How Resilient is Mortgage Credit Supply? Evidence from the COVID-19 Pandemic

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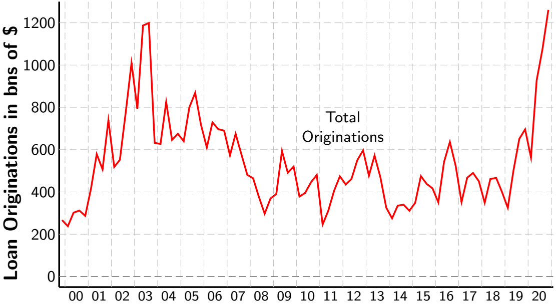
The mortgage marked boomed in 2020

- 2020 was an extraordinary year for the US mortgage market:
  - $\approx$ **\$4tr** of mortgage originations, a new record
  - 30-year fixed rate fell below **3%** for first time
  - Surge in profits for lenders (e.g., Rocket: \$9.4bn; up 950%)



2000-2020 Quarterly Originations, Source: Mortgage Bankers Association

Particularly striking given concerns at start of pandemic

- With lockdowns etc., who would buy homes, and how would loans get closed?
- Would lenders suffer a liquidity crunch? (loans in forbearance, TBA margin calls)
- Would mortgage intermediaries fail? (nonbank lenders, REITs etc.)

Virus scare creates perfect storm for mortgage lenders

By Kate Berry, Allissa Kline   March 19, 2020, 9:30 p.m. EDT   9 Min Read

Social distancing likely to affect physical mortgage closings

By Brad Finkelstein   March 16, 2020, 12:41 p.m. EDT   6 Min Read

March 27, 2020

Mortgage Relief Could Cripple Loan Servicers

Forbearance programs would cause liquidity problems for nonbank mortgage providers, the industry says.

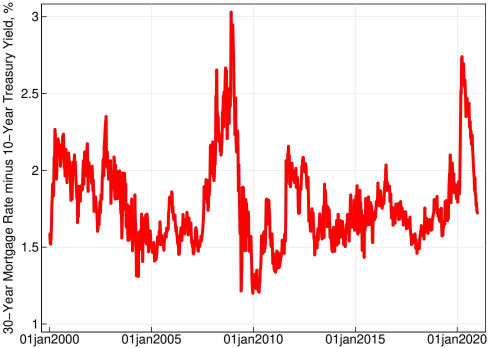
Mortgage REITs Come Under Stress That Even the Fed Might Not Be Able to Ease

By Alexandra Scaggs   March 24, 2020 2:09 pm ET

Despite good news, market not functioning normally

- Mortgage rate spread to Treasuries spiked 50-100bp, to levels near 2008 crisis
- Industry reports of tighter credit standards and rationing

Mortgage-10yr Treasury Spread



This paper

<u>Question:</u> Did pandemic lead to tighter mortgage credit supply? If so, *how* and *why*?

Findings:

1. Rise in mortgage-Tsy spread entirely due to higher lender markup in primary mkt. Not driven by MBS market (except March 2020).
2. Markup usually rises with demand; but this explains only part of 2020 spike. Supply elasticity low. *Interpretation:* operational challenges / frictions.
   - Evidence: Labor mkt frictions & shift to fintech (easier to scale).
3. Default/forbearance risk reduced credit supply in riskier segments (jumbo, FHA)
4. Fed QE supported mortgage supply. (Identification: features of TBA mkt)

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Data

- Optimal Blue: platform that processes $\approx 1/3$ of U.S. mortgage originations
  - Rate locks. Lock-level information including note rate, net points/rebates, date/time-stamp, loan characteristics, location, lender/branch ID.
  - Offer rates ("OB Insight"). Note rates and net rebates offered by lenders for menu of different mortgage contracts (held fixed over time). 20 cities.
- J.P. Morgan Markets: MBS prices, yields, OAS, option cost.
- SitusAMC: Values of mortgage servicing rights.
- MBA Quarterly Performance Report: Lender income and costs.
- Freddie Mac Primary Mortgage Market Survey: headline mortgage rates.
- HMDA: Geographic market characteristics (e.g., concentration).
- McDash: Composition of mortgage originations.
- Google trends; Ahrefs: Shopping.
- NY Times Github: County-level daily COVID cases & fatalities.

