

# Unequal Leverage: How Does Monetary Policy Redistribute Wealth Across Generations?

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## Abstract

Monetary policy may influence the short-run dynamics of income and wealth inequality across generations. The age-based redistributive effects might be intensified and further reinforced due to the interconnected nature of housing and mortgage markets with monetary policy. While older cohorts often benefit from rising asset prices and minimal debt, younger and middle-aged households—facing high mortgage liabilities and stricter borrowing limits—are more exposed to changes in monetary policy. To capture these asymmetric effects, the study proposes a New Keynesian Overlapping Generations (NK-OLG) framework with age-based borrowing constraints. The model, calibrated to the Canadian data, will be used in policy experiments—including zero lower bound scenarios and monetary tightening cycles—to illustrate how shifts in monetary policy propagate through different age cohorts. By quantifying these redistributive channels, the project aims to offer evidence-based insights to strengthen the central banks’ approach to interventions, reinforcing interventions that address cross-cohort vulnerabilities and mitigate wealth disparities.

**Keywords:** Monetary Policy; Lifecycle; Income Distribution; Housing Markets; Demography; Inequality

## 1 Introduction

Over the past two decades, profound economic transformations—driven by global events such as the Global Financial Crisis (GFC), the COVID-19 pandemic, and the recent surge in inflation—have reshaped households’ borrowing capacity, mortgage accessibility, and house prices, intensifying wealth disparities across generations. Younger and middle-aged households, already constrained by earnings inequality, income volatility, and escalating housing costs, face significant barriers to wealth accumulation. Meanwhile, older generations, holding substantial housing equity, have reaped capital gains, further amplifying intergenerational wealth inequality.

While many of these dynamics are influenced by structural factors—such as limited housing supply (e.g., zoning restrictions, immigration) and demographic shifts (e.g., population aging)—monetary policy remains a key driver. Changes in interest rates, asset prices, and borrowing constraints asymmetrically affect different age cohorts, particularly through their impact on housing and mortgage markets.

Housing, often the largest asset for households, and mortgages, typically their largest liability, play pivotal roles in this redistribution. Mortgage repayments consume 15–30% of disposable income in major economies (Garriga et al., 2017)<sup>1</sup>, highlighting the high sensitivity of household finances to interest rate fluctuations. For younger households, borrowing constraints—driven by loan-to-value (LTV) and loan-to-income (LTI) ratios—pose significant obstacles to homeownership and limit their ability to leverage housing wealth. In contrast, older households, with fewer liabilities and greater housing equity, benefit disproportionately from rising asset prices and are comparatively insulated from shifts in borrowing costs.

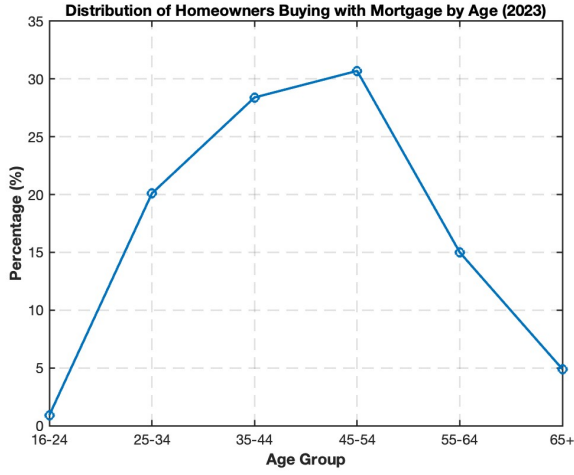
Prolonged periods of low interest rates—alongside unconventional interventions during the Global Financial Crisis (GFC) and COVID-19 pandemic—eased bor-

rowing constraints and lowered debt servicing costs, even as they fueled rising house prices—often offsetting potential gains in housing affordability by increasing down-payment and borrowing requirements. Conversely, rapid tightening of monetary policy, as seen in the post-pandemic era, could disproportionately burden younger and indebted households, for whom mortgage repayments constitute a substantial share of disposable income. Meanwhile, older generations, typically holding greater housing equity, remain less exposed to rising borrowing costs and can further capitalize on continued appreciation in asset values.

