Structure Chars by Time FE	-	-	-	Y	Y	Y	Y	Y
LTV Q by Time FE	-	-	-	-	Y	-	-	-
Cr. Score Q by Time FE	-	-	-	-	-	Y	-	-
Race/Gender by LTV Q	-	-	-	-	-	-	Y	-
Race/Gender by CS Q	-	-	-	-	-	-	-	Y

This table reports estimates of group differences in experiencing delinquencies following a financed home purchase. We use the stacking procedure proposed by Cengiz et al. (2019). Panel A and B reports estimates for 30+ days delinquency, while panel C and D reports estimates for 90+ day delinquency. Column (1) reports the baseline with individual and time fixed effects. Column (2)–(4) add sequentially age fixed effects, tract × time, and structure characteristics × time fixed effects. Columns (5)–(8) add LTV quintiles × time, credit score × time, LTV quintiles × group, and credit score LTV quintiles × group fixed effects, respectively. Standard errors clustered at the tract level.

Table 2. Group Differences in Non-Mortgage Debt Balances

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Student Debt Balance Differences by Race								
Post x Black	0.194	0.186	0.175	0.155	0.136	0.108	0.155	0.159
	(0.052)	(0.052)	(0.049)	(0.049)	(0.049)	(0.051)	(0.049)	(0.052)
Post	-0.140	-0.139	-0.135	-0.131	-0.071	-0.081	-0.131	-0.133
	(0.028)	(0.029)	(0.024)	(0.024)	(0.020)	(0.026)	(0.024)	(0.025)
Panel B: Student Debt Balance Differences by Gender								
Post x Female	0.114	0.102	0.079	0.079	0.062	0.059	0.079	0.076
	(0.035)	(0.038)	(0.033)	(0.032)	(0.033)	(0.033)	(0.032)	(0.033)
Post	-0.154	-0.148	-0.138	-0.138	-0.075	-0.089	-0.138	-0.140
	(0.030)	(0.032)	(0.027)	(0.027)	(0.022)	(0.028)	(0.027)	(0.028)
Married × Time FE	-	Y	Y	Y	Y	Y	Y	Y
Observations	74,590	74,582	72,950	72,949	72,945	67,387	72,949	67,387
Panel C: Bank Card Balance Differences by Race								
Post x Black	0.122	0.153	0.160	0.157	0.137	0.153	0.157	0.164
	(0.048)	(0.048)	(0.049)	(0.050)	(0.050)	(0.052)	(0.050)	(0.051)
Post	0.290	0.253	0.248	0.246	0.222	0.240	0.246	0.241
	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)	(0.016)	(0.016)	(0.016)
Panel D: Bank Card Balance Differences by Gender								
Post x Female	-0.021	-0.009	-0.005	0.000	-0.011	-0.002	0.000	-0.002
	(0.025)	(0.026)	(0.025)	(0.025)	(0.025)	(0.026)	(0.025)	(0.026)
Post	0.306	0.265	0.259	0.255	0.233	0.251	0.255	0.252
	(0.019)	(0.019)	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.018)
Married × Time FE	-	Y	Y	Y	Y	Y	Y	Y
Observations	286,873	286,873	284,696	284,696	284,696	261,822	284,696	261,822
Credit Score (Vantage)	Y	Y	Y	Y	Y	Y	Y	Y
Individual FE	Y	Y	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y	Y	Y
Age FE	-	Y	Y	Y	Y	Y	Y	Y
Tract by Time FE	-	-	Y	Y	Y	Y	Y	Y
Structure Chars by Time FE	-	-	-	Y	Y	Y	Y	Y
LTV Q by Time FE	-	-	-	-	Y	-	-	-
Cr. Score Q by Time FE	-	-	-	-	-	Y	-	-
Race/Gender by LTV Q	-	-	-	-	-	-	Y	-
Race/Gender by CS Q	-	-	-	-	-	-	-	Y

This table reports estimates of group differences in non-mortgage debt balances following a financed home purchase. We use the stacking procedure proposed by Cengiz et al. (2019). Panel A and B reports estimates for student debt balances, while panel C and D reports estimates for bank card balances. Column (1) reports the baseline with individual and time fixed effects. Column (2)–(4) add sequentially age fixed effects, tract × time, and structure characteristics × time fixed effects. Columns (5)–(8) add LTV quintiles × time, credit score × time, LTV quintiles × group, and credit score LTV quintiles × group fixed effects, respectively. Standard errors clustered at the tract level.