Decomposition of mortgage-treasury spread

$$FRM_{30\text{yr}} - UST_{10\text{yr}} = \underbrace{FRM_{30\text{yr}} - \text{MBS yield}}_{\text{primary-secondary spread}} + \underbrace{\text{MBS yield} - UST_{10\text{yr}}}_{\text{MBS yield spread}}$$

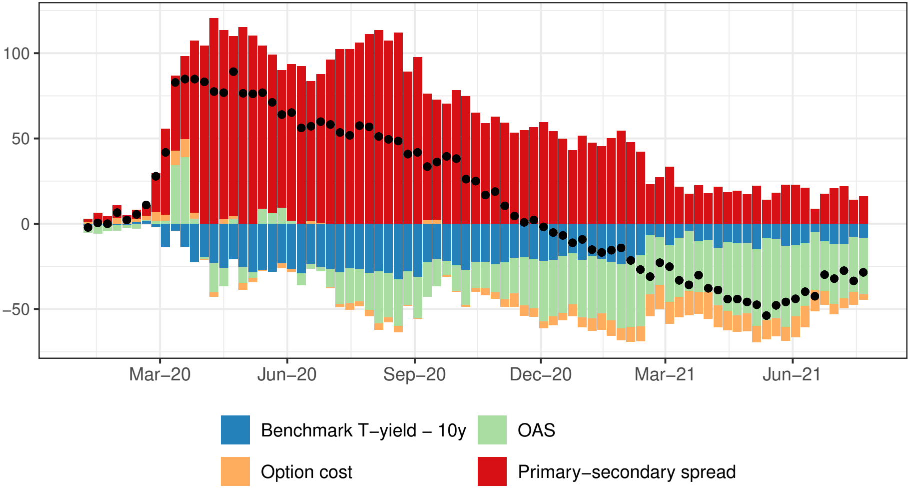
where *MBS yield* is the yield corresponding to new production MBS (with coupon $= \text{FRM}_{30\text{yr}} - 59\text{bp g-fee} - 25\text{bp servicing fee}$)

The second term can be further decomposed into:

$$\text{MBS yield} - UST_{10\text{yr}} \approx \underbrace{\left(UST_{\text{dur}} - UST_{10\text{yr}}\right)}_{\text{duration adjustment}} + \begin{array}{c}\text{Option}\\\text{Cost}\end{array} + \begin{array}{c}\text{Option-}\\\text{Adjusted}\\\text{Spread}\\\text{(OAS)}\end{array}$$

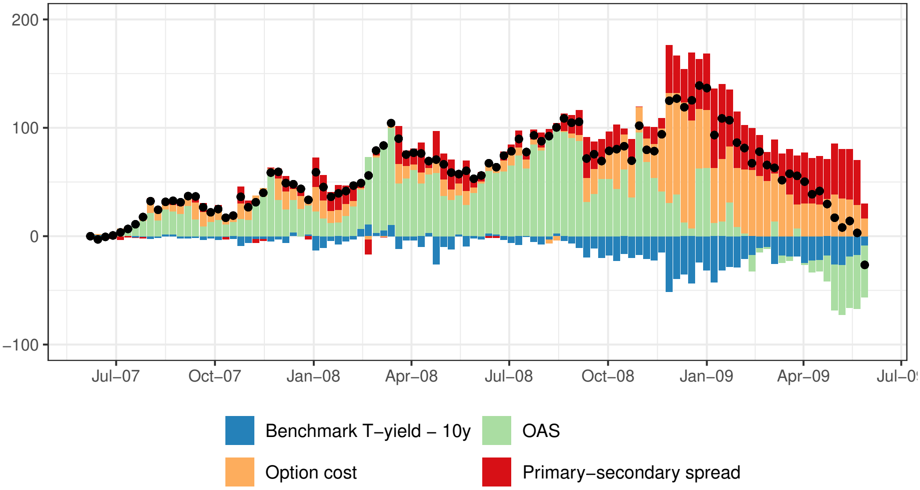
Decomposition of mortgage-treasury spread

High mortgage rate due to primary-secondary spread. Up 120bp (peak); 10-20bp (now)

