

Discussion of "Duration Effects in Macro-Finance Models of the Term Structure"

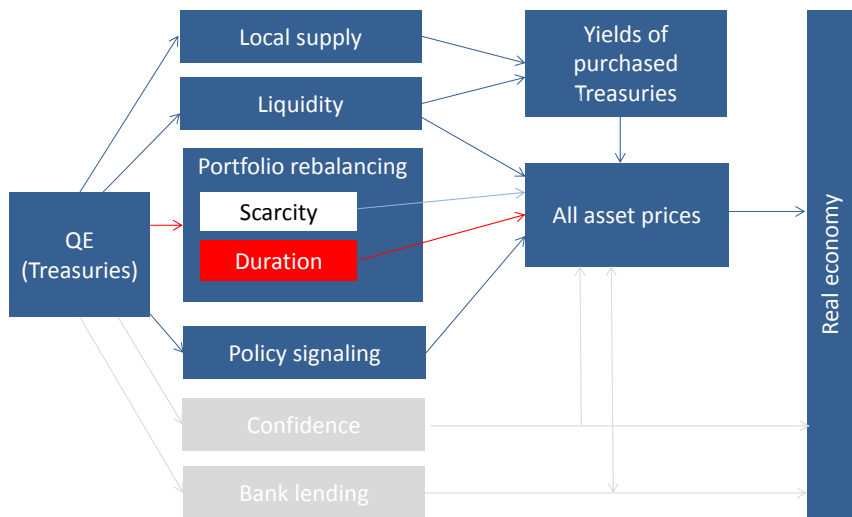
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Disclaimer: The views expressed in this presentation are my own and not those of the ECB

The duration channel in the transmission mechanism of Treasury QE



Theory catching up with evidence

- Empirical evidence tends to find that sovereign QE was effective in lowering long-term interest rates
- But how exactly?
 - ▶ **Duration:** Li and Wei (2013), Yellen (2012), ...
 - ▶ **Local supply:** D'Amico and King (2013), Krishnamurthy and Vissing-Jorgensen (2011, 2013),...
 - ▶ **Policy signaling:** Vlieghe (2018), Krishnamurthy and Vissing-Jorgensen (2011, 2013), ...
 - ▶ **Liquidity:** Vlieghe (2018), ...
- **This paper: integrate the duration channel into a structural macro-finance model and assess its economic importance**

The mechanics of the duration channel

- If there is no arbitrage, then there exists a SDF such that

$$p_t = E_t[M_{t,t+h}q_{t+h}]$$

- To make quantities matter for prices, the SDF depends on the return on wealth:

$$M_{t,t+1} = M(\mathbf{s}_{t+1}, \mathbf{s}_t, R_{t+1}), \quad R_{t+1} \equiv \frac{\mathbf{x}_t' \mathbf{q}_{t+1}}{\mathbf{x}_t' \mathbf{p}_t}$$

- So (relative) quantities held by investors affect the distribution of R_{t+1} and thus asset prices
- This holds for e.g. Epstein-Zin-Weil preferences and the 'preferred habitat' investor framework (Vayanos and Vila, 2009)
- ... but not in the additively time separable utility function in e.g. Eggertsson and Woodford (2003)

Taking the model to the data

- Towards a quantitative model:
 - ▶ 2 observed factors (consumption growth, inflation)
 - ▶ 2 unobserved factors (shadow rate, duration factor)
- Solved numerically using global methods (ZLB!) under rational expectations
- Estimated on annual US data (1971-2017) using non-linear Bayesian filtering methods (particle filter)

The estimated impact of LSAPs via the duration channel is relatively small...

