Effects of QE on O.B. Auctions
# Dynamic DiD Exposure Analysis

December 8, 2023

1 FED purchases and investors

The following figures show the daily time series of amounts and prices of FED purchases of MBAs for Fannie Mae and Freddie Mac products and 30-year maturity in the early COVID period. We plot by month the total amount by coupon and the mean price. The prices and quantities are aggregated monthly by trade date.

Figure 1: FED purchases of Fannie Mae and Freddie Mac MBS securities in the early COVID period

(a) Quantity by trade date   **(b)** Price by trade date
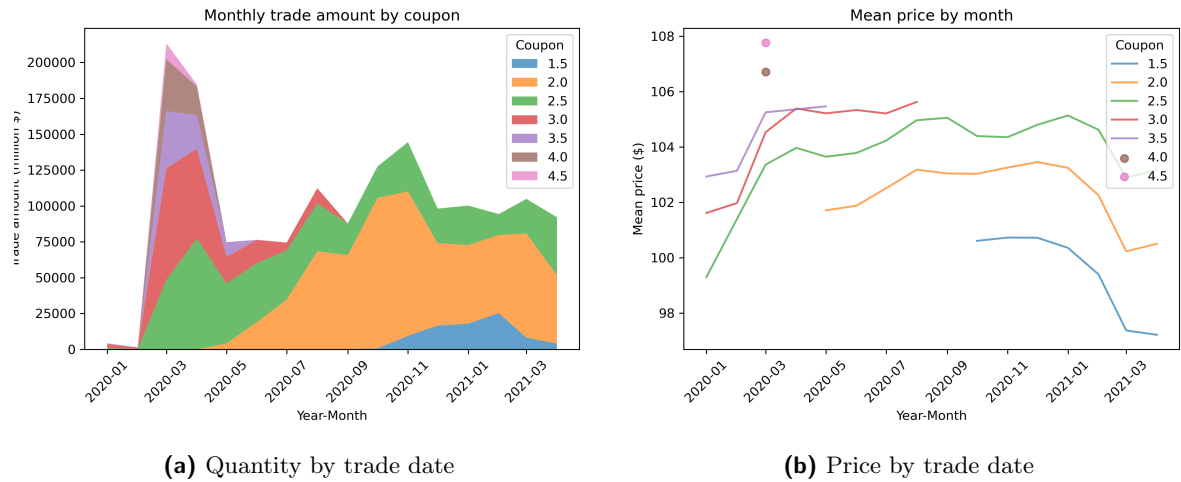
Notes: The figure shows the monthly time series of trade amounts and prices of FED purchases of Fanny Mae and Fredy Mac products and 30-year maturity. Colors represent different coupons.

Below, we show the amount of MBS purchased by the FED to each investor.

Table 1: Sold amount in period Jul 2019 to April 2021

Counterparty	Amount (millions $)
Morgan Stanley & Co. LLC	305283.000000
Credit Suisse AG, New York Branch	251325.000000
Citigroup Global Markets Inc.	147147.000000
Goldman Sachs & Co. LLC	135437.000000
BofA Securities, Inc.	121230.000000
J.P. Morgan Chase	107472.000064
Wells Fargo Securities	85813.000000
Barclays Capital Inc.	75906.000000
Nomura Securities International, Inc.	72999.999872
Daiwa Capital Markets America Inc.	46608.000000
BNP-Paribas	17418.000000
Mizuho Securities USA LLC	9737.000000
Jefferies LLC	6377.000000

There are 931 from 14873 observations in this period that have a missing counterparty (investor).

Figure 2: FED MBS purchases by month.
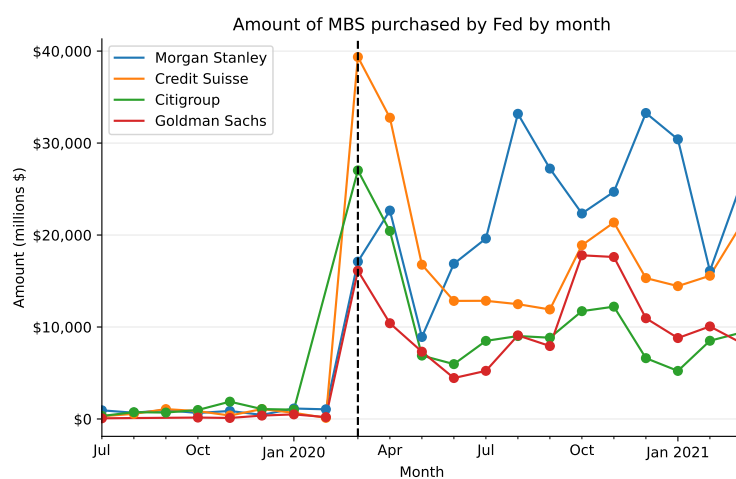
(a) Largest 4 investors that sold loans to the FED.
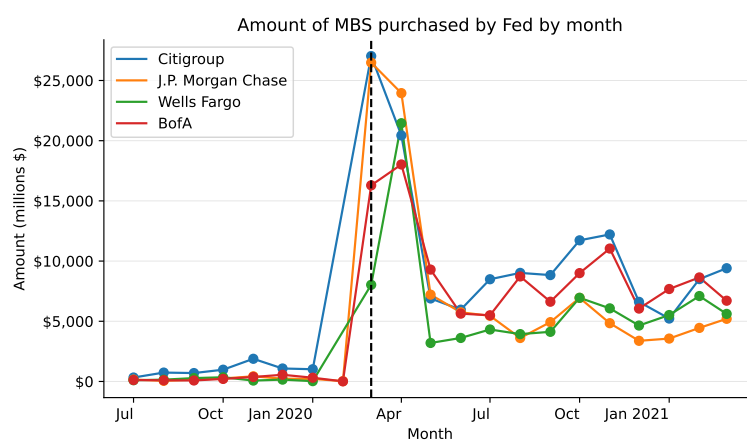
(b) Commercial banks