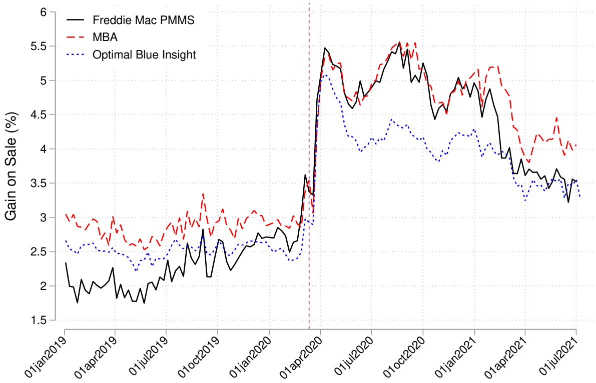


Contrast to 2007-09 financial crisis

In 2007-09, high mortgage rates due to MBS mkt dislocation, not primary market



Sharp rise in gain-on-sale



- Increase in gain-on-sale ≈ 150-250bp. Direct measure of lender markup.
  - Given >$3tr originations in Q2-Q4, we estimate total gain-on-sale of $162bn, or $80bn additional income for lenders relative to gain-on-sale at 2.5%

Punchline: Sharp rise in intermediation markups. Why?

1. **Capacity constraints.** Mortgage markups typically rise during refi booms, because supply not perfectly elastic (Fuster et al. 2017)

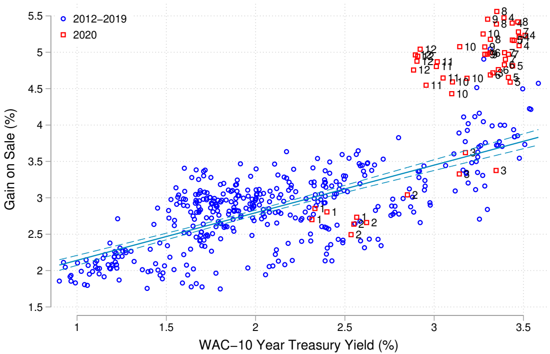
   $\Rightarrow$ Historical relation accounts for only part of markup spike in 2020, however

   $\Rightarrow$ Evidence that **operational and labor market constraints** related to pandemic made credit supply particularly inelastic

2. **Other explanations?** Able to rule out several alternatives (see paper for details)
   - Forbearance and default risk
   - Macro and health shock
   - Market power and shopping

Capacity constraints: evidence

Gain on sale vs refinancing incentive [Mortgage WAC - 10 yr Tsy]



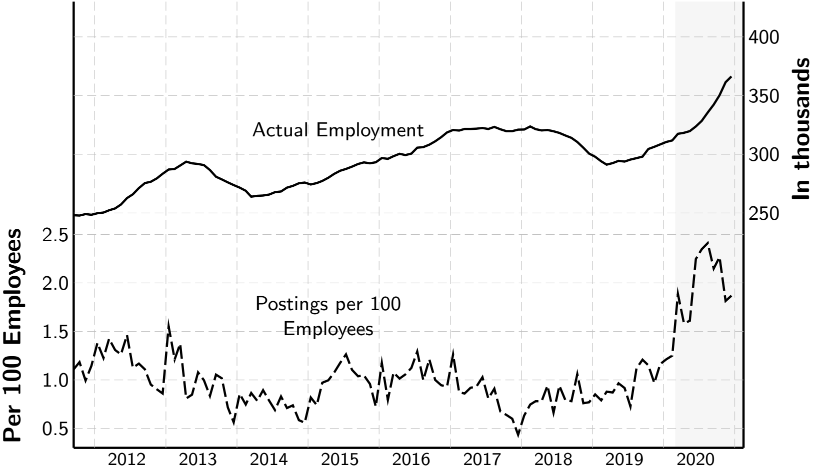
Notes: numbers next to red squares denote the calendar month in 2020. Trend line based on data from 2012-2019.

Regressions: “excess” GOS of \$1-1.50; historical relation explains only 20-40% of rise.

