YCC in Japan

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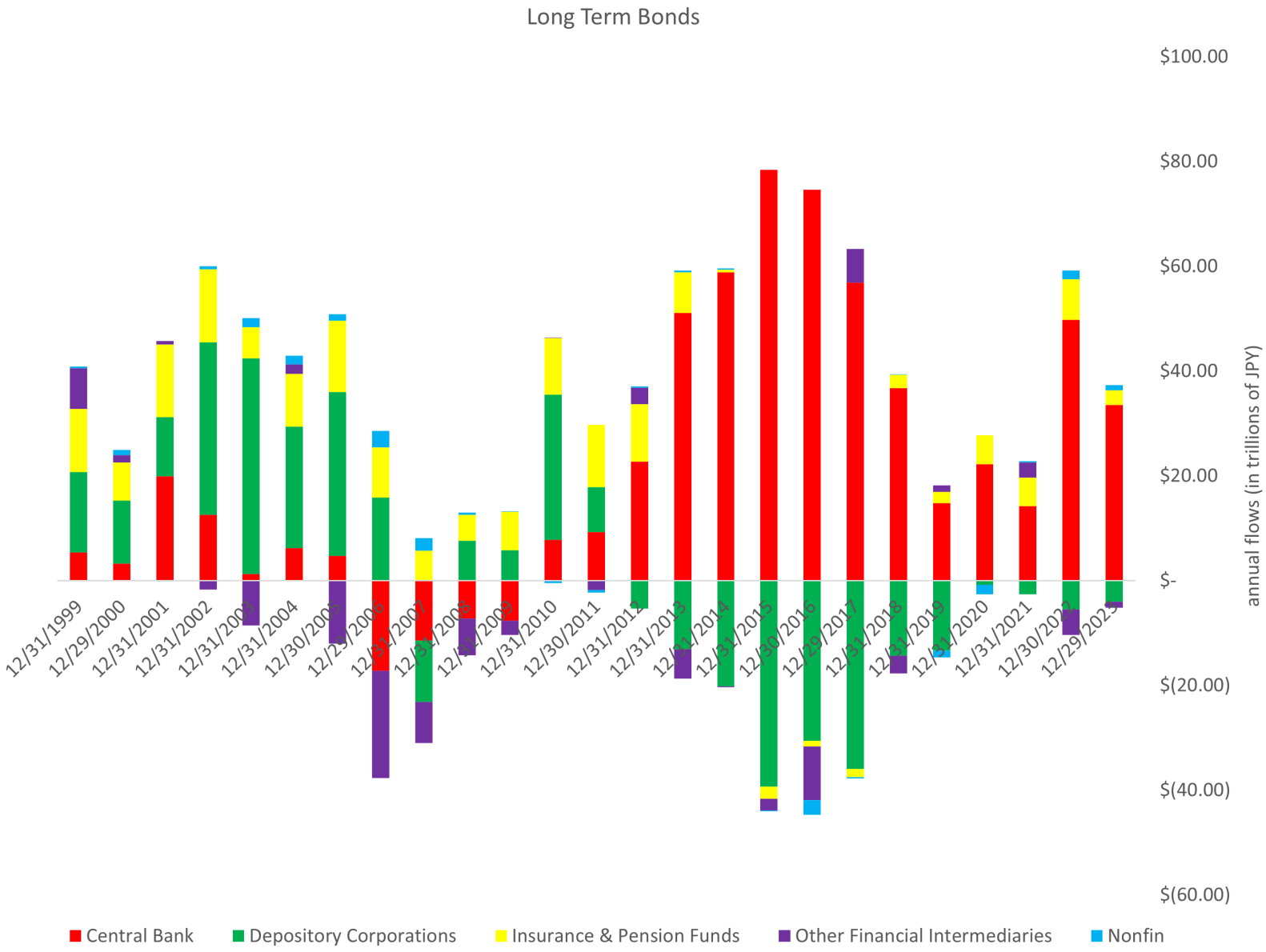
Timeline BoJ policies

- Japan had been stuck in a low-growth regime since the mid-1990s.