Notes: The figure shows a time series of FED auction outcomes. The vertical line is March 1.

2 Dynamic DiD Exposure Analysis

The dynamic DiD analysis is based on the following equation:

$$y_{ijtc} = \alpha + \sum_{\tau} \beta_{\tau} \times 1(\tau = t) \times QE_{ic} + \nu_{t,c} + \nu_{t,i} + \psi_j + \epsilon_{ijtc}$$

where y_{ijtc} is rate of winner bid or loan amount for loans sold to investor i from seller j in month t for coupon segment c. The variable QE_i is either the exposure dummy or the exposure level. The exposure level is defined as the amount of MBS purchased by the FED in March 2020. When a dummy is used, the variable takes the value of 1 if the investor has exposure and 0 otherwise.

The investors that we could identify as having exposure are J.P. Morgan Chase, Wells Fargo, and Citibank. The results are shown below. The clearer effect is on the winning bid, there is an increase in the average winning bid after March 2020 for the exposed investors. Robustness checks on the fixed effects did not change the results.

There is plenty of run for improvements here (more controls, improve crosswalks, use differences, logs, other outcomes like probability of wining, bid, use spread instead of winner bid, etc).

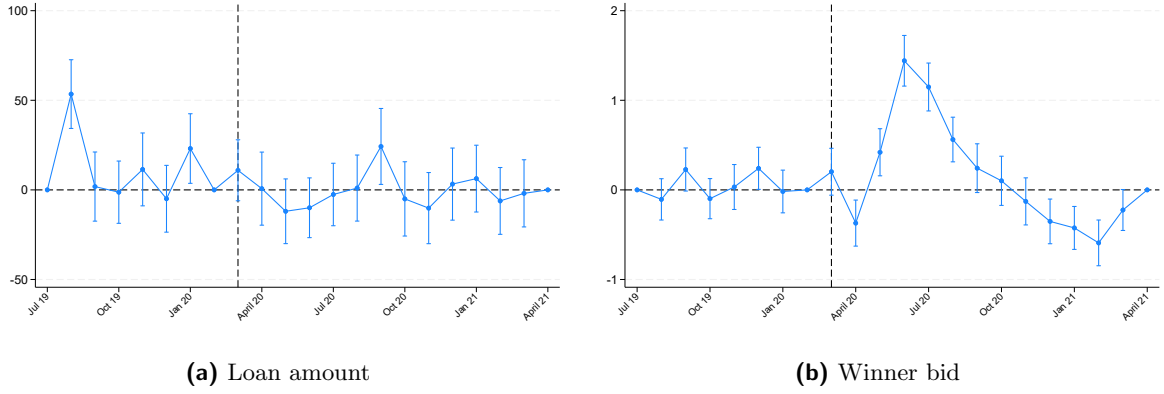Figure 3: Effect of QE on Ob Auctions using exposure dummy on March 2020.
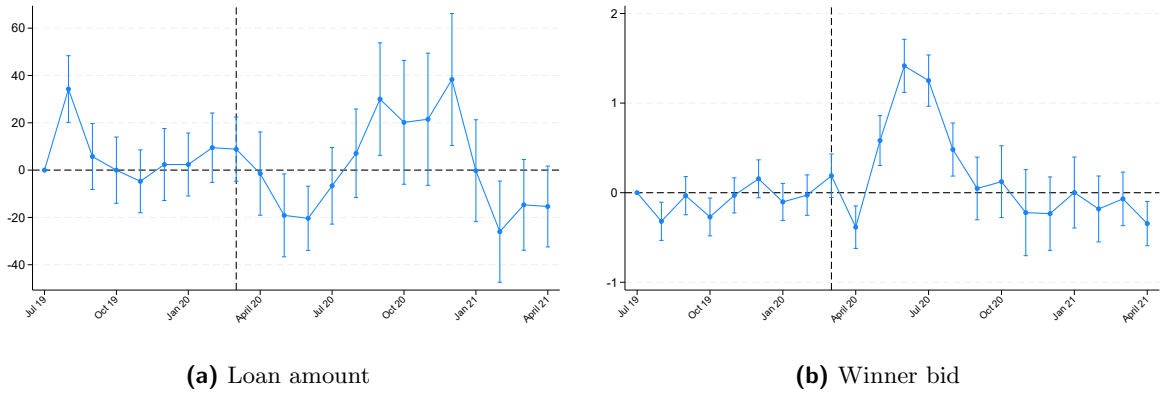
(a) Loan amount