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Figure A3: Changes in Mortgage Balance After Homeownership

Figure A4: Controlling for Income-at-purchase × Event-time

Figure A5: Delinquency event-study excluding non-mortgaged Black/Female homeowners.

Figure A6: Debt balance event-study excluding non-mortgaged Black/Female homeowners.

Table A1. Summary Statistics

	Full Sample		Not Black		Black		Not Female		Female	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	N	mean	N	mean	N	mean	N	mean	N	mean
Panel A: Credit Characteristics										
Credit Score (Vantage)	16,473	737.98	14,998	745.44	1,475	662.07	10,982	743.35	5,491	727.23
% Has Auto Loan	18,199	0.80	16,576	0.80	1,623	0.81	12,118	0.82	6,081	0.77
Avg. Auto Balance	12,890	12,336.70	11,716	12,353.29	1,174	12,171.13	8,784	13,452.64	4,106	9,949.36
% Has Student Debt	18,199	0.28	16,576	0.27	1,623	0.40	12,118	0.27	6,081	0.29
Avg. Student Balance	3,324	32,946.26	2,816	32,940.62	508	32,977.52	2,127	33,935.53	1,197	31,188.38
% Has Bankcard	18,199	0.85	16,576	0.86	1,623	0.72	12,118	0.85	6,081	0.84
Avg Bankcard Balance	13,731	4,640.68	12,710	4,694	1,021	3,976.97	9,207	4,863.25	4,524	4,187.72
% Has 30 Days Delinquent Acct	18,199	0.28	16,576	0.26	1,623	0.44	12,118	0.26	6,081	0.32
% Has 60 Days Delinquent Acct	18,199	0.13	16,576	0.11	1,623	0.28	12,118	0.11	6,081	0.15
% Has 90 Days Delinquent Acct	18,199	0.06	16,576	0.05	1,623	0.15	12,118	0.05	6,081	0.08
% Has Accts in Bankruptcy	18,199	0.02	16,576	0.02	1,623	0.03	12,118	0.02	6,081	0.02
Panel B: Property Transaction Characteristics										
Loan to Price Ratio	10,191	0.79	9,243	0.77	948	0.94	6,973	0.74	3,218	0.88
Property Age	16,026	22.42	14,588	23.29	1,438	13.60	10,751	21.99	5,275	23.30
No. of Bedrooms	12,876	3.22	11,702	3.21	1,174	3.29	8,636	3.33	4,240	2.99
Square Feet	15,960	2,102.66	14,536	2,109.81	1,424	2,029.62	10,709	2,243.65	5,251	1,815.11
Price Per Sq. Ft.	15,960	114.37	14,536	116.72	1,424	90.34	10,709	115.36	5,251	112.35
Income at Purchase ($1000)	14,168	115.17	13,304	116.85	864	89.34	9,572	124.63	4,556	95.42

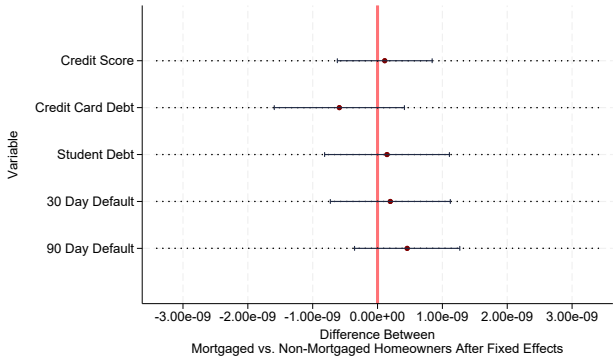
This table reports the summary statistics of our analysis sample, broken down into racial groups and gender groups. Panel A reports the summary statistics of the individuals' credit characteristics, including credit score, fraction of agents with auto loan, student debt, bank card and the corresponding balances of these loans. 30+ day, 60+ day and 90+ day delinquencies are also reported. Panel B reports the property characteristics, including the loan to price ratio, price per square feet, property age, property size and the number of rooms.