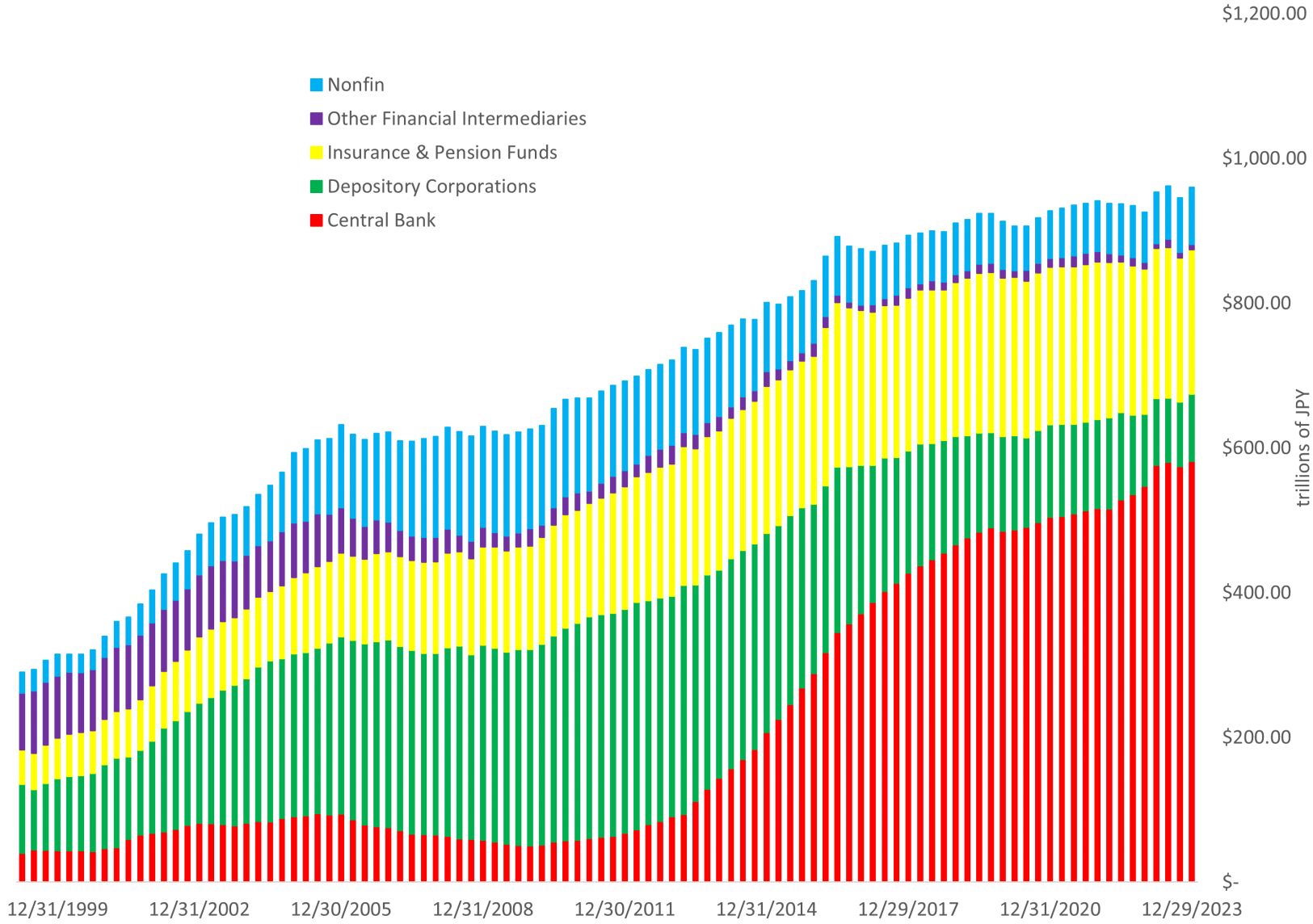
  1. 1999: the BoJ commits to holding short-term rates at zero.
  2. 2001: the BoJ starts LSAPs.
  3. 2012: the BoJ steps up LSAPs.
  4. 2016: the BoJ shifts to yield curve control (YCC). (**signaling/announcement effect**)

     - 2016: Target yield of 0% for 10-year JGB.
     - 2021: BoJ raises cap to 0.25% for 10-year JGB.
     - 2022: BoJ raises cap to 0.5% for 10-year JGB.
     - 2023: BoJ raises cap to 1% for 10-year JGB.
     - 2024: BoJ abandons YCC.

Japanese Government Bond Purchases.



Japanese Government Bond Holdings.



