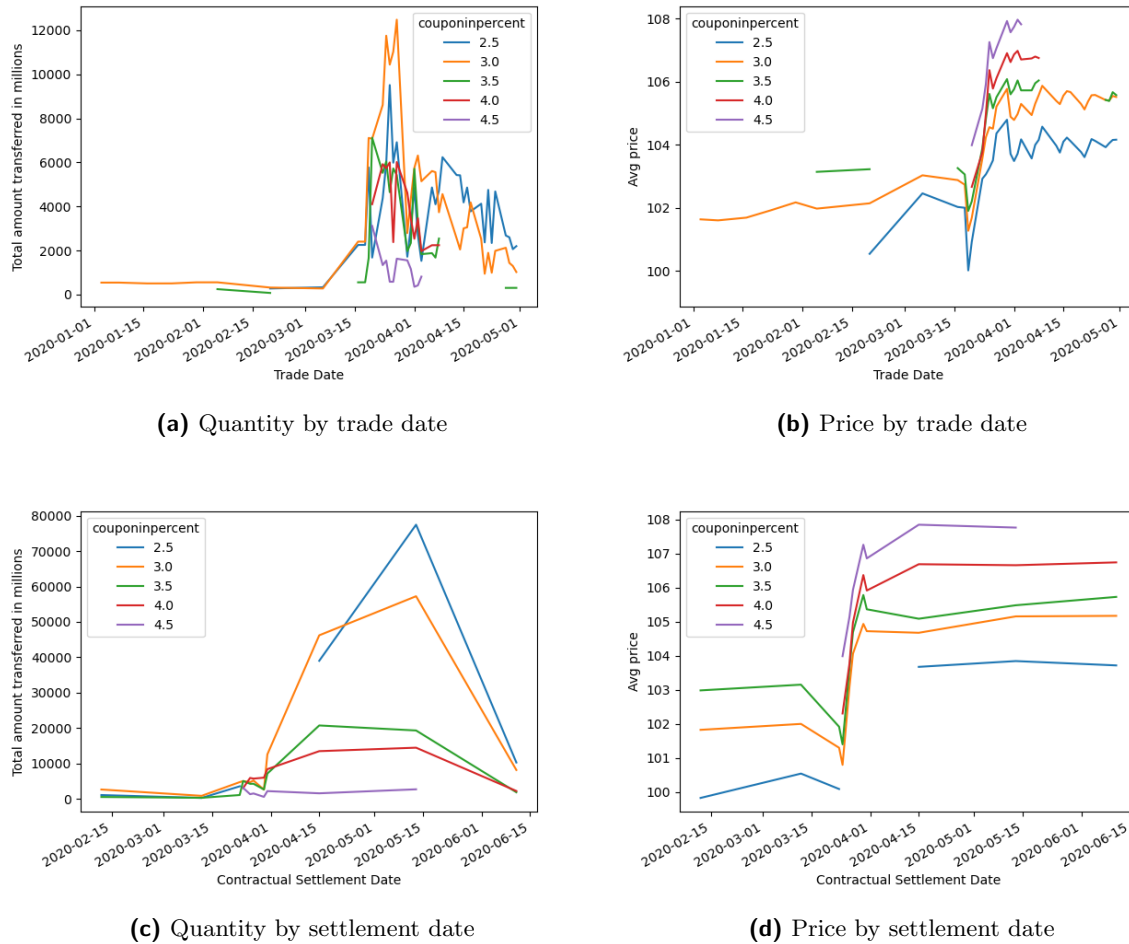# Analysis of Auctions in OB in the Early Covid Period

June 8, 2023

1 FED purchases of MBS

The following figures show the daily time series of amounts and prices of FED purchases of MBAs for FNMA products and 30-year maturity in the early COVID period.

Figure 1: FED purchases of FNMA products in the early COVID period

(a) Quantity by trade date

(b) Price by trade date

(c) Quantity by settlement date

(d) Price by settlement date

Notes: The figure shows the daily time series of amounts and prices of FED purchases of FNMA products and 30-year maturity. Colors represent different coupons.