Table A2. Sorting into Property and Loan Characteristics

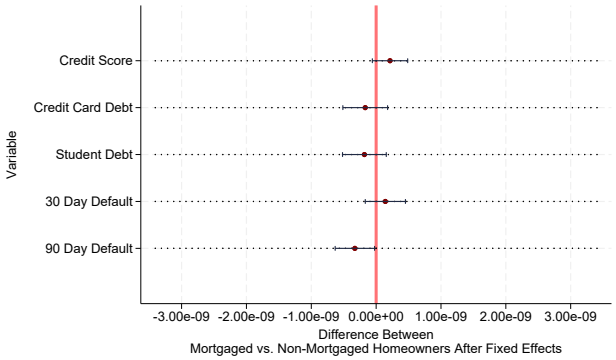
	(1) Prop. Age	(2) Sq. Ft.	(3) No. of Beds	(4) Log Price	(5) Log Mortgage	(6) Log LTV
Panel A: Differences by Race						
Black	-4.638	21.872	0.060	-0.047	0.124	0.171
	(0.628)	(28.178)	(0.032)	(0.016)	(0.022)	(0.026)
Observations	13,232	13,130	10,559	13,454	13,454	13,454
R-squared	0.524	0.436	0.378	0.497	0.251	0.236
Panel B: Differences by Gender						
Female	0.277	-330.786	-0.281	-0.151	-0.015	0.135
	(0.369)	(16.492)	(0.019)	(0.009)	(0.013)	(0.015)
Observations	13,232	13,130	10,559	13,454	13,454	13,454
R-squared	0.522	0.458	0.396	0.509	0.250	0.239
Age FE	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y
Tract FE	Y	Y	Y	Y	Y	Y
Cluster	Tract	Tract	Tract	Tract	Tract	Tract

This table reports estimates of group differences in property and loan characteristics. We use the stacking procedure proposed by Cengiz et al. (2019). Panel A reports estimates for group differences by race while panel B reports estimates for group differences by gender. Columns (1)–(6) reports the balance check for the tenure of properties, square feet, number of beds, logarithm of price, mortgage, and LTV scores, respectively. For all characteristics, fixed effects for age, time, and tract are absorbed. Standard errors clustered at the tract level.

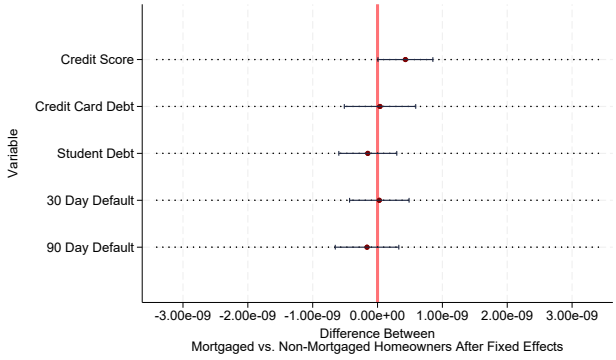
Figure A1. Pre-Ownership Balance in Outcomes Between Mortgaged and Non-Mortgaged Homeowners