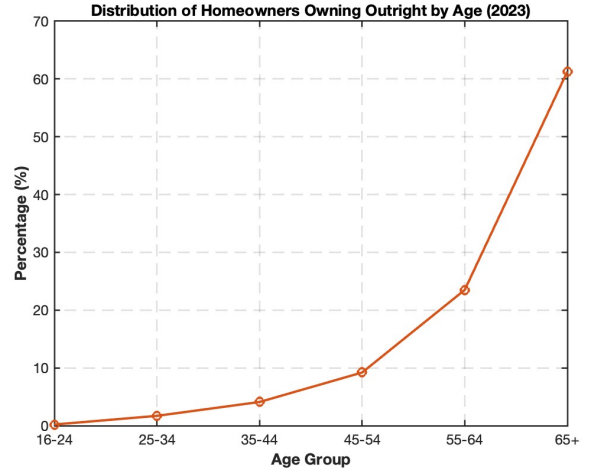
Illustrative of these generational patterns, Figure 1a shows that the reliance on borrowing to access homeownership increases as individuals transition from youth to middle age, with mortgage-financed homeownership peaking at 30.7% for households aged 45–54 years. This reliance highlights the significant dependence of younger and middle-aged households on mortgages, positioning them as particularly sensitive to borrowing constraints and shifts in interest rates and credit conditions. In contrast, outright homeownership—depicted in Figure 1b—is heavily concentrated among older households, with 61.3% of individuals over 65 owning their homes outright, compared to only 1.7% for those aged 25–34. Together, these patterns of generational divide reveal the potential for asymmetric impacts of monetary policy and their reinforcing effects on intergenerational inequality.

This research proposal plans to examine how monetary policy redistributes wealth across generations, focusing on the distributional mechanisms operating within housing markets. Using a New Keynesian Overlapping Generations (NK-OLG) framework, the study incorporates housing markets, borrowing constraints, and age-specific asset heterogeneity to analyze monetary policy transmission. The framework will be designed to capture life-cycle dynamics, highlighting the asymmetric effects of policy interventions on households of different age groups.

<sup>1</sup>Mortgage repayments are equivalent to 15%–22% of homeowners’ pre-tax income in the United States (average for the past 30–40 years), 15%–20% in the United Kingdom, 27% in Germany, 36.5% in Denmark (first-time homeowners), and 30% in France (first-time homeowners.)



(a) Buying with Mortgage by Age



(b) Own Outright by Age

Figure 1: Homeowner Distribution by Age and Financing Type (England, 2023)

## 2 Background & Aims

Existing literature highlights the impact of monetary policy on inequality and the distribution of income and wealth. Central bank decisions influence asset prices and labor market outcomes, disproportionately affecting households with varied asset-liability profiles and labor market participation across the life cycle (Bielecki et al., 2022; Auclert, 2019). While models featuring age-based heterogeneity and rich household asset portfolios are well-established, they do not systematically address *age-based borrowing constraints* within an overlapping generations framework.<sup>2</sup> Such constraints matter for housing decisions and exposure to monetary policy changes and remain underexplored in standard New Keynesian settings.

Building on these insights, this research proposes a New Keynesian Overlapping Generations (NK-OLG) framework that extends Bielecki et al. (2022) with borrowing constraints inspired by Iacoviello (2005). Implementing constraints across 80 cohorts poses significant computational demands given the need to evaluate 80 occasionally binding constraints. This addition makes the model's solution more complex, as it must handle kinked decision rules and potentially large state spaces when constraints bind. To address these complexities, this research proposes to implement age-based constraints that are tied to expected housing values through a Kuhn-Tucker inequality condition. The model will be calibrated to Canadian data, ensuring robust, policy-relevant outcomes.

### 2.1 Aims

This study aims to address critical gaps in our understanding of how monetary policy *interacts* with housing markets and borrowing constraints, offering insights into persistent intergenerational wealth disparities and potential policy solutions. Specifically, the research will:

1. Investigate how borrowing constraints *amplify or mitigate* the redistributive effects of monetary policy across generations.
2. Determine how these effects *vary in aggregate and*

*over the lifetime* of different cohorts.

3. Explore how monetary authorities can *design policies* that reduce intergenerational wealth gaps while maintaining macroeconomic stability.

To achieve these objectives, the study will focus on two contexts: (i) *zero lower bound (ZLB) conditions* and (ii) *monetary tightening cycles*, highlighting how policy changes propagate through the economy.