2 OB Auctions in the Early Covid Period

The following figure shows a histogram of all bids for all auctions in the oB platform for the months of January, February, March, and April 2020. The product is Conforming loans with a 30-year maturity.
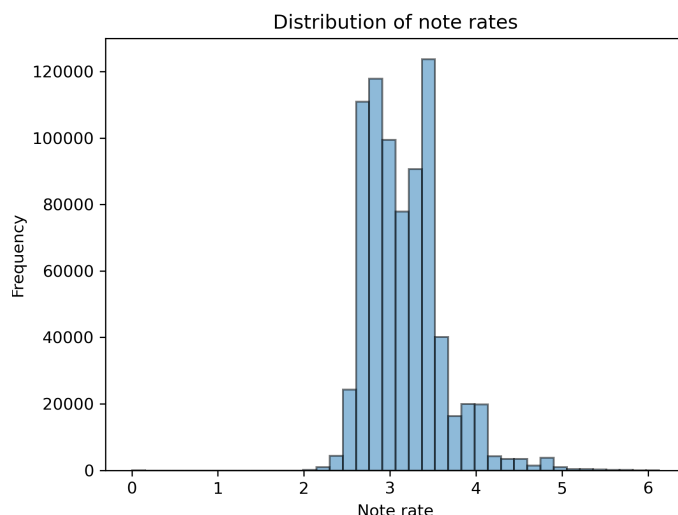
Figure 2: Histogram of all bids for all auctions in the oB platform for the months of January, February, March, and April 2020. The product is Conforming loans with a 30-year maturity.
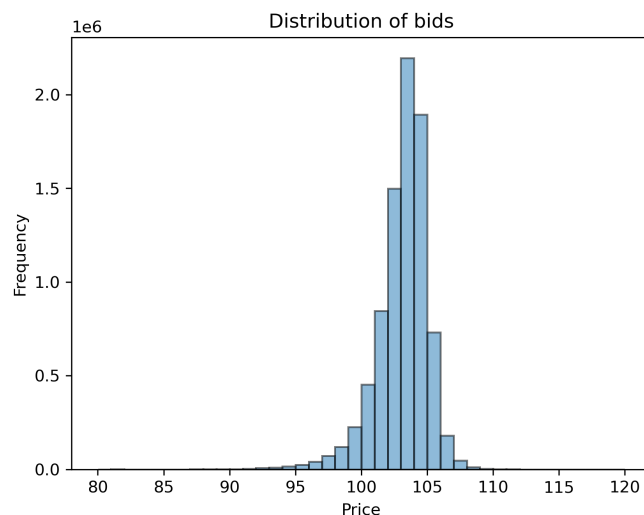
Notes: The figure shows a histogram of all bids for all auctions in the OB platform for the months of January, February, March, and April 2020. The product is Conforming loans with a 30-year maturity.

This figure shows a histogram for the note rates by auction for the same period and product.

Figure 3: Histogram of all bids for all auctions in the oB platform for the months of January, February, March, and April 2020. The product is Conforming loans with a 30-year maturity.

Notes: The figure shows a histogram of all note rates of auctioned loans in the OB platform for the months of January, February, March, and April 2020. The product is Conforming loans with a 30-year maturity.

Table 1 shows descriptive statistics for important outcomes at the auction level for the same period and product.

Table 1: Descriptive statistics at the auction level.

	count	mean	std	min	25%	median	75%	max
Loan amount	766296.0	287.72	134.25	14.68	186.15	267.63	370.50	1500.00
Note rate	766296.0	3.17	0.43	0.00	2.88	3.12	3.38	6.12
Price	766296.0	103.93	1.78	83.84	102.98	104.09	105.02	120.00
Days to auction	765049.0	5.15	10.83	-326.00	1.00	3.00	6.00	667.00
Number of participants	766296.0	10.94	5.66	1.00	7.00	11.00	15.00	32.00
Number of bulk bidders	766296.0	7.32	5.81	0.00	0.00	8.00	12.00	27.00
Sell rate	766296.0	0.74	0.44	0.00	0.00	1.00	1.00	1.00
Rate sell to winner	766296.0	0.45	0.50	0.00	0.00	0.00	1.00	1.00

Notes: The table shows descriptive statistics at the auction level of observation for the months of January, February, March, and April 2020. The product is Conforming loans with a 30-year maturity.

2.1 Naive comparison before after COVID

A similar table is depicted for the months of January and February and for the months of March and April. The idea is to compare the outcomes before and after COVID (tables 2 and 3 respectively).

Table 2: Descriptive statistics at the auction level January and February 2020.

	count	mean	std	min	max
Loan amount	28572.0	261.97	126.40	23.25	1184.92
Note rate	28572.0	3.98	0.40	2.75	6.12
Price	28572.0	103.99	1.34	97.90	120.00
Days to auction	28517.0	5.84	8.70	-326.00	288.00
Number of participants	28572.0	12.10	5.96	1.00	32.00
Number of bulk bidders	28572.0	8.82	6.45	0.00	27.00
Sell rate	28572.0	0.84	0.37	0.00	1.00
Rate sell to winner	28572.0	0.50	0.50	0.00	1.00

Notes: The table shows descriptive statistics at the auction level of observation for the months of January and February 2020. The product is Conforming loans with a 30-year maturity.

