Monetary policy and the revaluation of debt

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Stanford & NBER

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Motivation

- Dollar = unit of account for many nominal debt contracts
  - inflation $\Rightarrow$ lower real value of dollar, nominal promises
  - wealth effects: good for borrowers, bad for lenders
- Two types of revaluation shock
  - surprise inflation: unanticipated increase in price level
    - ★ same % drop in real value for all promises, regardless of duration
  - surprising news about *future* inflation
    - ★ e.g. central bank announces higher inflation target
    - ★ smaller % drop in promises with short duration
    - ★ promises with short duration not affected by inflation in far future
- This talk
  - measurement of nominal position & exposure to revaluation shocks
    update of Doepke & Schneider 2006 JPE
  - aggregate & welfare effects in a model with heterogeneous households
    Doepke-Schneider-Selezneva 2018

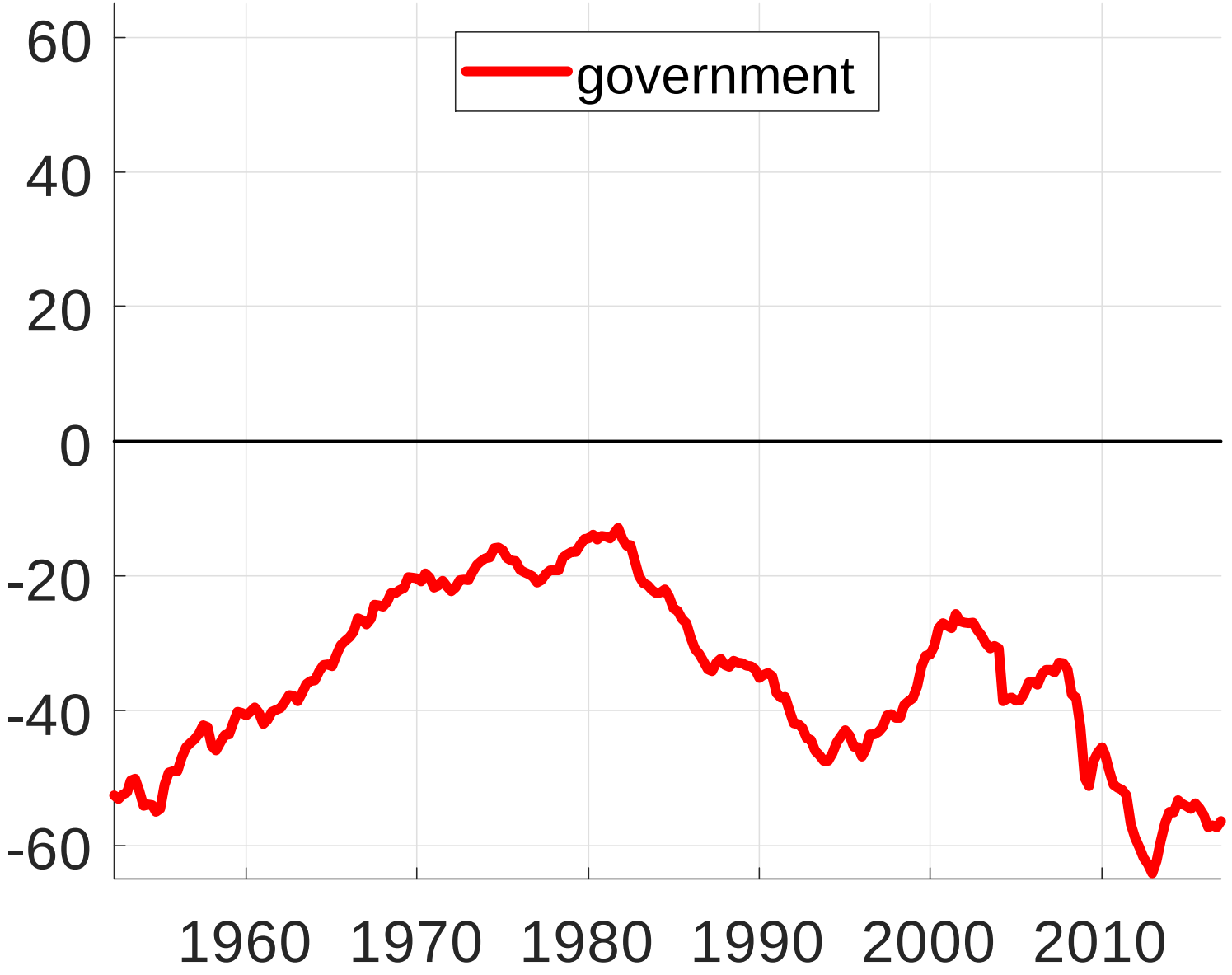
Sectors, asset & net nominal positions

- Net Nominal Position (of a sector or individual household)

$$NNP := \text{nominal assets} - \text{nominal liabilities}.$$

- Sectors
  - consider: households, government, rest of the world
  - consolidate: business, including financial intermediaries.
- NNP contains
  - nominal assets held indirectly through mutual funds, DC pension funds
  - nominal debt owed indirectly through ownership of equity
- Data
  - Flow of Funds Accounts $\longrightarrow$ sectoral positions
  - Survey of Consumer Finances $\longrightarrow$ distribution of households
- Construct payment streams for all nominal instruments
  - restate positions at market value
  - measure duration by position: important for revaluation exercises

Net nominal positions by sector, % GDP



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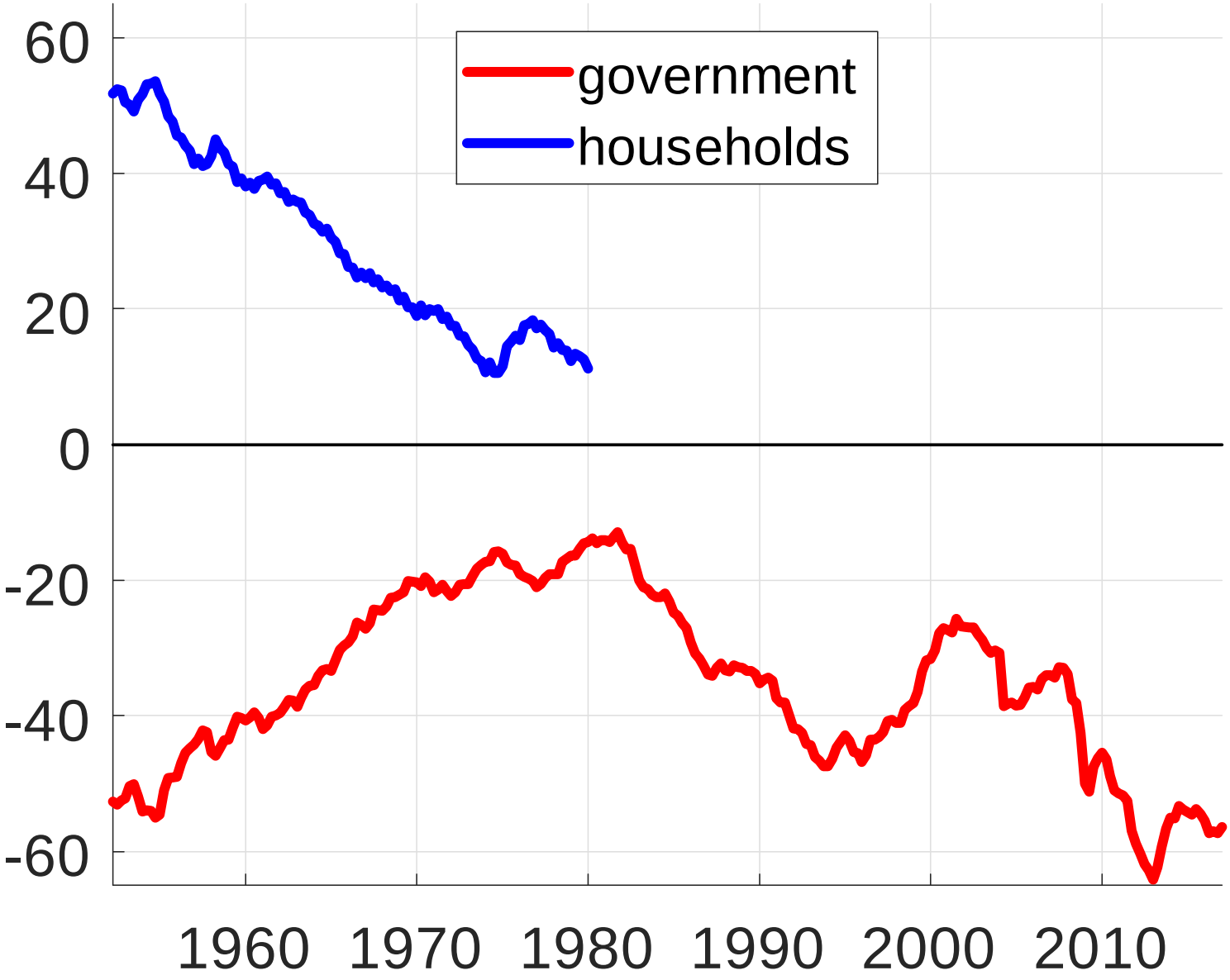

