



BANK FOR INTERNATIONAL SETTLEMENTS

Flow effects of central bank asset purchases on euro area sovereign bond yields: evidence from a natural experiment

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The views expressed are those of the authors and do not necessarily reflect those of the BIS.



What the paper does

- Provide evidence on the flow effect of the ECB's PSPP
 - Do the actual purchases have an effect on bond yields on top of the stock effect?
- Address simultaneity problem inherent in any analysis of flow effects through instrumental variable approach exploiting legal restrictions of PSPP



Empirical problem

- Flow effect estimated regressing change in yields/returns on central bank purchases of the bond and its close substitutes

$$y_{it} = \beta Q_{it}^0 + \sum_{j=1}^J \gamma_j Q_{it}^j + u_i + v_t + \varepsilon_{it}$$

- Problem: Yields react to flows, but flows may also react to yields if CB bases purchase decisions in yield constellations
 - Conventional flow effect estimate likely biased (downward)

Solution

- Instrumental variable estimation exploiting legal restrictions of the PSPP, the “blackout period”
- Article 4(1) of ECB decision on PSPP:

“(…) no purchases shall be permitted in a newly issued or tapped security and the marketable debt instruments with a remaining maturity that are close in time, before and after, to the maturity of the marketable debt instruments to be issued, over a period to be determined by the Governing Council (‘blackout period’).”

(Decision (EU) 2015/774 of the European Central Bank; Article 4(1))

- Blackout periods give rise to exogenous changes in purchases
- Use blackout period dummy as instrument to get rid of simultaneity bias

Solution

- First stage regression

$$\begin{pmatrix} Q_{it}^0 \\ Q_{it}^j \end{pmatrix} = D_{it}^0 + \sum_{j=J}^4 \gamma_j D_{it}^j + \nu_i + \phi_t + \varepsilon_{it}$$

- Estimate flow effects using fitted values from first stage regression

Main findings

Figure 8: Baseline

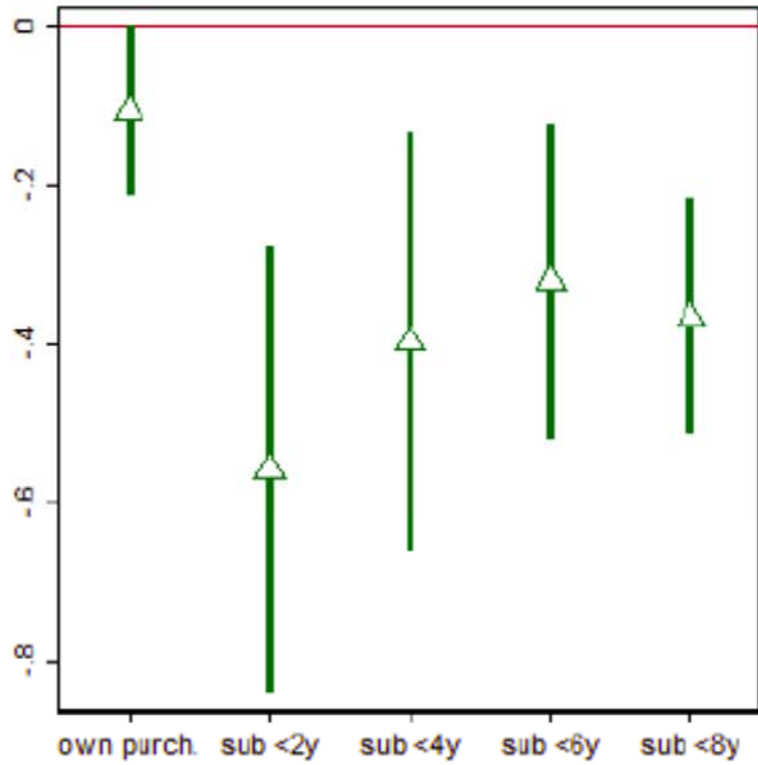
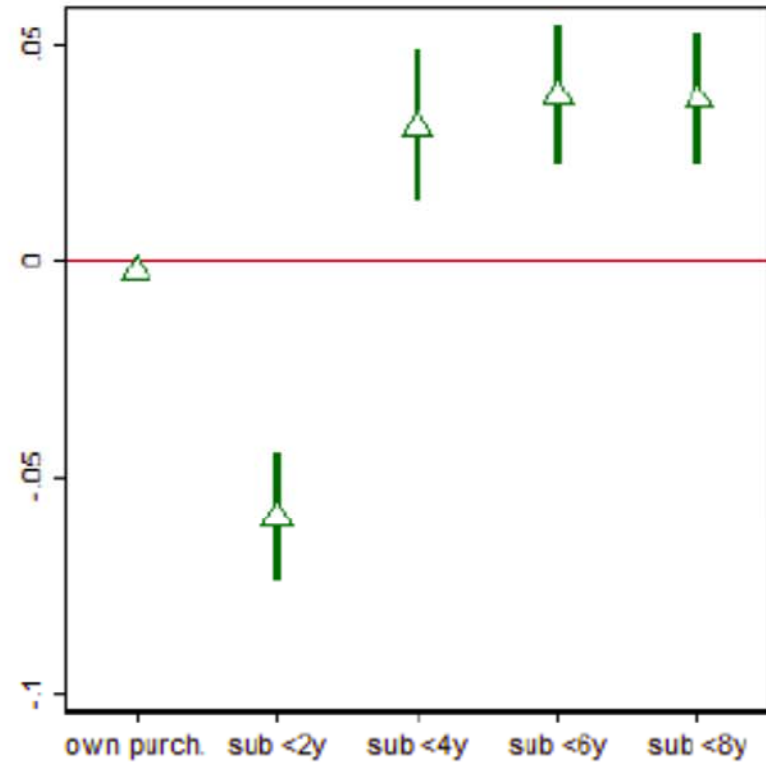