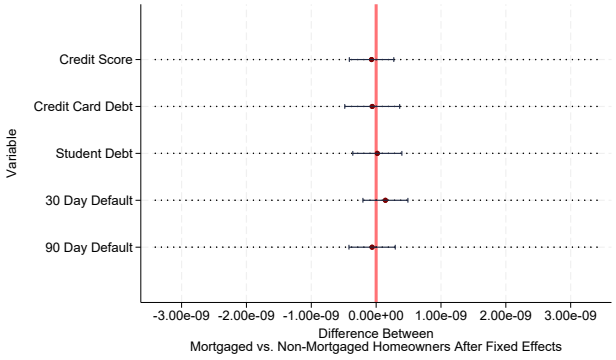
(a) Black Homeowners



(b) White Homeowners



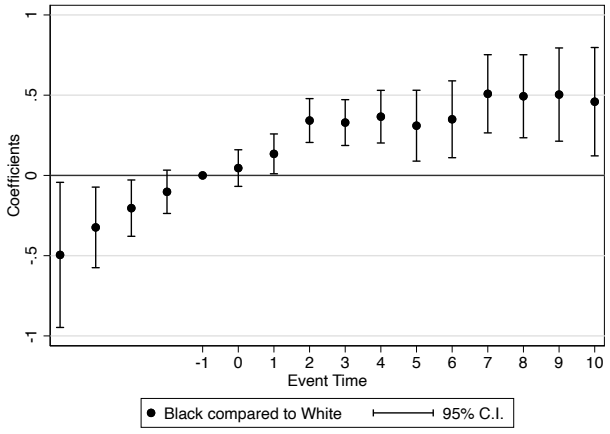
(c) Female Homeowners



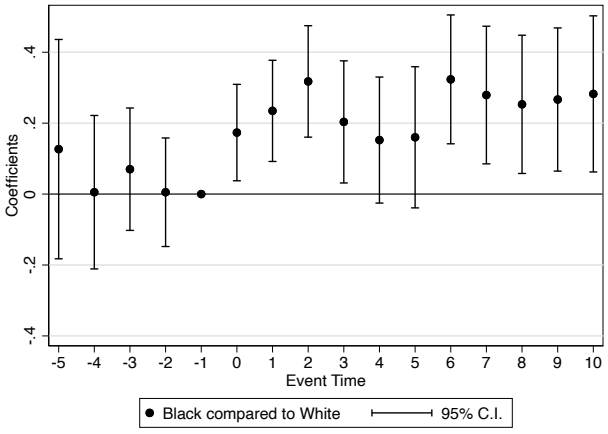
(d) Male Homeowners

This figure reports differences between in outcomes between mortgaged and non-mortgaged homeowners *prior* to the home purchase conditional on individual and age fixed effects. To construct each figure, each outcome is residualized by taking out individual and age fixed effects and is then normalized into a z-score. Estimates are then retrieved from a regression of each outcome of interest on future mortgage status. Panels A, B, C, and D present estimates from a sample of Black homeowners, White homeowners, female homeowners, and male homeowners, respectively.

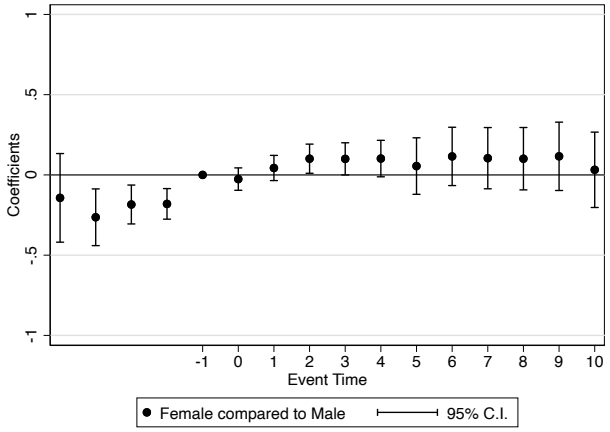
Figure A2. Group Differences in Handling Non-Mortgage Balances - Mortgaged Homebuyers



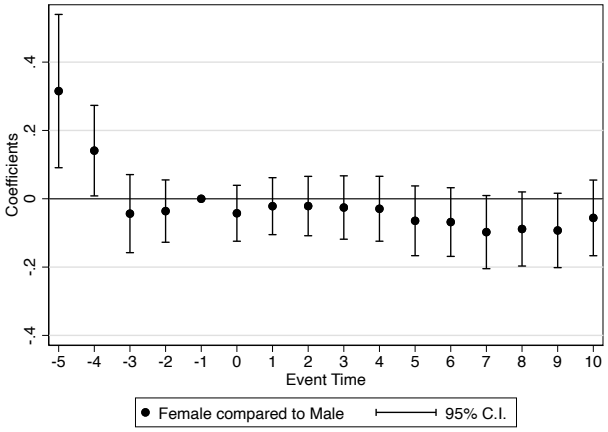
(a) Racial Differences in Student Debt Balance



(b) Racial Differences in Bankcard Balance



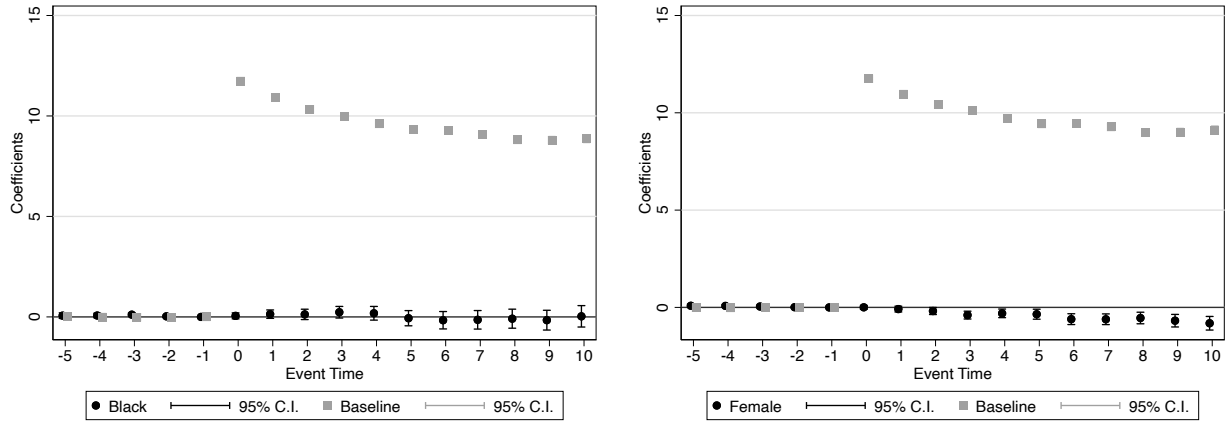
(c) Gender Differences in Student Debt Balance