Table 3: Descriptive statistics at the auction level of March and April 2020.

	count	mean	std	min	max
Loan amount	52276.0	281.15	126.22	26.16	1470.00
Note rate	52276.0	3.56	0.41	2.25	6.12
Price	52276.0	104.07	1.37	94.03	120.00
Days to auction	52187.0	4.17	7.47	-244.00	234.00
Number of participants	52276.0	10.94	5.22	1.00	30.00
Number of bulk bidders	52276.0	6.58	5.72	0.00	26.00
Sell rate	52276.0	0.73	0.44	0.00	1.00
Rate sell to winner	52276.0	0.49	0.50	0.00	1.00

Notes: The table shows descriptive statistics at the auction level of observation for the months of March and April 2020. The product is Conforming loans with a 30-year maturity.

3 OB Auctions in the Early Covid Period: Time Series analysis

This section includes a time series analysis of the OB auctions in the early COVID period. The analysis is done at the daily level. The product is Conforming loans with a 30-year maturity. It includes the price and quantities of the auctions, as well as the number of auctions that occur daily. Next, distress signs are explored by looking at the number of participants, the number of bids, and the number of bulk bids. Finally, the GSEs' response is by plotting the number of bids by the GSE and the number of auctions won by GSEs. In all cases, the analysis includes a comparison between note rates around 3 - 3.75% and note rates around 4 - 4.75%.

3.1 Prices and Quantities

The following figures show OB auctions mean, median higher bid, quantities, and the number of auctions that occurred daily from January 1st to December 31st, 2021.

Figure 4: OB auction outcomes.
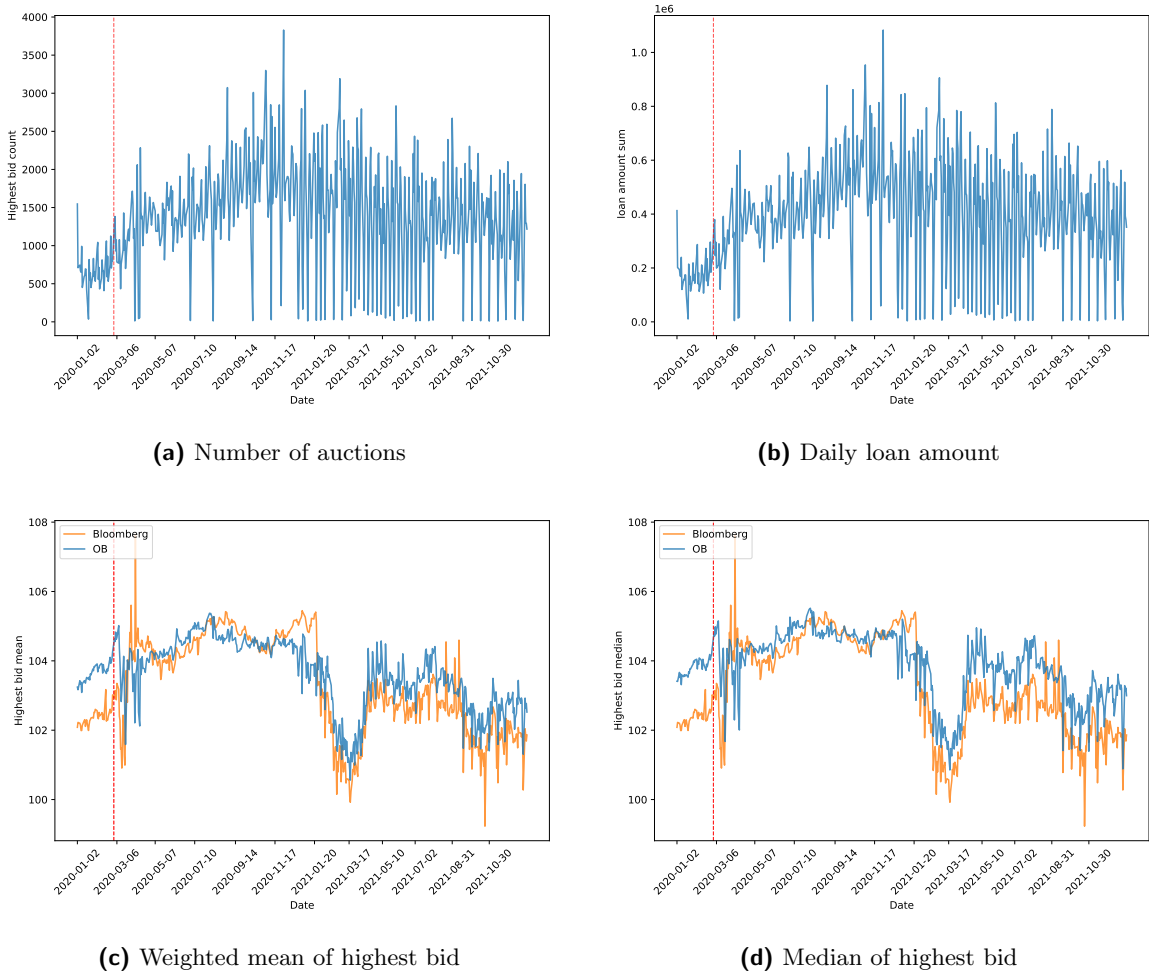
(a) Number of auctions