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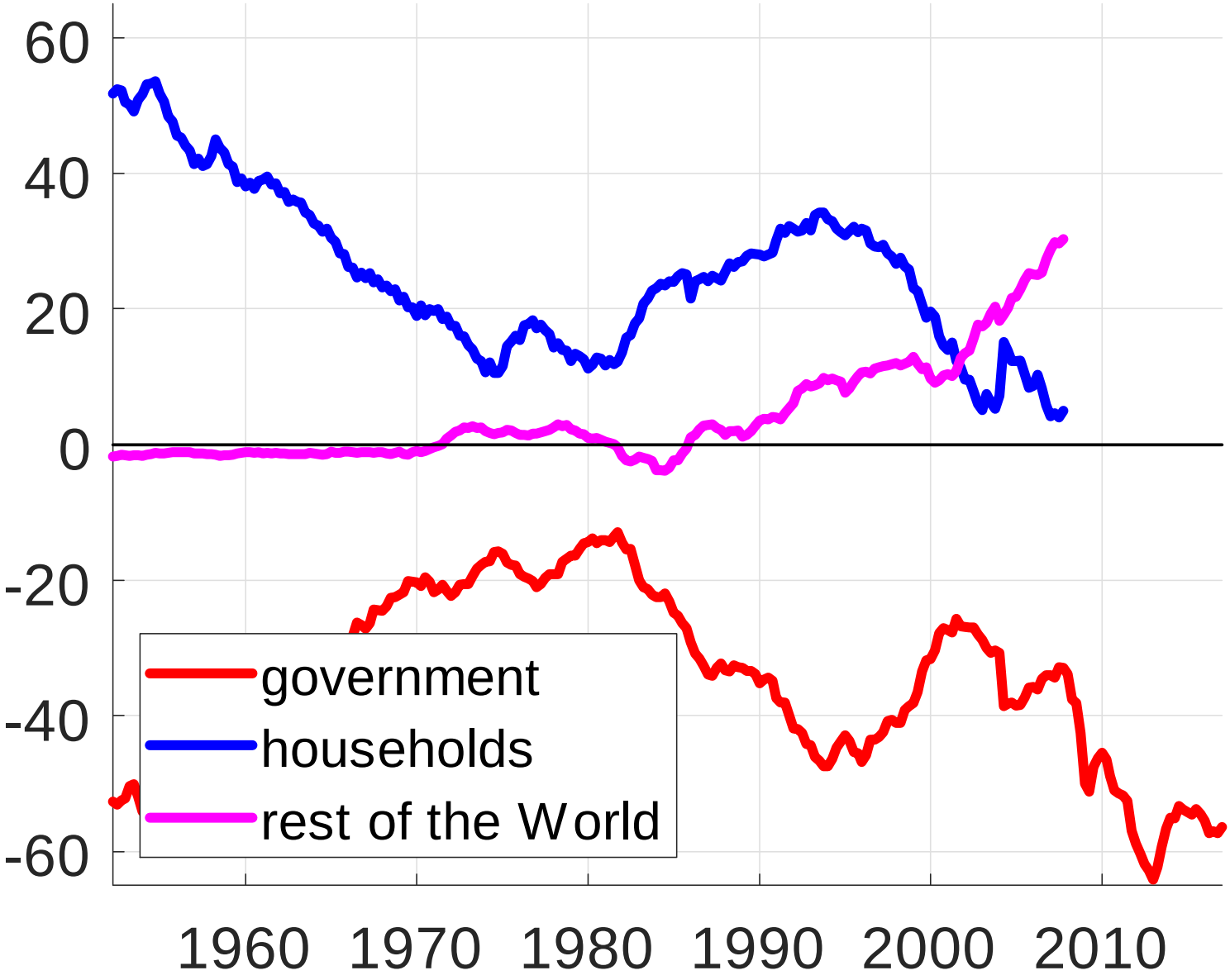