(d) Gender Differences in Bankcard Balance

This figure illustrates the heterogeneity across gender and race of event study estimates of the response of delinquency rates following a leveraged home purchase. Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). Panel (a) and (b) report racial differences in the response of student debt and bankcard balances, respectively. Panel (c) and (d) report gender differences in student debt and bankcard balances, respectively. 95% confidence intervals are clustered by tract.

Figure A3. Changes in the Mortgage Balance

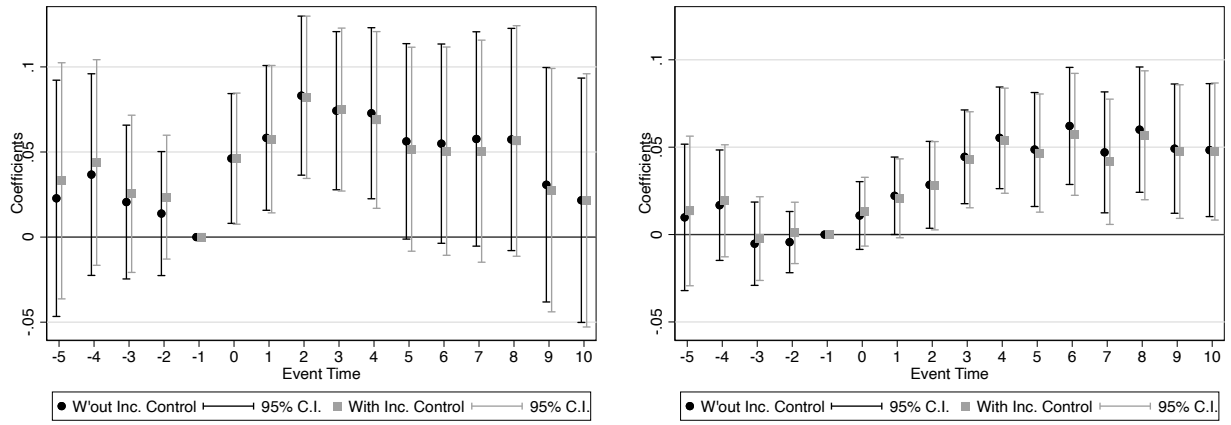


(a) Change in Mortgage Balance by Race

(b) Change in Mortgage Balance by Gender

This figure presents event study estimates of the response of mortgage balance following a leveraged home purchase. Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). The baseline estimates are illustrated with gray labels while the race- or gender-specific estimates are illustrated by the black labels. Panel (a) reports (lack of) racial differences in mortgage balance after controlling for individual, age, and time fixed effects. Likewise, Panel (b) reports (lack of) gender differences mortgage balance after controlling for individual, age, and time fixed effects. 95% confidence intervals are clustered by tract.