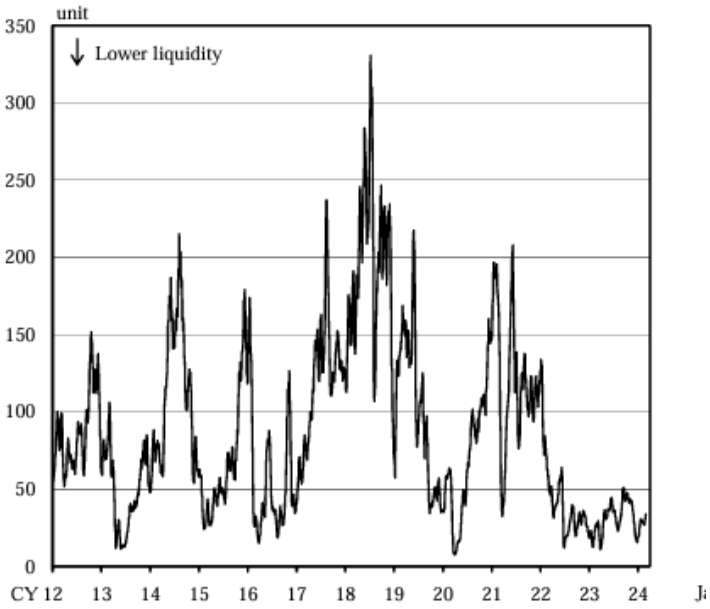
YCC In Japan

- Koeda and Wei (2024): Technical question; How did the BoJ pull this off?

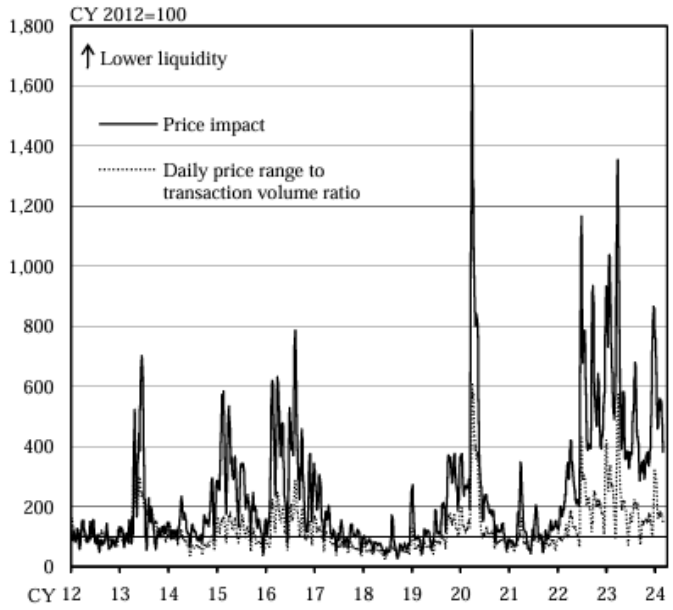
- Distinguish between YCC Purchases and QE Purchases.
- **High-frequency event-study approach**:
  - Only narrow effects of YCC Purchases on yields.
  - Broader impact of YCC announcements on yields. (**signaling/announcement** effect)
- **Dynamic Term Structure Models for JGBs.**
  - Neoclassical/No-arbitrage models with perfectly **elastic** demand.
    - BoJ provides perfectly **inelastic** demand at set rates for JGBs.
- Alternative: **Demand-based asset pricing models** a la Koijen, Yogo and Koijen, Yogo and Richmond: Substitution between JGBs and other securities.

Japanese Government Bond Purchases.

(1) Volume of Orders at the Best-ask Price



(2) Price Impact



- JGB Market dysfunction?
  - Volume on benchmark JBG ↘
  - Market depth ↘
  - Price Impact ↗