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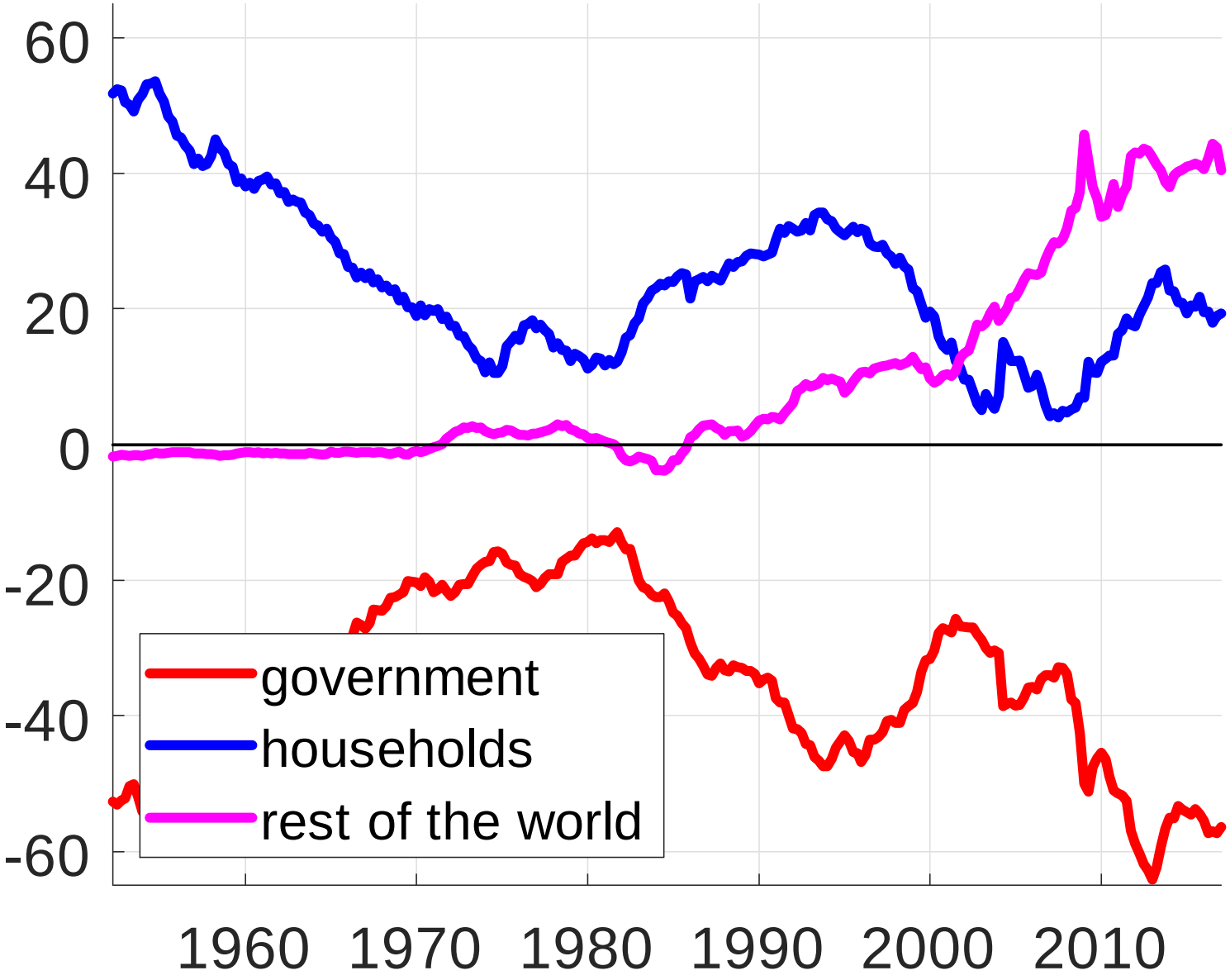
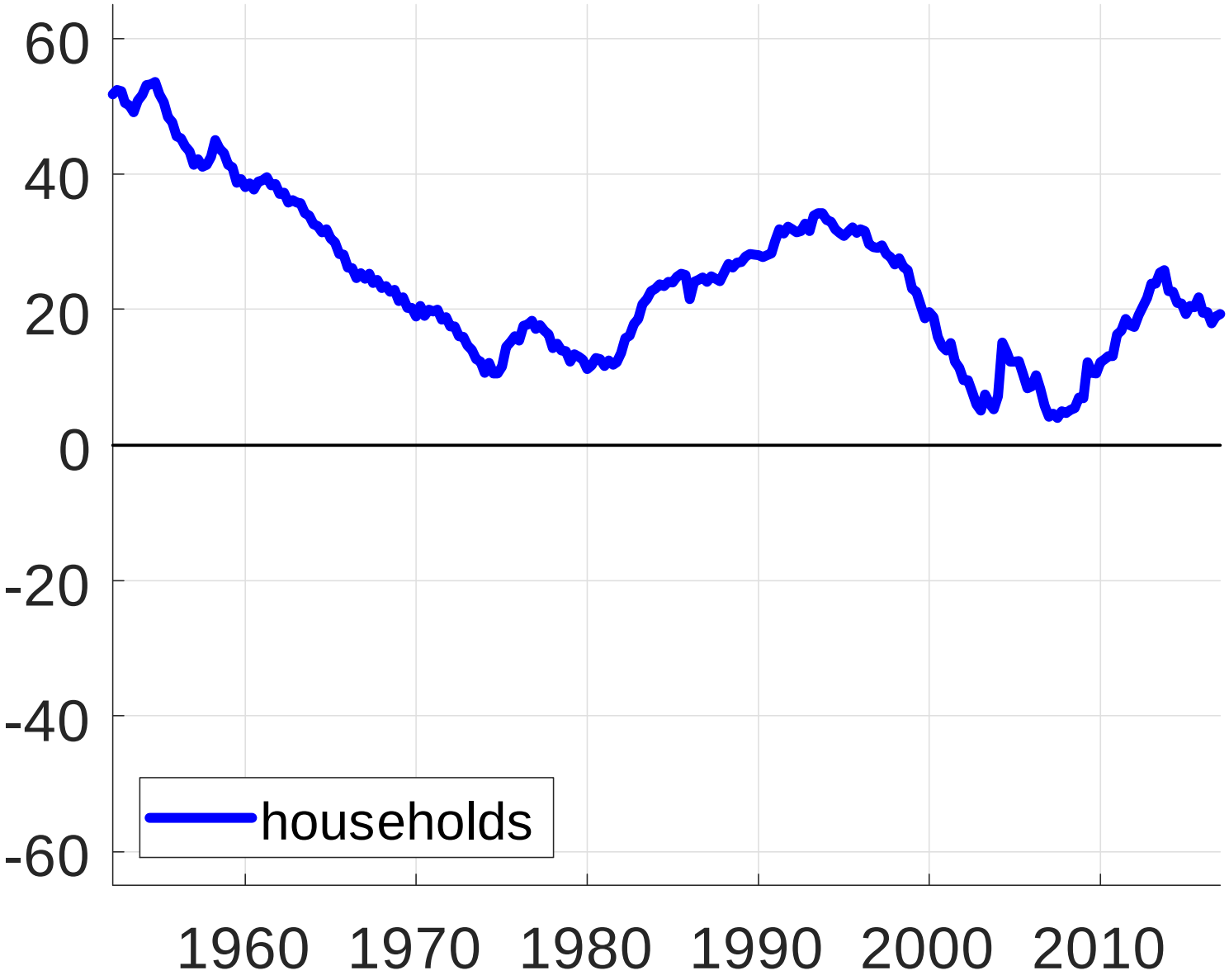


Household nominal positions: role of indirect debt



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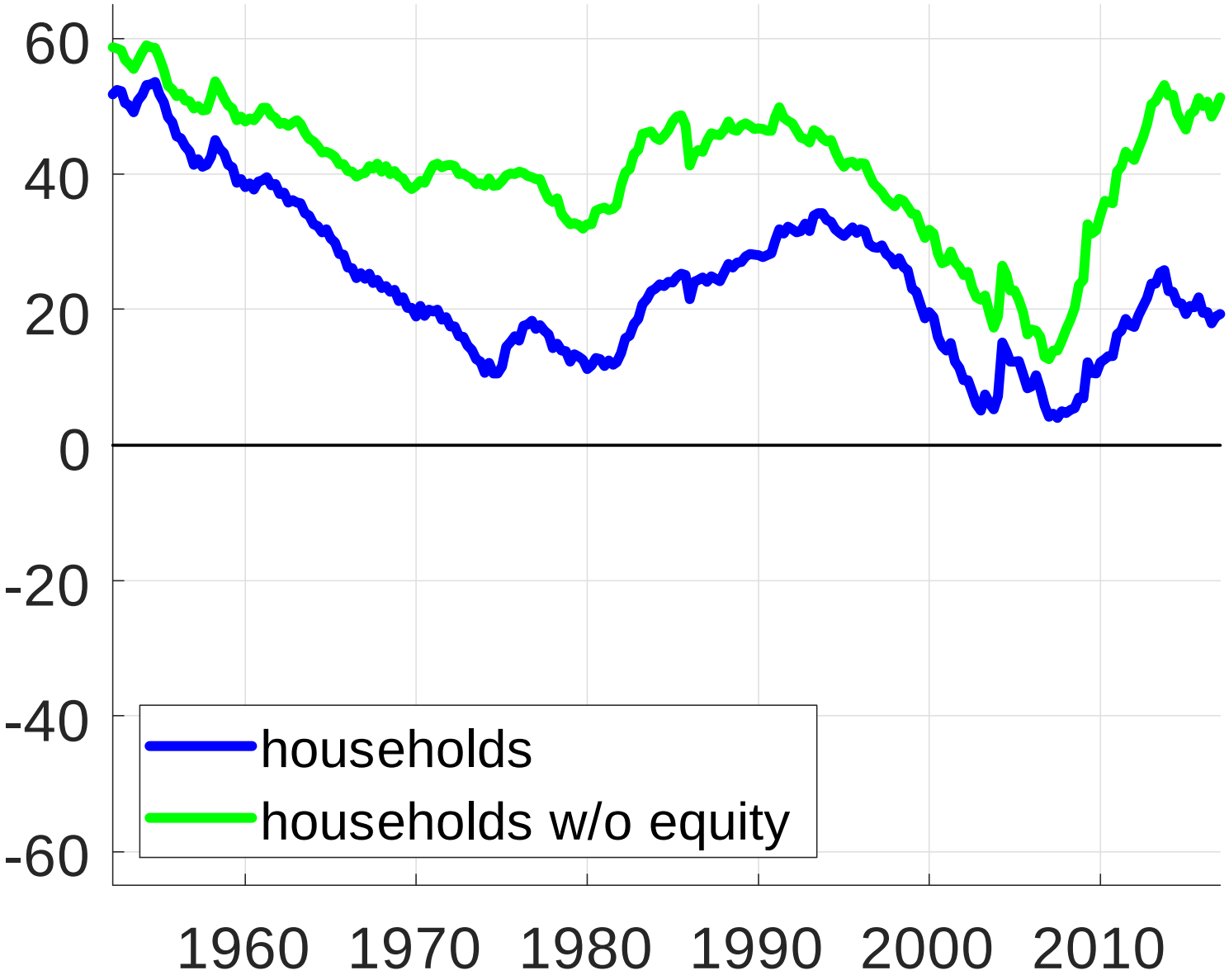