(b) Daily loan amount

(c) Weighted mean of highest bid

(d) Median of highest bid

Notes: The figure shows the time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1. For reference, Bloomberg TBA prices are aggregated for all forward months and coupons between 1 and 7.
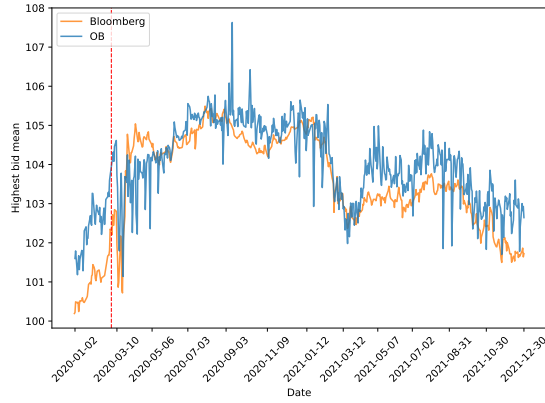
3.1.1 Comparison of note rates

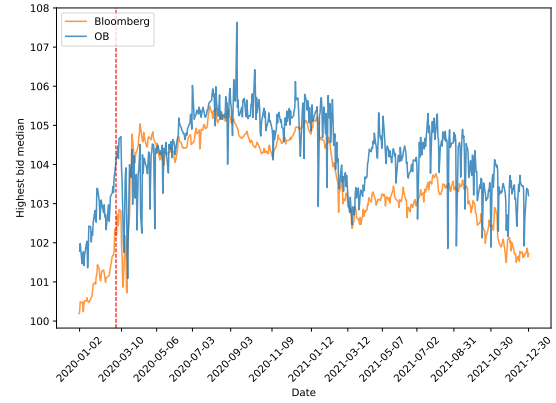Figure 5: OB auction outcomes for note rates between 3% and 3.75%
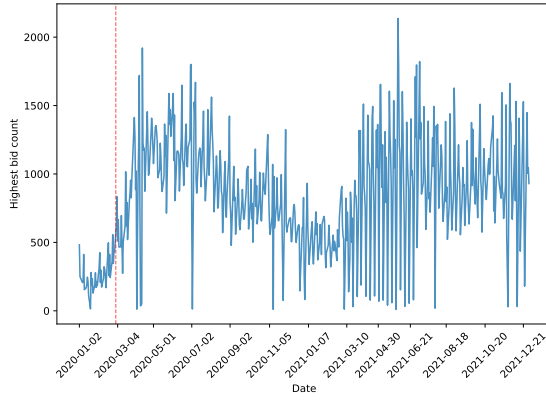
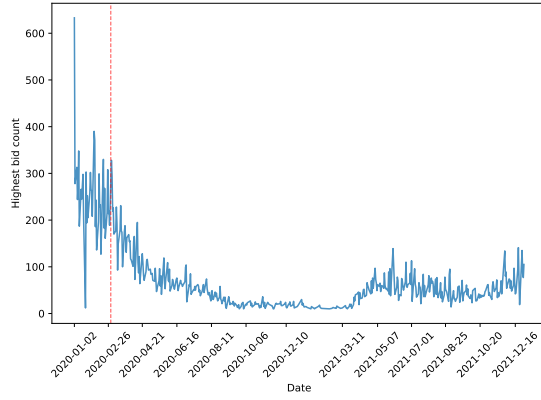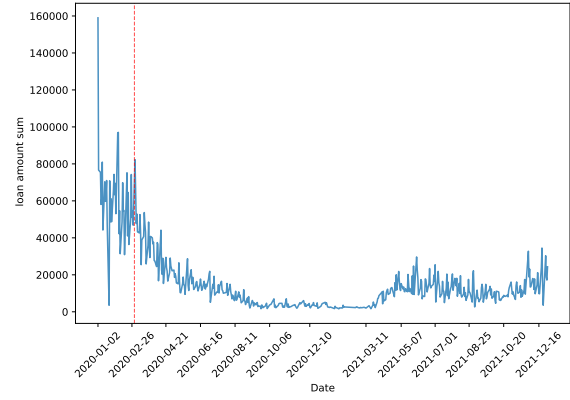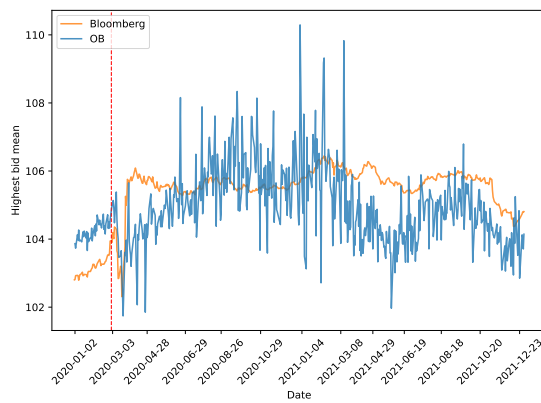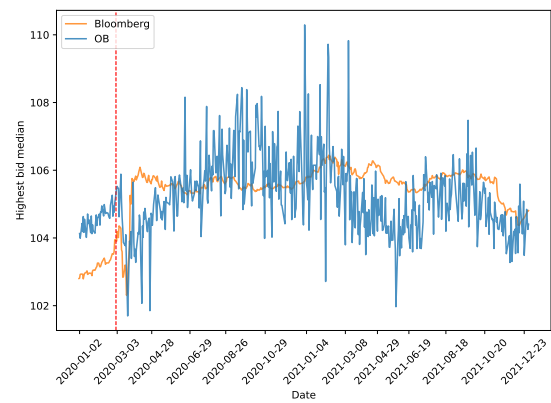**(a)** Number of auctions
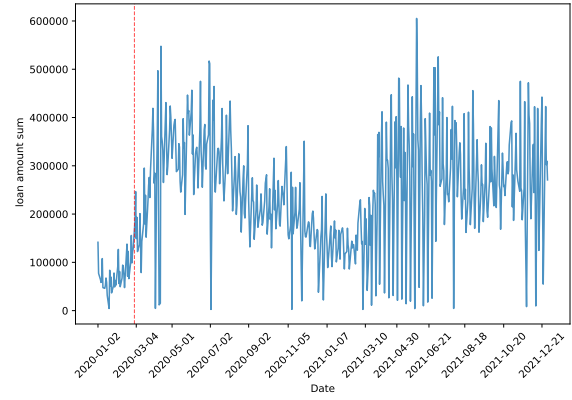
(b) Daily loan amount