Figure 9: OLS estimates



Comments I: Does the approach work?

- What are the F-statistics of the first stage regressions?

Figure 6: Baseline (first stage)

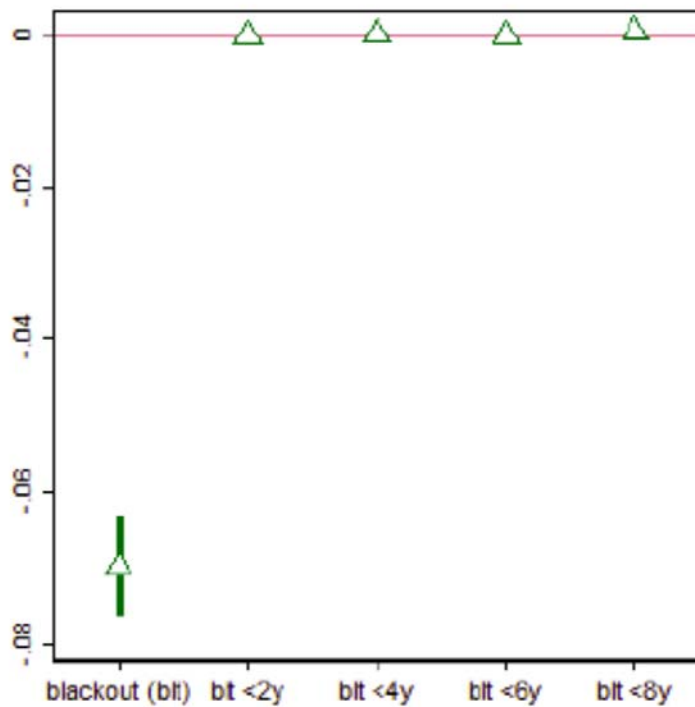
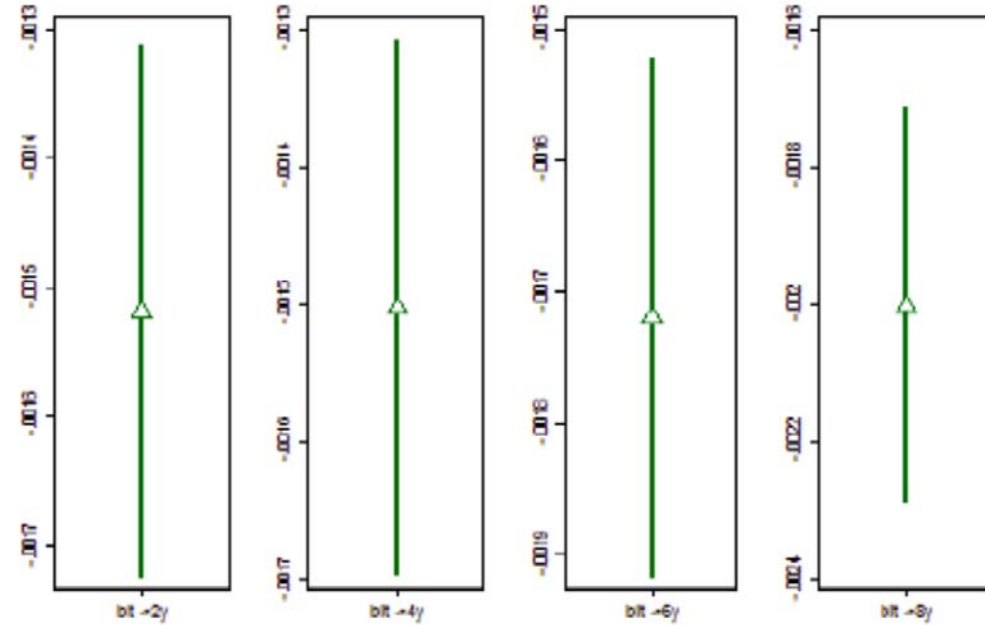