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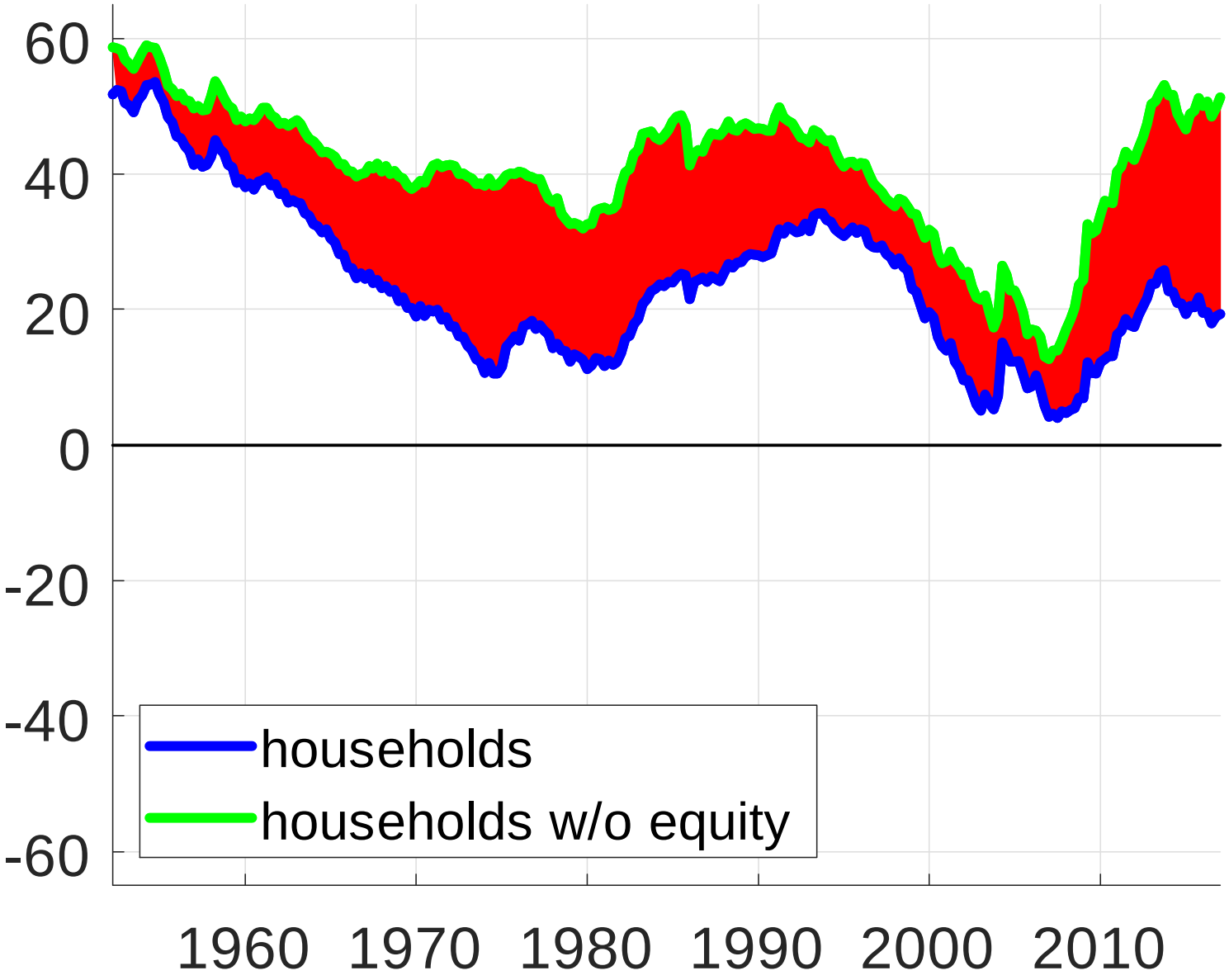
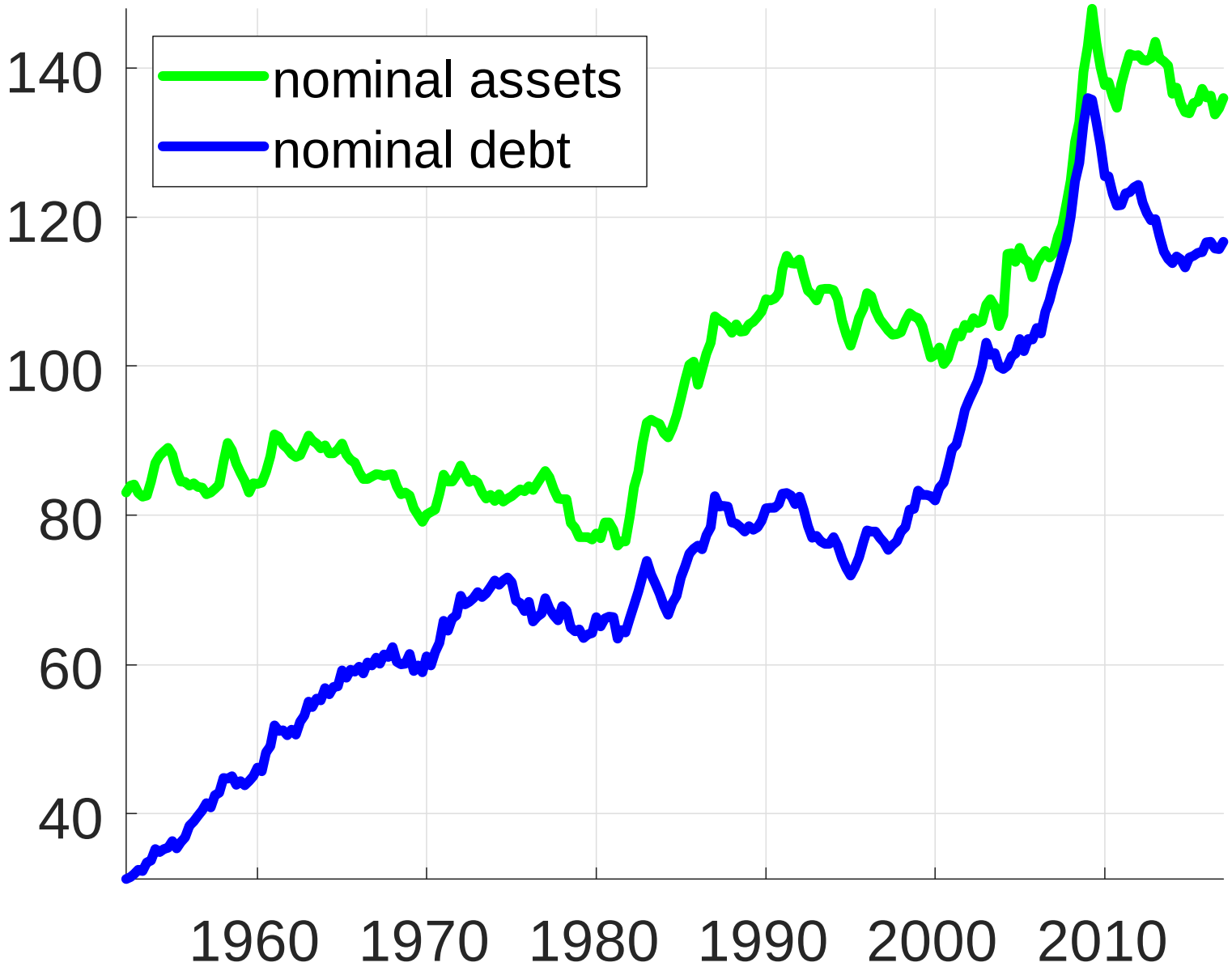