Figure A4. Robustness to Controlling for Income-at-purchase × Event-time

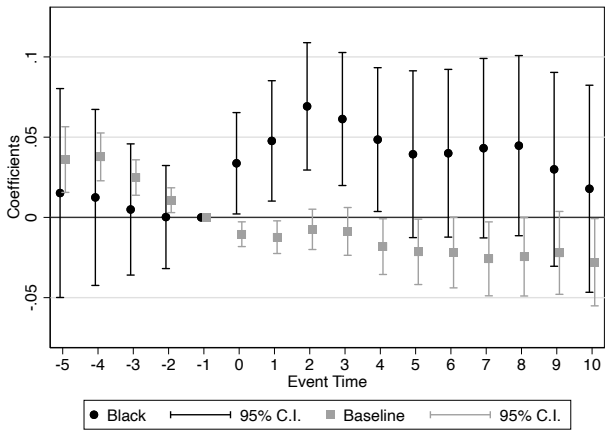


(a) Change in 30+ Days Delinquency by Race

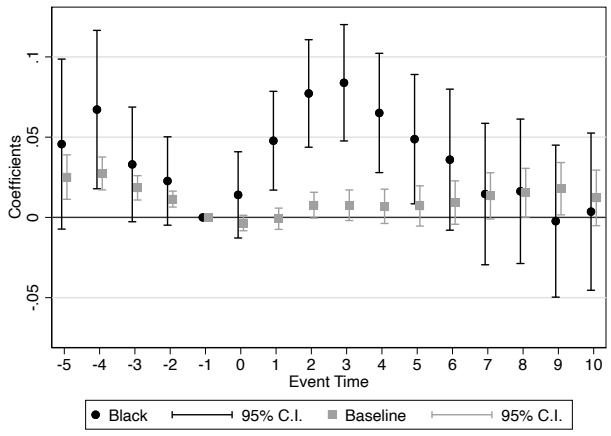
(b) Change in 30+ Days Delinquency by Gender

This figure presents event study estimates of the response of 30+ Days Delinquency following a leveraged home purchase. Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). Each Panel documents the change in 30+ days delinquency under two specifications: one without controlling for the interaction between at purchase income and event time (black graph), and one with controls for this interaction (grey graph). Panel (a) documents the response for Black mortgaged homeowners, while Panel (b) documents the response for female mortgaged homeowners. 95% confidence intervals are clustered by tract.

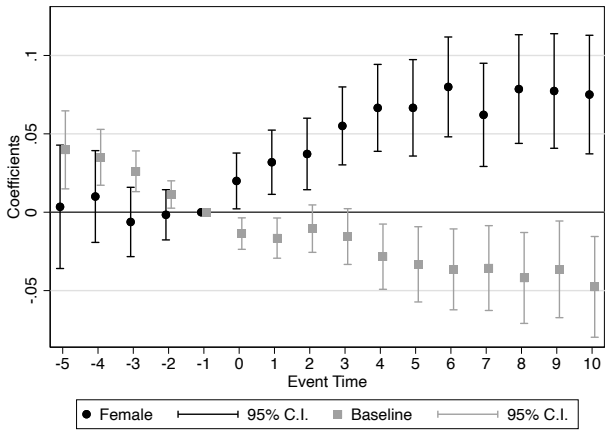
Figure A5. Group Differences in Delinquency (Excluding Non-Mortgaged Black/Female Homeowners)



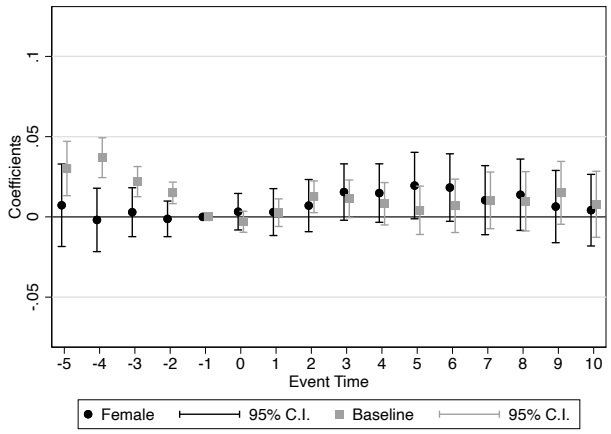
(a) Racial Differences in Delinquency – 30 Days



(b) Racial Differences in Delinquency – 90 Days



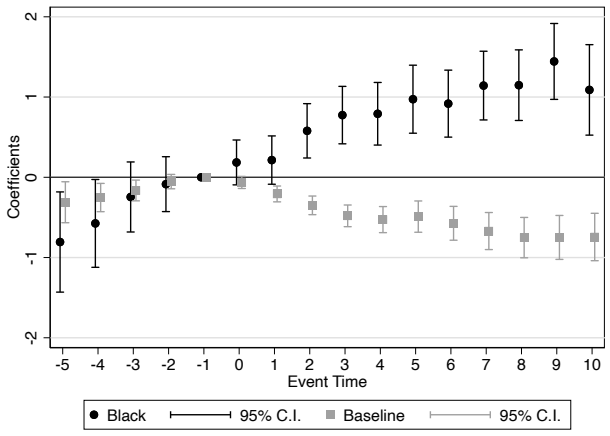
(c) Gender Differences in Delinquency – 30 Days