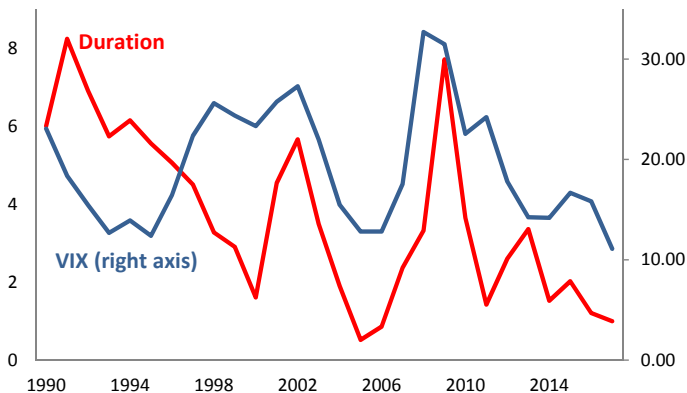
- LSAPs reduced nominal long-term treasury yields by about 50 bps on impact via the duration channel
 - ▶ Previous work estimated overall decline of 35-160 bps (Kaminska and Zinna, 2018)

Comments

- ① What is the duration factor, and why is it important to explain the behavior of yields?
- ② The structure of government debt matters: but can duration capture it all?
- ③ Why is the inflation risk premium so large?
- ④ What can we learn from the model about QE exit?
- ⑤ What do the results imply for macroeconomic modeling?

Comment 1:

What is the duration factor, and why is it important to explain the behavior of yields?



Sources: King (2018) and FRED (St Louis Fed)

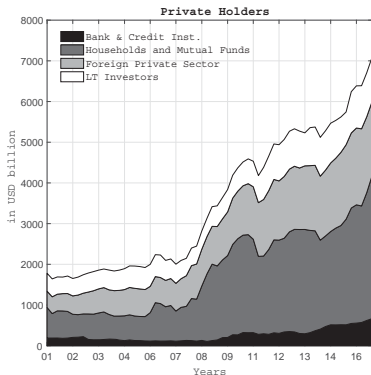
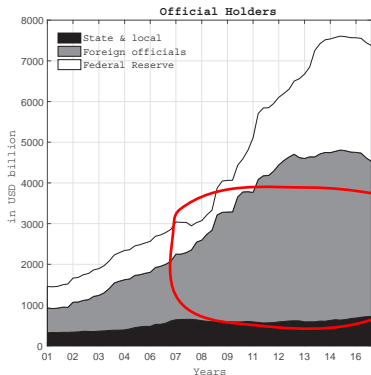
Comment 1:

What is the duration factor, and why is it important to explain the behavior of yields?

- Can a model with a SDF independent of the return on wealth but with VIX as an additional macro factor explain the data equally well?

Comment 2:

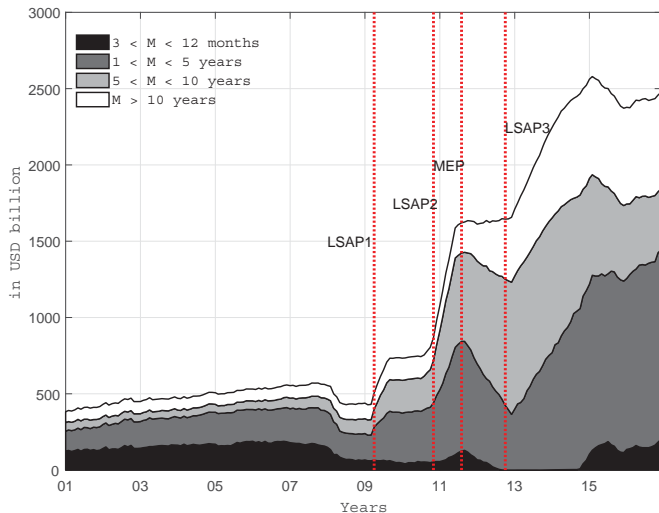
The structure of government debt matters: but can duration capture it all?