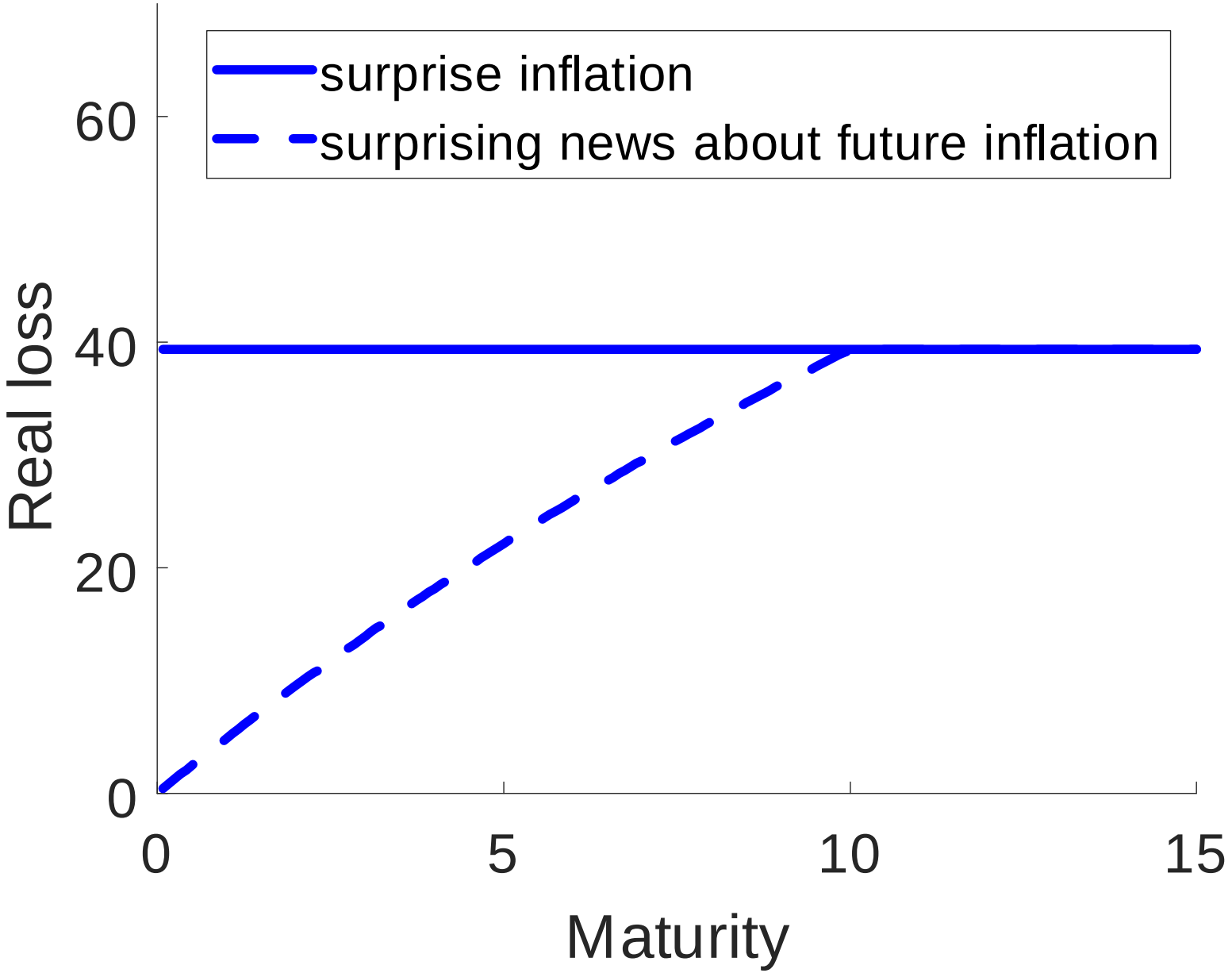
Gross household positions, % GDP



Revaluation shocks

- Inflation episode: 5% higher inflation for 10 years
- Two thought experiments
  - surprise inflation: one time unanticipated increase in price level
    - ★ same % drop in real value for all positions; upper bound
  - surprising news about *future* inflation
    - ★ smaller % drop in promises with short duration; lower bound
- Gains & losses on gross household positions
  - compute hypothetical gains & losses for each date
  - surprise inflation: gains $<$ losses – households net lenders
  - surprising news: gains $>$ losses recently – hh lend short, borrow long
- Net gains by group of households for SCF year 2013
  - consider only news: what if higher inflation target announced in 2013
  - rich = top 10% NW, poor = bottom 20% NW, middle class = rest
  - redistribution: old rich $\Rightarrow$ young middle class

Losses on zero coupon bonds by maturity in %



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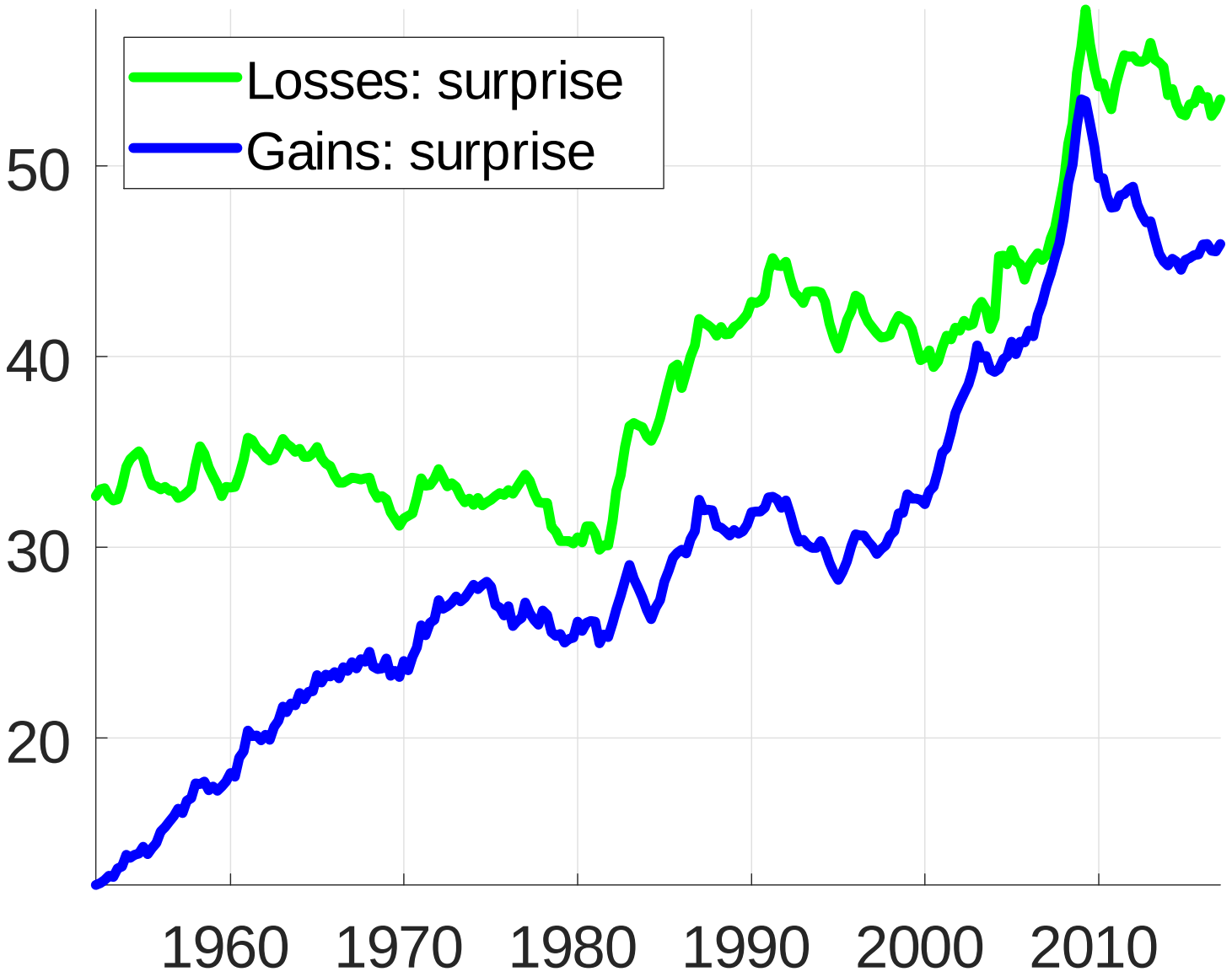