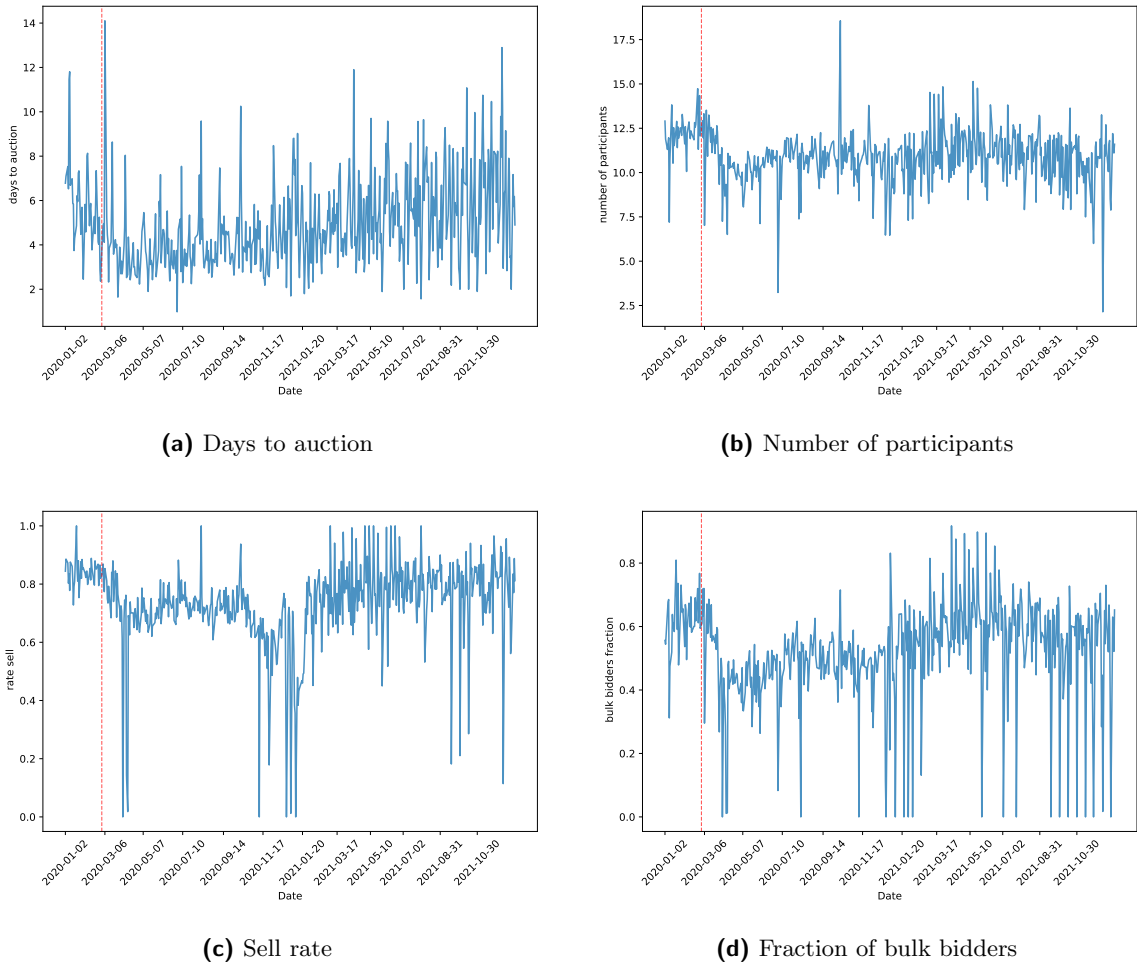**(c)** Weighted mean of highest bid

(d) Median of highest bid

Notes: The figure shows time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1. For reference, Bloomberg TBA prices are aggregated for all forward months and coupons between 2.5, 3, and 3.5.

Figure 6: OB auction outcomes for note rates between 4% and 4.75%

(a) Number of auctions

(b) Daily loan amount

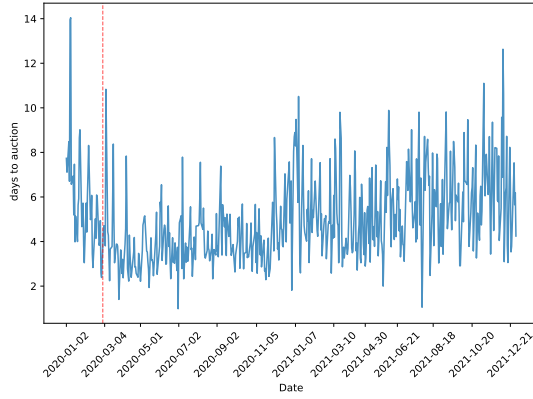**(c)** Weighted mean of highest bid

(d) Median of highest bid

Notes: The figure shows the time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1. For reference, Bloomberg TBA prices are aggregated for all forward months and coupons 3.5, 4, and 4.5.

3.2 Distress signs in the OB auctions