## 3 Methodology

### 3.1 Model

This study shall construct an OLG New Keynesian DSGE model to study the distributional impact of monetary policy. The model economy would consist of finitely lived households, firms, fiscal authority, and a central bank.

#### Households

The households would solve their lifetime utility maximisation problem subject to a budget constraint. The setup would allow each household to enter the model at a specific age (say the agent enters at the age of twenty years) and retire after contributing to the labour force for a specific period (say the agent works for forty years). In addition, the households can accumulate housing (subject to depreciation) and other nominal and real assets. They face occasionally binding constraints tied to housing values; when they bind, these constraints significantly alter consumption, saving, and housing choices, magnifying or dampening the effects of monetary policy. Further, the households' wages would be subject to nominal rigidity (wage stickiness), and the wages would be reoptimized according to random signals, which shall show up with a probability of  $1 - \theta$  as in the Calvo (1983) scheme.

#### Firms

The supply side of the model economy would consist of two types of producers: intermediate and final good

<sup>2</sup> A growing literature highlights that *firm age* shapes financial constraints and investment responses: younger firms typically face tighter credit conditions and respond more sharply to interest-rate changes than older counterparts (Cloyne et al., 2018; Dinlersoz et al., 2024).

firms. In order to introduce nominal rigidity in the supply side of the model, the intermediate good firms would be allowed to use Calvo (1983) price setting. This would ensure that the intermediate good producers face demand schedules based on the solution to final good firms' profit maximisation problem and, in turn, set their prices contingent on Calvo friction. The final good firms would operate under the assumption of perfect competition.

### Fiscal Authority

The government would act like a fiscal authority collecting revenue by taxing labour income. It would use the tax on labour income to finance its social security (pension) schemes. Moreover, to extend this research to the unconventional monetary setting, the government shall also issue and supply bonds with different maturities. In turn, the central banks would use these bonds to carry out their asset purchase program (quantitative easing).

### Central Bank

The central bank would be the authority setting the nominal interest rates in the economy following a Taylor rule in the conventional monetary setup. In the unconventional setup, it would purchase government bonds and, in turn, control the long-run rates in the economy.

### Calibration

The model will close with market-clearing conditions and key parameters—such as those governing wealth distribution, earnings dynamics, and household preferences—shall be calibrated to the Canadian data. The calibration will draw on macro-level national accounts and micro-level surveys—including the Canadian Income Survey (CIS), the Survey of Financial Security (SFS), and the Canada Mortgage and Housing Corporation (CMHC) datasets. These sources will help capture life-cycle profiles of consumption, labor income, and asset holdings, reflecting the heterogeneity observed across age cohorts.

Given the study's focus on borrowing constraints, granular data (e.g., LTV ratios, credit scores, and mortgage terms) will be incorporated. Specialized surveys, including the Survey of Household Spending (SHS), will provide additional detail on household indebtedness and credit conditions. For standard NK parameters (labor supply elasticity, Calvo probabilities), this research will adopt empirically grounded values commonly used in the literature.

## 4 Timeline and Deliverables

### Year 1 (Months 1–3)

- **Data Collection & Preparation:** Acquire and preprocess macro-level (national accounts) and micro-level (SFS, SHS, bank lending surveys) datasets.
- **Baseline Model Framework:** Formally integrate and solve the NK-OLG framework from Bielecki et al. (2022) under occasionally binding constraints to establish a mathematical benchmark,

providing the system of equations and conditions for subsequent computational implementation.

### Months 4–6

- **Implement Borrowing Constraints:** Introduce Kuhn-Tucker conditions across 80 cohorts; address computational challenges (e.g., large state spaces).
- **Preliminary Simulations:** Run test scenarios to ensure numerical stability; compare model output with basic stylized facts about housing and mortgage debt.

### Months 7–9

- **Calibration & Validation:** Use SFS, SHS, and mortgage-level data (LTV, credit terms) to calibrate the model, matching life-cycle profiles and borrowing behavior.
- **Refine Constraints:** Validate the binding constraints against bank lending surveys; adjust parameters for realistic leverage limits.

### Months 10–12

- **Policy Experiments & Counterfactuals:** Evaluate how ZLB conditions or monetary tightening redistribute wealth under binding constraints; conduct sensitivity analysis.
- **Manuscript Preparation:** Finalize drafts for leading journals and present findings at conferences and central bank workshops.

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