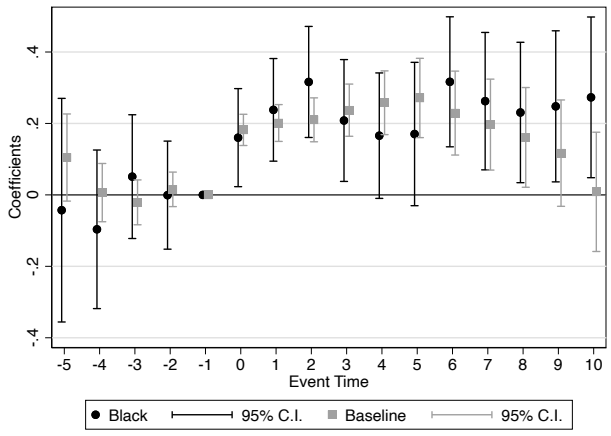
(d) Gender Differences in Delinquency – 90 Days

This figure illustrates the heterogeneity across gender and race of event study estimates of the response of delinquency rates following a leveraged home purchase. We exclude non-mortgaged Black/Female homeowners from the specification. Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). The baseline estimates are illustrated with gray labels while the race- or gender-specific estimates are illustrated by the black labels. Panel (a) and (b) report racial differences in the response of 30+ and 90+ day delinquencies, respectively. Panel (c) and (d) report gender differences in 30+ and 90+ day delinquency rates, respectively. 95% confidence intervals are clustered by tract.

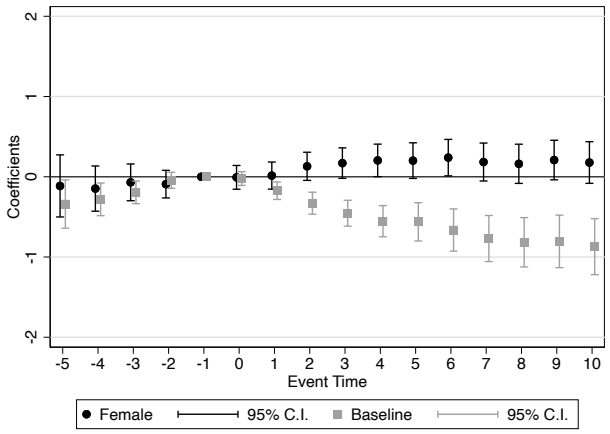
Figure A6. Group Differences in Handling Non-Mortgage Debt (Excluding Non-mortgaged Black/Female Homeowners)



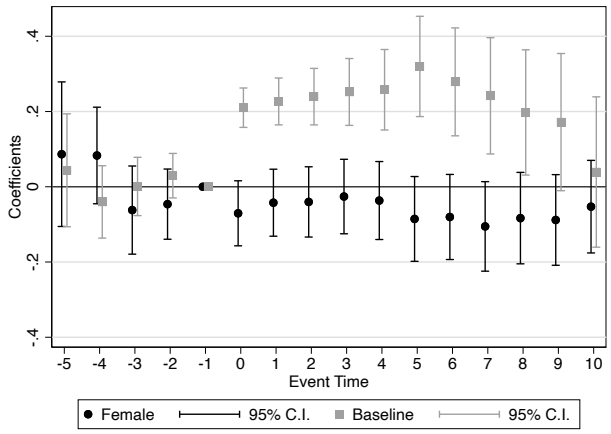
(a) Racial Differences in Student Debt Balance



(b) Racial Differences in Bankcard Balance



(c) Gender Differences in Student Debt Balance



(d) Gender Differences in Bankcard Balance

This figure illustrates the heterogeneity across gender and race of event study estimates of the response of non-mortgage debt following a leveraged home purchase. We exclude from the sample non-mortgaged Black/Female homebuyers. Estimates follow the stacking difference-in-difference method proposed by Cengiz et al. (2019). The baseline estimates are illustrated with gray labels while the race- or gender-specific estimates are illustrated by the black labels. Panel (a) and (b) report racial differences in the response of student and bankcard debt, respectively. Panel (c) and (d) report gender differences in student and bankcard debt, respectively. 95% confidence intervals are clustered by tract.