Below, we show distress and illiquidity measures in the OB auctions during the early Covid period. The variables are defined as follows:

- **Days to auction**: Number of days between the auction date and the date the loan originated.

- **Number of participants**: Number of participants in the auction.

- **Sell rate:** Rate to which the loan is sold to an auction participant.

- **Fraction of bulk bidders:** Fraction of bids that are bulk bids.

Figure 7: OB auction outcomes.

(a) Days to auction

(b) Number of participants

(c) Sell rate

(d) Fraction of bulk bidders

Notes: The figure shows time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1.
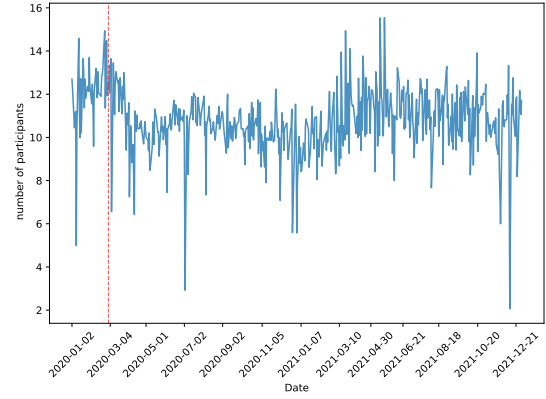
3.2.1 Comparison of note rates

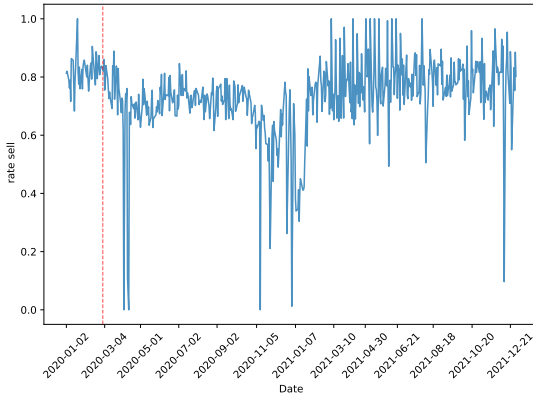Below, we show the same variables as above, but for different note rates.

