Introduction and Roadmap

- Quantifies the redistributional effects of inflation

- Document nominal asset positions in US
  - Across sectors (household, rest of the world, government)
  - Across households (by age and income/wealth)

- Redistributional effect of an unexpected inflation episode
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Nominal Assets and Liabilities in the U.S. Economy
Net Nominal Positions (NNP)

(market value nominal assets) - (market value liabilities)

- Includes indirect positions
  - Ex: ownership of mutual funds or a firm
- Nominal payoff fixed by contract
  - \( \{v_{t,s}^j\}_s \): deterministic sequence of payments
  - \( j \)=instrument; \( t+s \)=date of payment
  - Ex: n-zero coupon bond \( v_t^n = (0,0,1,0,\ldots) \)
- Market value
  \[
  M_t^j = \sum_{s=1}^{\infty} \exp (-i_{t,s} s) v_{t,s}^i
  \]
  - \( i_{t,s} \): nominal i-rate of a s-zero coupon bond
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- Challenge
  Real world (\(v\) is state contingent); Here (\(v\) is deterministic)
Net Nominal Positions By Sectors (% GDP)
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Before 80’, households are creditors/ the government is a debtor
Net Nominal Positions By Sectors (% GDP)

After 80’, the rest of the world is a creditor
Net Nominal Positions By Sectors (% GDP)

After 2000, the RoW is the main creditor of the gov.
Net Nominal Positions By Sectors (% GDP)

In 2000, RoW and households are equal creditor
Sectoral Positions Maturities

- **Value-weighted average maturity**

\[ D^j_t = \sum_{s=1}^{\infty} s\omega^j_{t,s} \quad \text{with} \quad \omega^j_{t,s} = \frac{\exp(-i_{t,s}s) v^j_{t,s}}{M^j_t} \]

  - \( \omega^j_{t,s} \): discounted relative payment at period \( t+s \)

- **Direct position**
  - Direct held asset/liability
  - Ex: Households buy a U.S. Treasuries

- **Indirect position**
  - Direct position + claims on investment intermediaries and firms
  - Ex: Households buy a share of a firm that holds U.S. Treasuries
Maturities by Sectors
Maturities by Sectors

Before 80’, decreasing maturity of households assets (=gov. debt)
Maturities by Sectors

Recently, maturity increases across sectors
Maturities by Sectors

Households: ↑ Mortgage finance with long-term bond
Maturities by Sectors

Large maturity mismatch in the rest of the world
Net Nominal Positions Across Households

- Report for 1989

- Divide households by
  - **Cohorts**: household head age ≤35, 36-45, ..., 66-75, ≥76
  - **Rich**: 10 % of households with highest net worth
  - No Rich:
    - **Middle Class**: 70 % of households with highest income
    - **Poor**: 20 % of households with lowest income

- Report Net Nominal Positions / net worth
## Net Nominal Positions Across Households

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Facts to Remember After 1980

- Government
  - Debtor

- Rest of the world
  - Creditor
    - Large maturity mismatch (short M. liabilities/long M. assets)

- Households
  - Creditors (long maturity liabilities)
  - Young households are debtors
    - Middle class larger debtors with long maturity
    - Poor are debtors with short maturity
  - Old households are creditors
    - Middle class: larger creditors with short maturity
    - Rich: smaller creditors with long maturity
Experiment

An increase of 5% of inflation over the next 10 years (in 1989/2001)
Redistribution Under Two Scenarios

- Full Surprise (FS): jump of the value of a dollar at date \( t \)

\[ M_t^{j,\text{FS}} = \exp(-\Delta T) M_t^j \]

  - \( \Delta \): annual inflation
  - Independent of the maturity

- indexing ASAP (IA): perfect adjustment in the (intertemporal) price of a dollar

\[ M_t^{j,\text{IA}} = \sum_{s=1}^{\infty} \exp(-\tilde{i}_t, ss) v_{t,s} = \sum_{s=1}^{\infty} \exp(-i_t, ss - \Delta \min\{s, T\}) v_{t,s} \]

  - Real i-rate doesn’t change \(((\uparrow)i = (=)r + (\uparrow)\pi)\)
  - Dependents of the maturity
FS/IA with a n-year zero coupon bond
Redistribution through Maturity

the maturity of assets is here

zero initial net nominal position

Positive transfer of wealth in the IA experiment

the maturity of liabilities is here
Redistribution Across Sector (% GDP)

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1. Government: clear winner

2. Rest of the World: clear loser
   - Implicit default on debt
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2. Young middle class: big winners under FS/IA

3. Young poor: small gain under IA (short maturity of liabilities)

4. Old middle class: large share with short maturity

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