Estimated Ownership of U.S. Treasury Securities. Source: Kaminska and Zinna (2018)

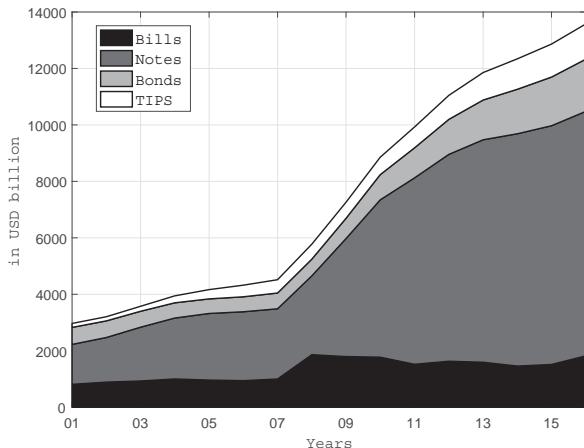
Comment 2:

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The structure of government debt matters: but can duration capture it all?



U.S. Treasury Debt Outstanding. Source: Kaminska and Zinna (2018)

Comment 2:

The structure of government debt matters: but can duration capture it all?

- How does the **estimated duration factor** relate to
 - ▶ Weighted average maturity of private domestic holdings?
 - ▶ Free float over Treasury debt outstanding?
- How does the model perform with **additional factors**, including:
 - ▶ Foreign official holdings over Treasury debt outstanding
 - ▶ Fed holdings over Treasury debt outstanding
 - ▶ New issuance
- Why not making the **factors related to structure of government debt observable**?
 - ▶ ... would make it easier to use the model for counterfactual policy analysis

Comment 3:

Why is the inflation risk premium so large?

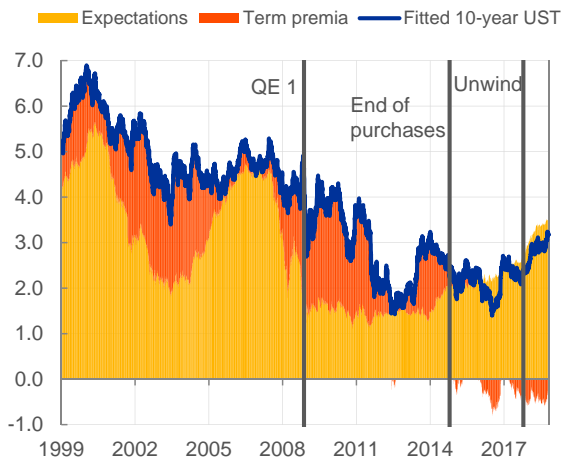
- Estimation period (1971-2017) covers different monetary policy regimes
- But the model has a constant inflation volatility
- Does the large inflation risk premium reflect the period of high inflation at the beginning of the sample?
- Can you estimate the model using a shorter (quarterly) sample of data ?

What can we learn from the model about QE exit?

- Different transmission channels have contrasting implications for QE exit
 - ▶ **Duration channel** predicts an **increase in term premium** (larger than during purchases due to ZLB asymmetry) and spill-overs to other asset prices
 - ▶ **Signaling channel** predicts **no impact** provided it is well understood that the policy rate is the primary instrument for policy
- Can your model explain what happened to the US term premium after exit?

Comment 4:

What can we learn from the model about QE exit?



Source: ACM model and ECB calculations.

Comment 5:

What do the results imply for macroeconomic modeling?

- In theory, Epstein-Zin-Weil utility allows for the duration channel
- But model estimates for the market price of consumption and wealth risk are both negative, which is inconsistent with Epstein-Zin-Weil utility
- Which utility function should we use to capture the duration channel in dynamic macro models?

Conclusions

- A great paper building a novel structural finance model to assess the economic importance of the duration channel
- Comments:
 - ▶ What is the duration factor, and why is it important to explain the behavior of yields?
 - ▶ The structure of government debt matters: but can duration capture it all?
 - ▶ Why is the inflation risk premium so large?
 - ▶ What can we learn from the model about QE exit?
 - ▶ What do the results imply for macroeconomic modeling?