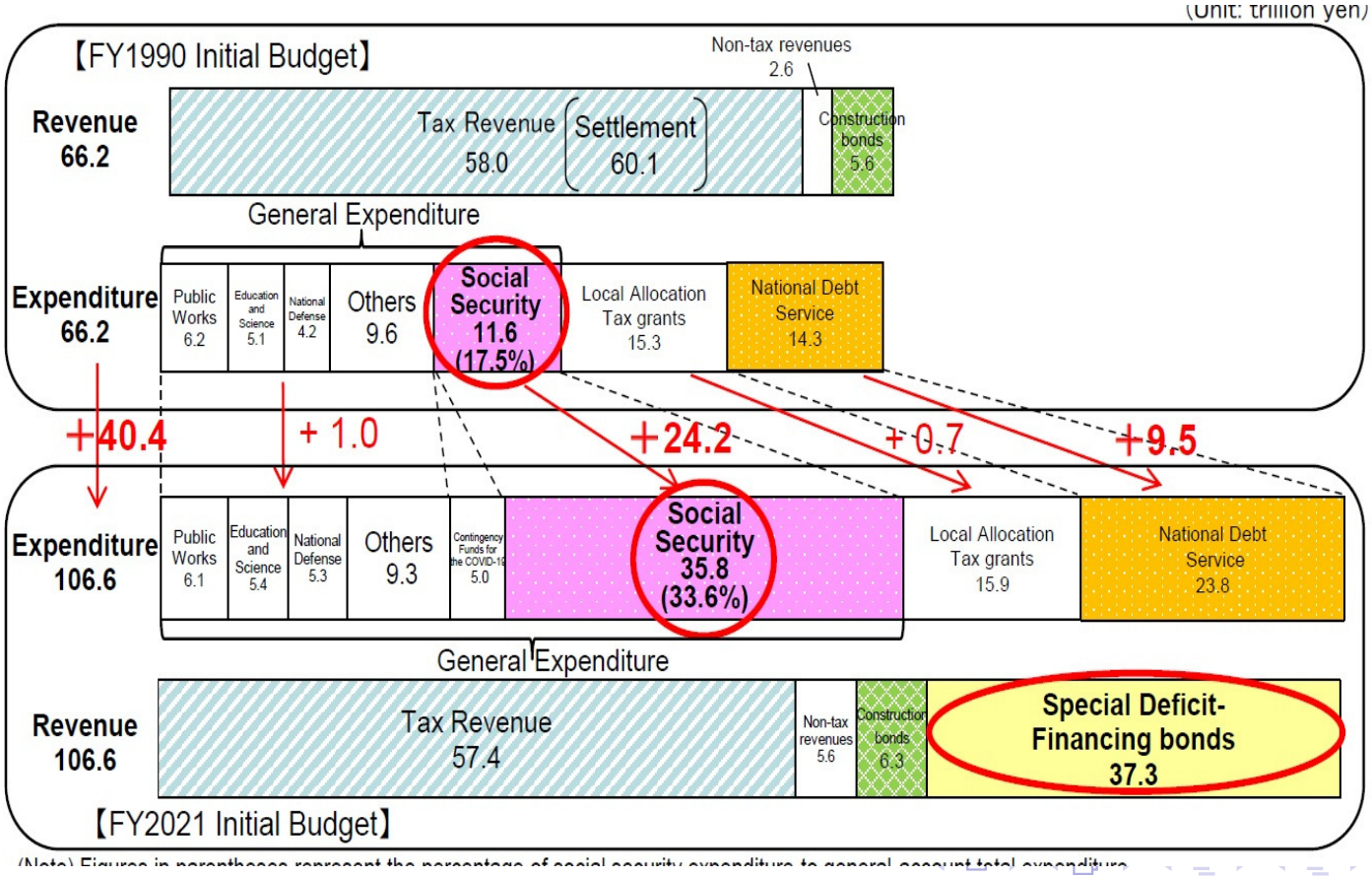
(Liquidity Indicators in JGB Market, March 29 2024, BoJ)

Price Discovery

- Broader question: is YCC a good idea?
- How much active price discovery is going on in JBG market?
- Are bond traders pricing news about fundamentals into bond prices or news about BoJ's willingness to buy more JGBs?

Fiscal Backdrop

- Advanced economies experiencing demographic transition and growth slowdown.
  - Governments projected to run large deficits and run up debt/output ratio as a result.
- Japan at leading edge of transition: cumulative primary deficit of 131% of GDP between 1997 and 2023.



BOJ Balance Sheet

- BOJ launched QE in 2001
- BOJ adopted YCC in 2016

% of GDP, Year End	1997	2010	2023
Assets			
Domestic Loans	4.2%	8.6%	17.1%
Bonds & T-Bills	**9.6%**	**15.5%**	**99.2%**
Equities	**0%**	**0.4%**	**10.7%**
Liabilities			
Currency	10.8%	17.2%	21.6%
Bank Reserves	**0.6%**	**4.5%**	**90.9%**
Others	0.1%	0.4%	10.3%

Consolidated Balance Sheet (BoJ + Gen Gov't + PFIs)

- Shortening Duration of Liabilities.