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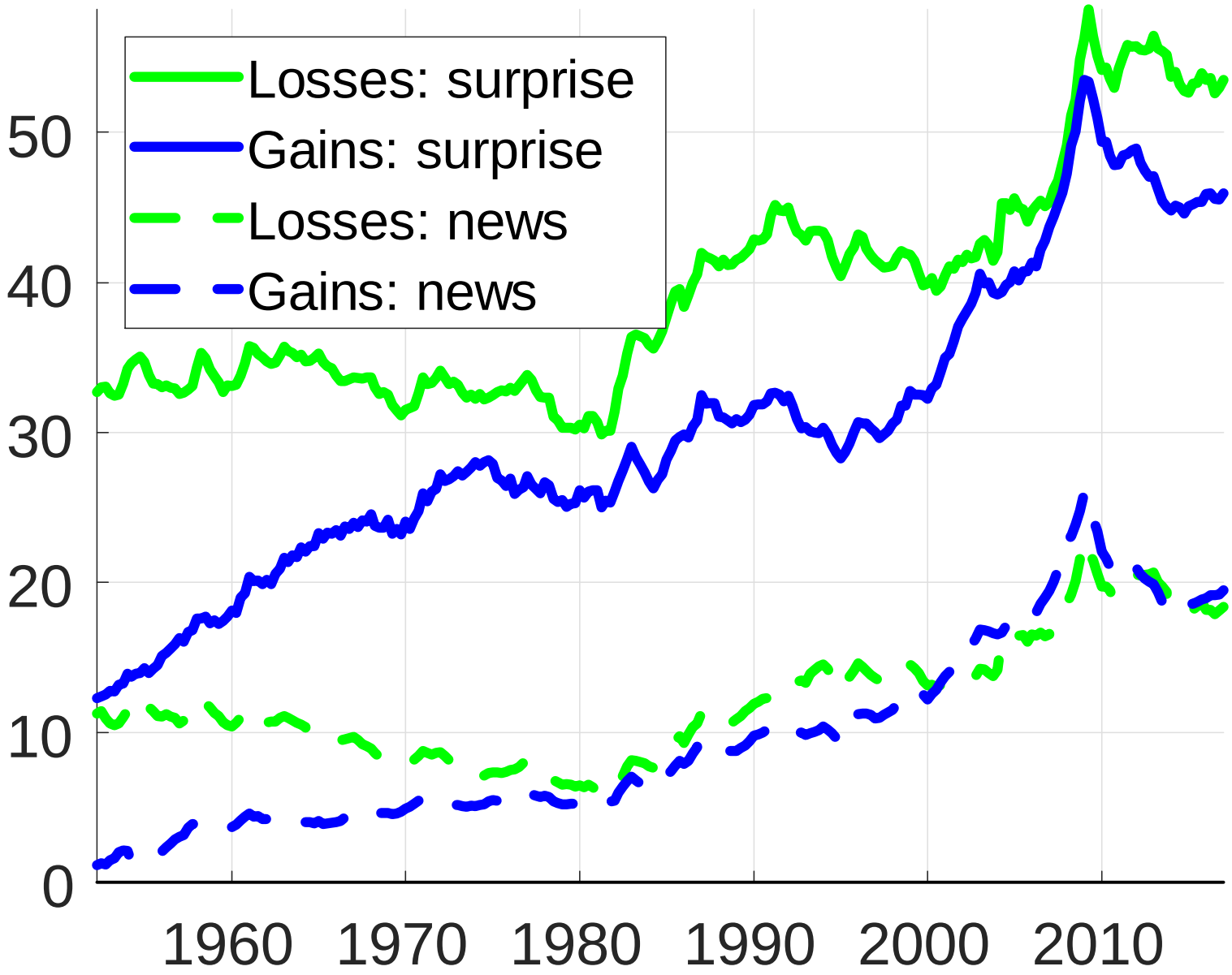

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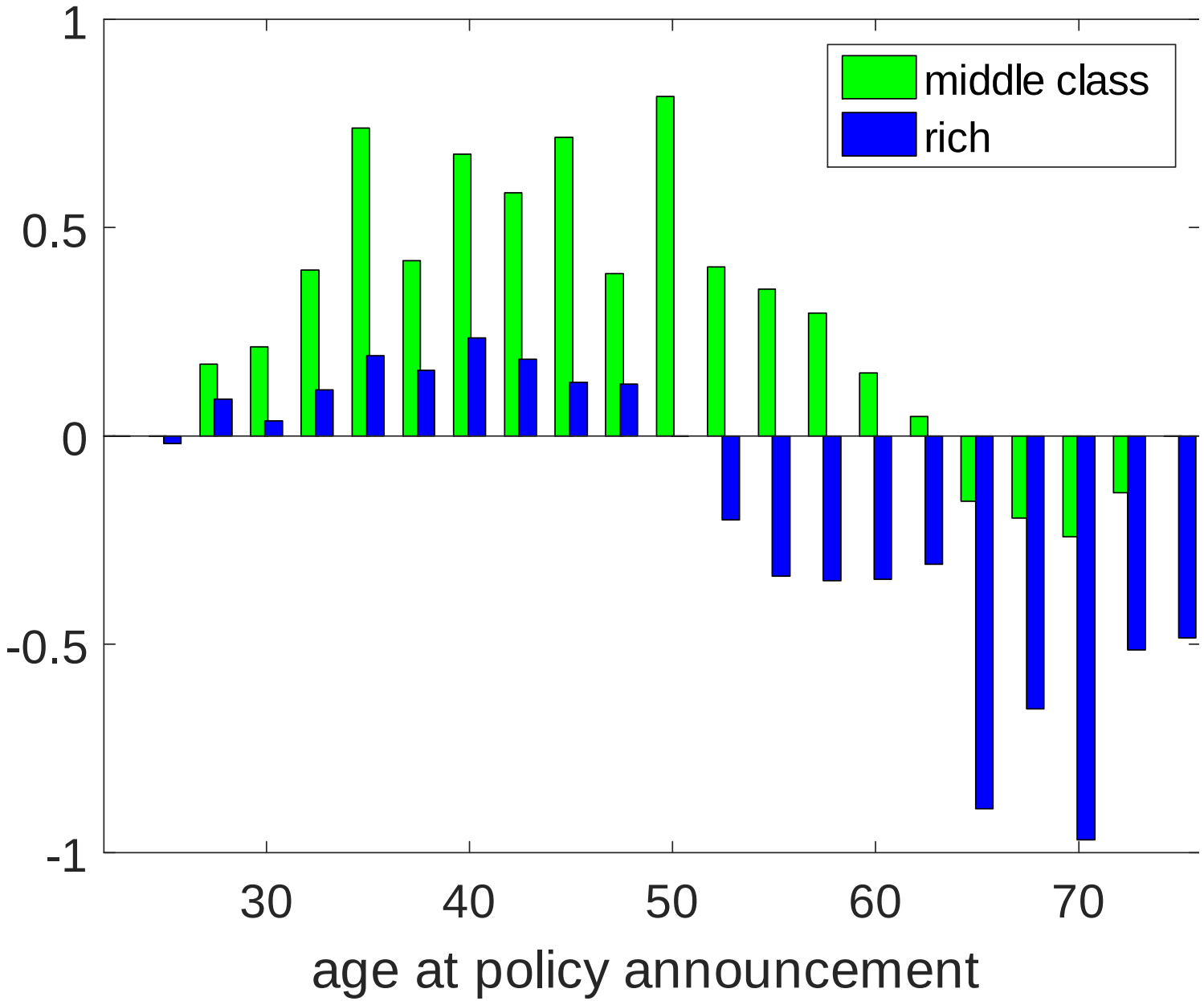
Redistribution among household groups, % GDP