Figure 7: Substitutes (first stage)



Comments I: Does the approach work?

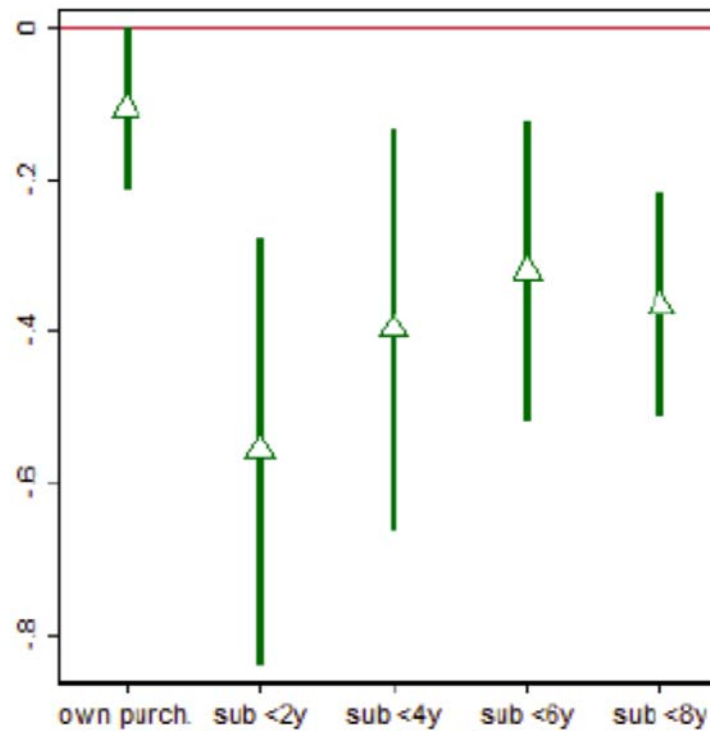
- Instrument set also includes security- and day-fixed effects
 - Could the former not reflect endogenous CB purchase decisions reflecting yield constellations?
- Could you get more out of the PSPP legal set up?
 - There are more legal restrictions than the blackout period
 - Issue/issuer share limit
 - No purchases if yield is below deposit rate



Comments II: Do the results make sense?

- Purchases of substitutes, even of those that are not close, have much bigger effects than own purchases

Figure 5: Baseline (second stage)



Comments III

- How to translate the results into overall effects?
 - Increase in purchases of a bond by 1% of outstanding amount lowers yields by 7 basis points
 - Sounds small, but size of PSPP is big
 - Increase in purchases of close substitute bonds by 1% of outstanding amounts lowers yields by almost 60 basis points
- What about control variables?
 - Macro news, stock effects
- What about changing effectiveness?



Output effects of QE shocks in the United States

- Sub-sample analysis of Weale and Wieladek (2016) VAR model in Hofmann and Weber (2016)