% of GDP, Year End	1997	2010	2023	97 to 23 Diff
Assets				
Gold, SDRs, and Deposits	6.6%	8.3%	19.1%	12.6%
Domestic Loans	**102.8%**	**68.2%**	**60.7%**	**-42.1%**
Other Domestic Securities	5.7%	22.9%	0.7%	−4.9%
Domestic Equities	**12.1%**	**22.4%**	**41.9%**	**29.7%**
Foreign Securities	**6.8%**	**22.9%**	**56.1%**	**49.3%**
Sum	**133.9%**	**144.7%**	**178.5%**	**44.6%**
Liabilities				
Currency	10.8%	17.2%	21.6%	10.9%
Bank Reserves	**0.6%**	**4.5%**	**90.9%**	**90.3%**
Bonds & T-Bills	**44.9%**	**172.0%**	**117.3%**	**72.3%**
Loans	55.1%	48.9%	35.9%	−19.2%
Deposits FILF	**46.4%**	**0.9%**	**1.9%**	**-44.6%**
Sum	**158.6%**	**248.1%**	**273.0%**	**114.4%**
Net Liabilities	**24.7%**	**103.3%**	**94.5%**	**69.8%**

Duration Mismatch on Japanese Gov't Balance Sheet

- Carry trade of 1.7 $\times$ GDP: Government expects to earn an additional 3.1% of GDP from its risky investments.
  - Risky maturity transformation on a large scale by borrowing at *floating rates* and investing in *long-duration* assets.
  - Q.E. is essentially a giant floating-for-fixed swap.
- **Duration mismatch** on JP's consolidated government balance sheet.
  - A decrease in real rates increases government's spending possibility set, because
    1. Net debt position has negative duration,
    2. But its future surpluses have long duration.
- Extra fiscal capacity created (destroyed) when rates decline (increase).
- Real rates can't go up (without destroying fiscal capacity).

Traditional Macro View

- Advanced economies experiencing
  1. Demographic transition (see, e.g., Auclert et al., 2021) and
  2. Secular stagnation (see, e.g., Eggertsson et al., 2016).
  3. Increase in inequality (Mian et al., 2020)
- Forces lead to lower equilibrium long-run real rates (neutral w.r.t. monetary and fiscal policy).
- Creates extra fiscal capacity (Blanchard, 2019; Mehrotra and Sergeyev, 2021)
- Economies bump into ZLB and CBs deploy large-scale asset purchases and YCC to lower long-term nominal rates.
  - Guided by r^* estimates. (Laubach and Williams, 2003, 2016; Holston et al., 2017)

Alternative (Complementary) View

- Advanced economies experiencing:
  1. Demographic transition
  2. Secular stagnation
- Forces lead to large governments deficits.

- Financial repression: Governments resort to measures to lower real rate on government debt *in order to create extra fiscal capacity*.
  - CBs deploy large-scale asset purchases and YCC just to lower long-dated real rates .
  - Government debt appears expensive.
- Heterogeneity in duration of HH fin. wealth $\Longrightarrow$ increased wealth inequality (Auclert, 2019; Greenwald et al., 2022)

Japanese Financial Repression

- Prior to 2001: Cheap funding for government.
  - Participation by HH in capital markets was expensive (Hoshi and Kashyap, 1999).
  - HH Trapped in deposits:
    - **Interest rate ceilings** on deposits.
    - HH Deposits at Japan Post and pension fund reserves required to fund FILF (Fiscal Investment and Loan Program).

- Post-2001 liberalization: Alternative sources of cheap funding.
  - Replacing FILF deposits with bank reserves at BoJ: BoJ starts large scale asset purchases (2001)
  - BoJ starts YCC (**interest rate ceiling**) (2016).
  - Domestic market segmented by large CIP deviations.

Japanese HH Balance Sheet: Trapped in Deposits.

	Japan		U.S.	
% of GDP, Year End	1997	2023	1997	2023
Assets				
Currency and Deposits	128%	189%	42%	61%
Other Securities	16%	5%	30%	22%
Equities	16%	46%	125%	199%
Insurance & Pension	63%	90%	110%	118%
Liabilities				
Loans	65%	62%	62%	69%

- Compare duration of $c - y$ to duration of financial wealth θ.
- The welfare gain: (Greenwald et al., 2022; Fagereng et al., 2022):

$$Welfare\ gain_j(\theta, z) \approx \left(D^{c-y} - D^{\theta}\right) \theta_0 \times d \log R.$$

- Assumption: Euler equation holds.
- We compute D^{c-y} for X-section of Japanese households.
- Large Welfare losses for young non-participants.

Conclusion

- Japanese government engaged in risky maturity transformation.
- Japanese government has engineered large maturity mismatch between surpluses and (net) debt.

- Duration mismatch on government balance sheet: fiscal capacity boost from lower real rates
- Duration mismatch on HH balance sheet: large welfare losses (gains) for young non-participants (older participants)

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