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- *How do people respond? Study aggregate & welfare effects in model!*

Model overview

- Small open economy; no aggregate uncertainty
  - leisure, housing services, other consumption (numeraire)
- Housing
  - indivisible units differ by service flow; baseline: fixed distribution
  - competitive markets for service flow (rent), houses (house prices)
- Other assets
  - borrowing & lending at world interest rate
  - collateral constraint: borrowing $\leq$ house value $*$ (max LTV)
- Overlapping generations of households
  - differ in preferences: discount factor, housing tenure
  - differ in skills: permanent differences + idiosyncratic shocks
  - warm glow bequests
- Rest of economy
  - competitive CRS firms produce numeraire from capital & labor
  - government: income tax, spending, social security

Quantitative exercise

- Calibrate to aggregates & SCF data for 2013
  - match income & portfolios by age & net worth
- Revaluation shock: unanticipated increase in inflation target
  - 5% for 10 years: real wealth transfers by group of household
  - also gains for government & households, loss for rest of the world
  - redistribution occurs only in first period
- Compute transition path
  - impulse responses for individual actions, aggregates, welfare
  - fiscal policy: gradually adjust spending towards new steady state, income tax adjusts to satisfy budget constraint
- Aggregate effects if responses of winners & losers do not cancel
  - winners younger & have lower MPCs: consumption falls
  - losers retired, winners working: labor supply falls
  - persistent effects: propagation via wealth distribution