Figure 8: OB auction outcomes for note rates between 3% and 3.75%.
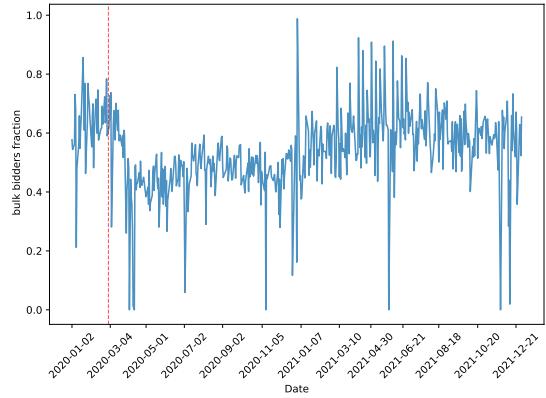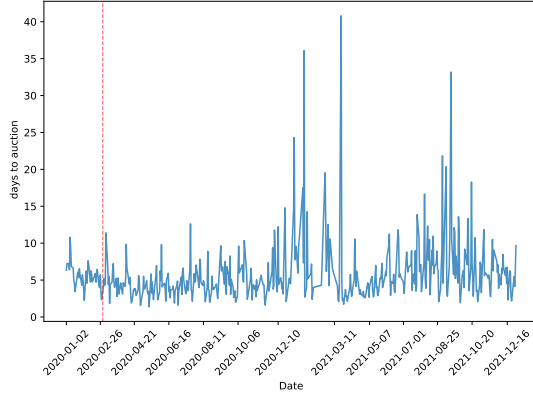

(a) Days to auction

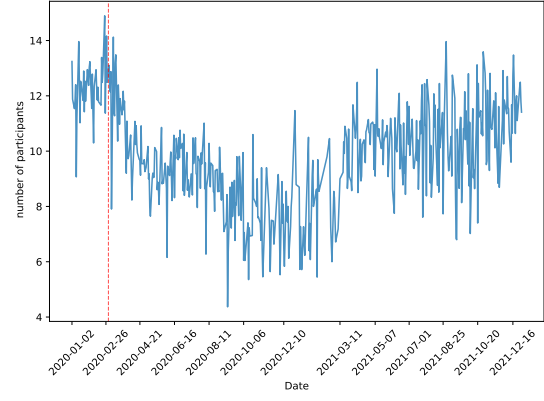**(b)** Number of participants

(c) Sell rate

(d) Fraction of bulk bidders

Notes: The figure shows time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1.
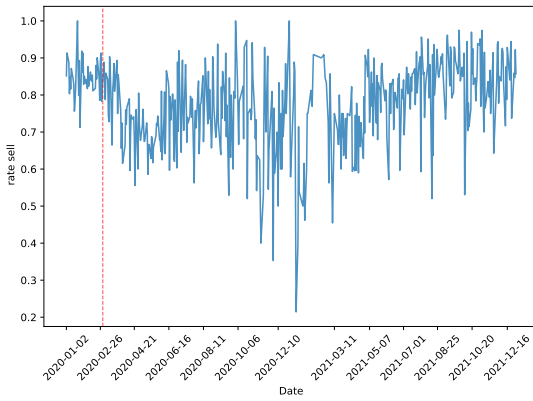
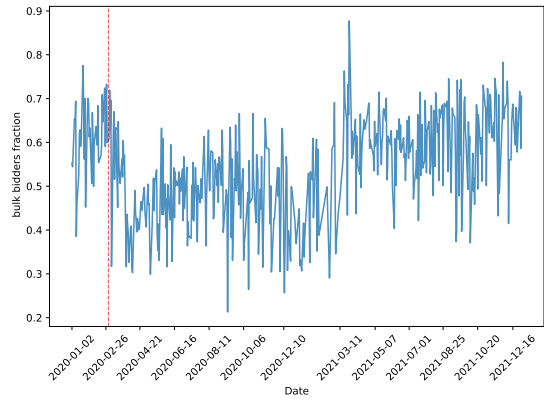Figure 9: OB auction outcomes for note rates between 4% and 4.75%.

(a) Days to auction

(b) Number of participants

(c) Sell rate
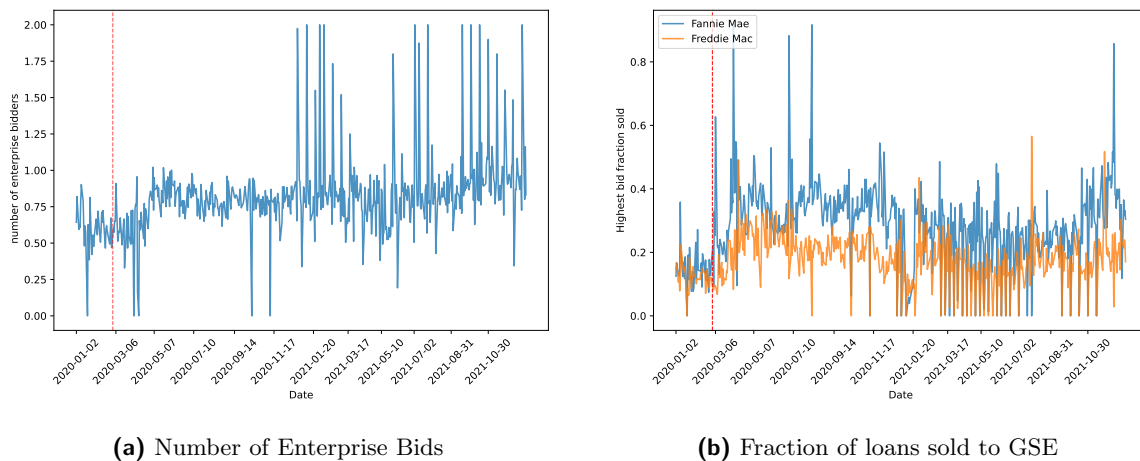

(d) Fraction of bulk bidders

Notes: The figure shows the time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1.