(b) Winner bid

Notes: The figure coefficients of the regression above for loan amounts and winner bid. The vertical line is March 1. Robust standard errors are used.

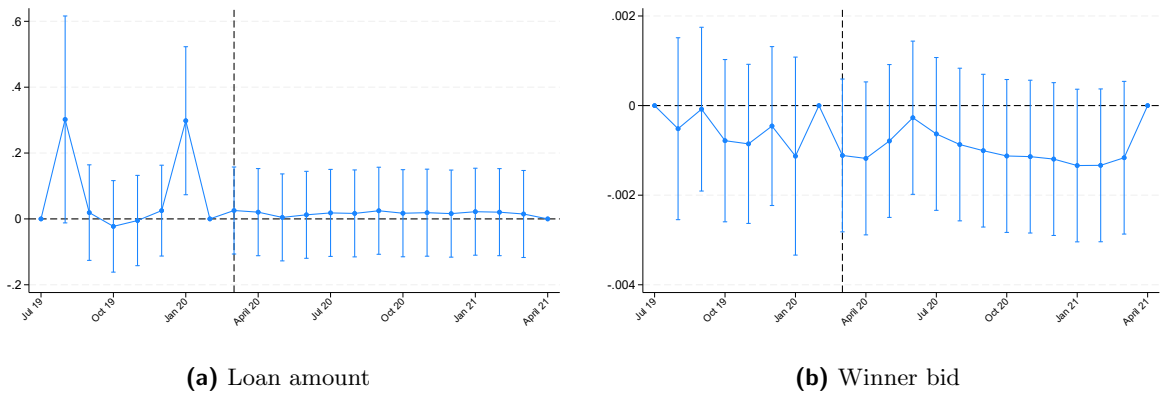Figure 4: Effect of QE on Ob Auctions using exposure amount purchase on March 2020.
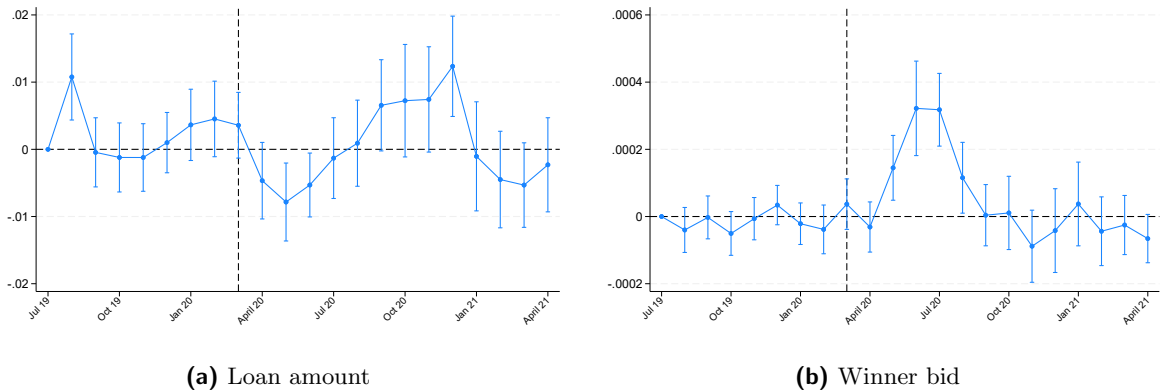
(a) Loan amount

(b) Winner bid

Notes: The figure coefficients of the regression above for loan amounts and winner bid. The vertical line is March 1. Robust standard errors are used.

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Figure 5: Robustness: Effect of QE on Ob Auctions using exposure dummy by month.

(a) Loan amount

(b) Winner bid

Notes: The figure coefficients of the regression above for loan amounts and winner bid. The vertical line is March 1. Robust standard errors are used.

Figure 6: Robustness: Effect of QE on Ob Auctions using exposure amount purchase by month.

(a) Loan amount

(b) Winner bid

Notes: The figure coefficients of the regression above for loan amounts and winner bid. The vertical line is March 1. Robust standard errors are used.