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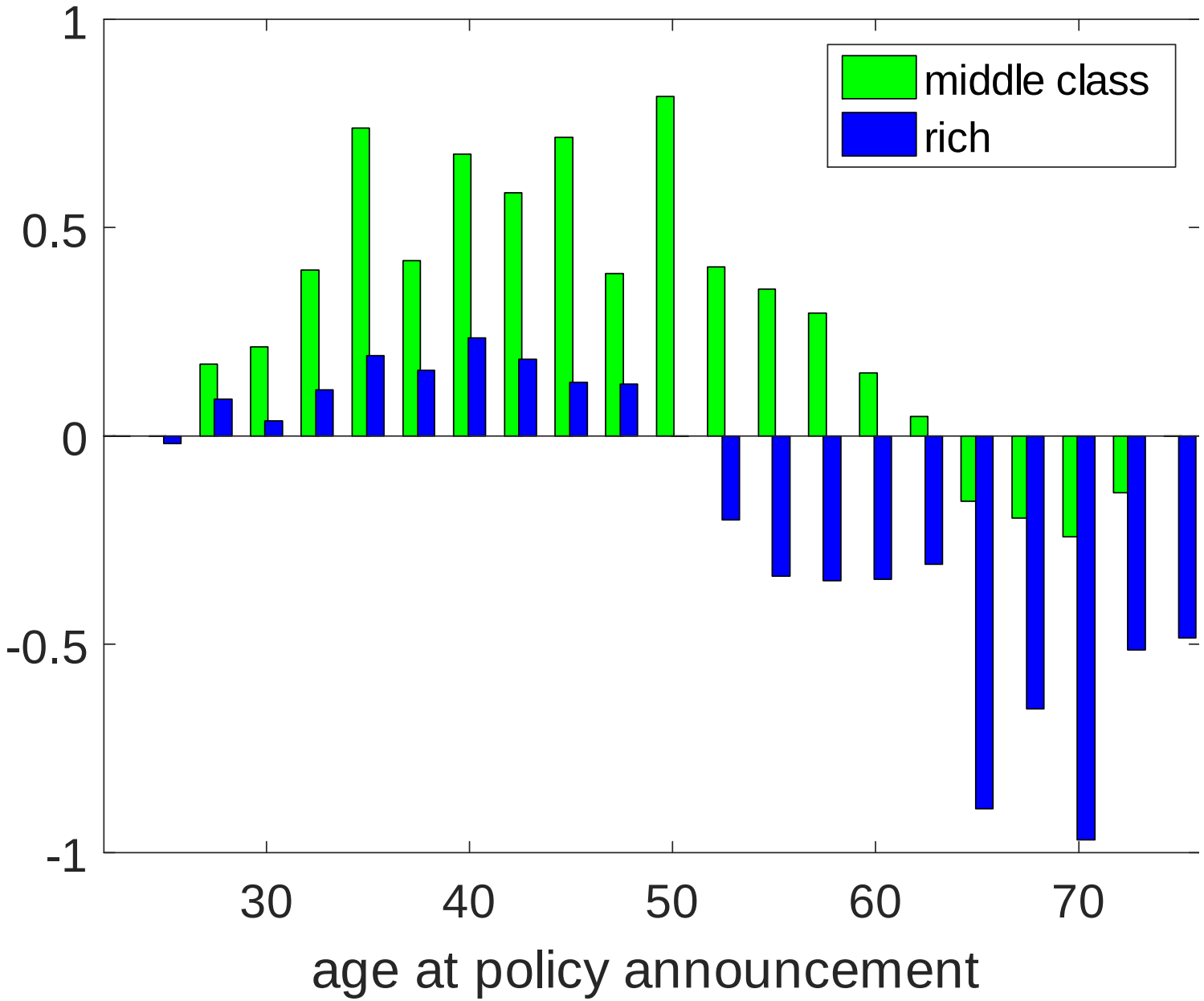
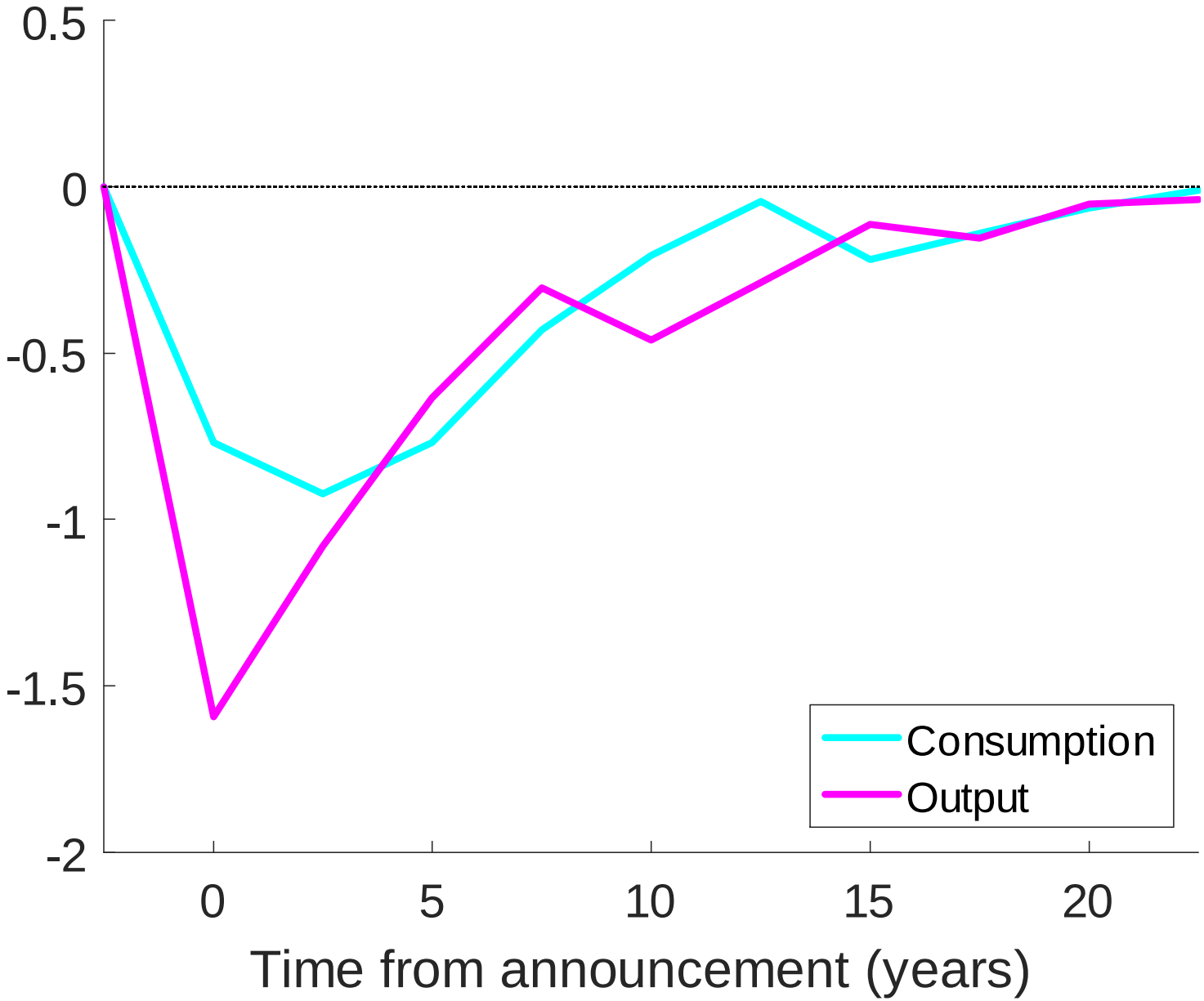
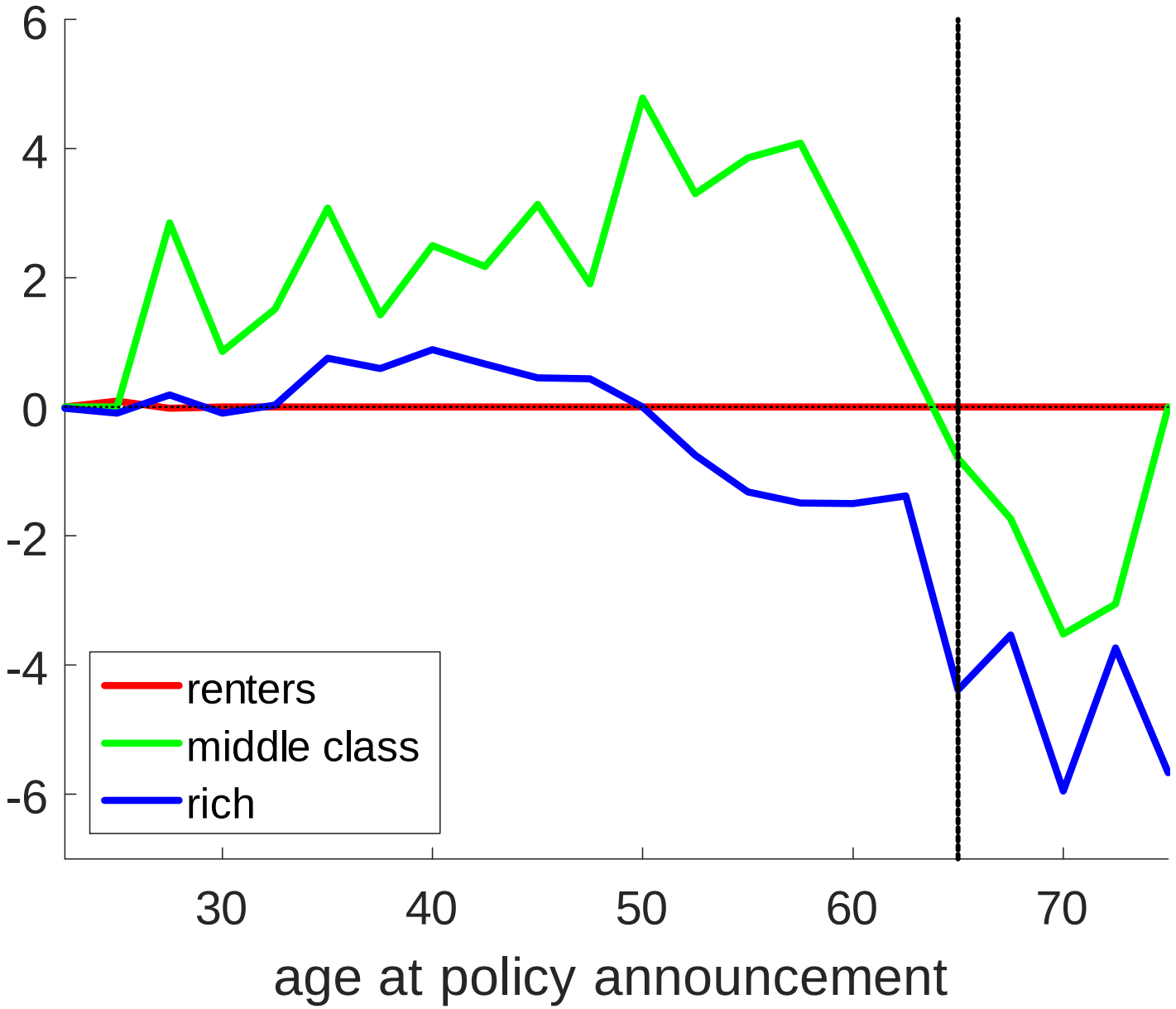


Aggregate consumption & output (% steady state)



Welfare by group (% equiv. consumption for life)



Conclusion

- Monetary policy as a revaluation shock
  - large gains for government, losses for foreigners
  - large heterogenous welfare effects
    - ★ net borrowers win, especially middle-aged middle class
    - ★ net lenders lose, especially rich retirees
  - moderate but persistent changes in aggregates
  - role of housing if fixed factor
    - ★ savings responses move house prices, not capital stock
    - ★ price move at high end: middle class tries to upgrade
- Movements in real interest rates
  - matter in closed economy, especially with nominal rigidities
  - wealth effects + income & substitution effects (Auclert 2018 AER)
- Price stability & choice of unit of account
  - Doepke-Schneider 2017 Ecma: why a dominant unit of account?
    - ★ coordination minimizes mismatch of assets & liabilities in credit chains
    - ★ optimal unit comoves with assets of likely borrowers & is stable in value
  - recent literature in international finance on choice of dollar