3.3 GSE response

In this section, we show the GSE response to the covid crisis. The variables are defined as follows:

- **Number of Enterprise Bids**: Number of bids per auction submitted by the GSEs (Fannie and Freddie).

- **Fraction of loans sold to GSE**: Fraction of loans sold to the GSEs.

Figure 10: OB auction GSE response.

(a) Number of Enterprise Bids

(b) Fraction of loans sold to GSE

Notes: The figure shows time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1.

3.3.1 Comparison of note rates

Figure 11: OB auction GSE response for note rates between 3% and 3.75%.
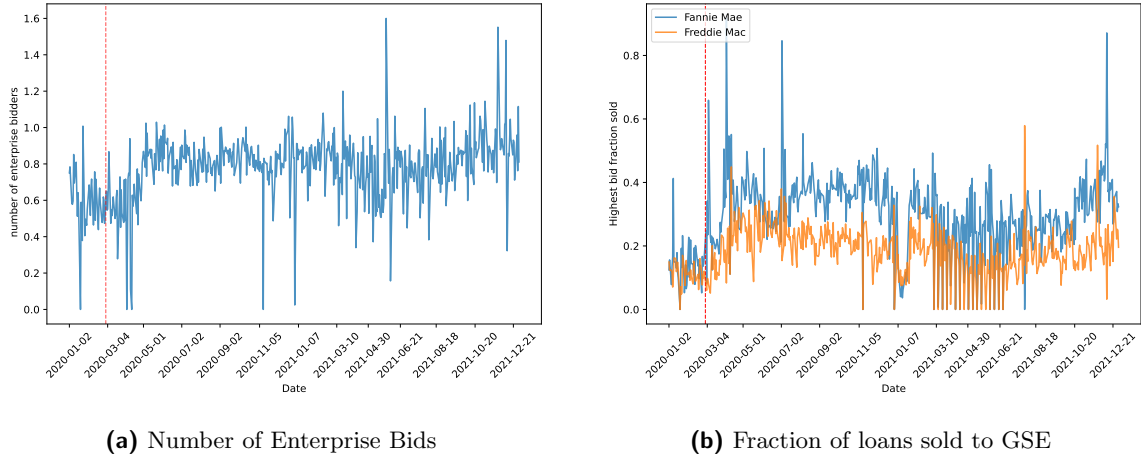
(a) Number of Enterprise Bids

(b) Fraction of loans sold to GSE

Notes: The figure shows time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1.
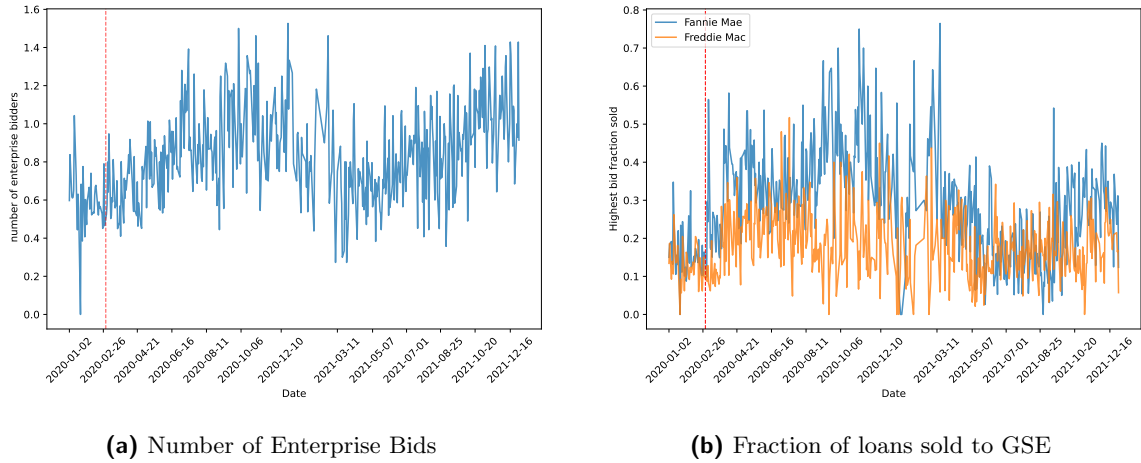
Figure 12: OB auction GSE response for note rates between 4% and 4.75%.

(a) Number of Enterprise Bids

(b) Fraction of loans sold to GSE

Notes: The figure shows the time series of auction outcomes for Conforming loans with a 30-year maturity. The vertical lines is March 1.