Operational constraints made mortgage supply less elastic

1. Labor market frictions:
   - Practitioners say hard to train & monitor new mtg employees due to remote work
   - Preference for experienced, well-trusted hires (often poached from competitors)
2. Licensing:
   - New loan officers (or moving across banks / states) must be licensed through NMLS
   - Most testing and fingerprinting locations closed in first phase of pandemic
3. Practical challenges in originating and closing loans:
   - Hard to document borrower employment & income (e.g., many firms shut or remote)
   - County recorder offices closed or on limited schedules
   - Property appraisals, notarized closing etc. more difficult due to social distancing

Figure: **Mortgage Loan Officer Job Postings and Employment Growth**



Sources: BLS Establishment Survey and Burning Glass Technologies.

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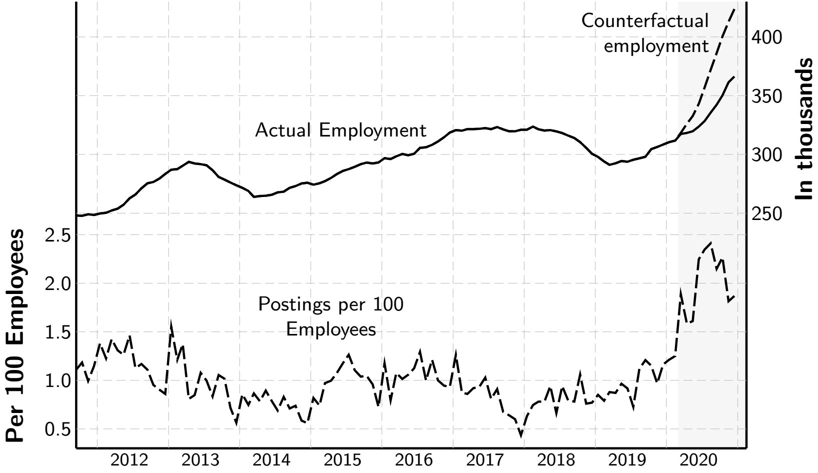
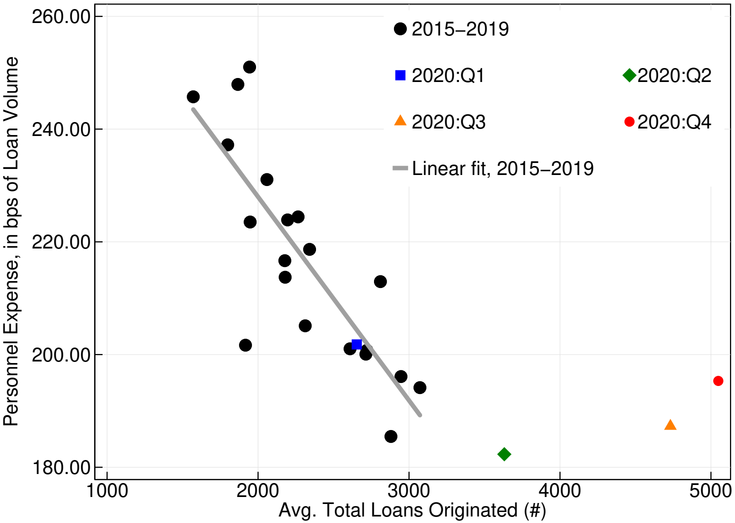


Sources: BLS Establishment Survey and Burning Glass Technologies. Counterfactual based on regression $\log MLO_{t+1} - \log MLO_t = \alpha + \beta_1 p_t + \beta_2 p_{t-1} + \beta_2 p_{t-2} + \varepsilon_t$ over 3/2012-12/2020.

Per unit labor costs vs. volume



Source: Mortgage Bankers Association Quarterly Performance Report

Growth in technology-based lending for "complex" loans

- **Finding:** shift to fintech (greater automation) for loans that are labor-intensive to underwrite and close: purchase mtgs, low FICO loans (Sharpe & Sherlund, 2016)

Dependent variable = 100 if mortgage originator is a fintech lender, zero otherwise

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Purchase Mortgages			Refinancings			All Loans		
Pandemic	2.74***	2.17***	1.48***	-0.78	-0.33	-0.79~	4.20***	1.71***	1.32***
	(0.28)	(0.27)	(0.26)	(0.62)	(0.35)	(0.39)	(0.29)	(0.27)	(0.26)
Pandemic × FICO<680			2.67***			4.04***			2.10***
			(0.26)			(0.34)			(0.21)
Num obs.	5147358	5147358	5147358	5473513	5473513	5473513	10620871	10620871	10620871
Mean of dep. var.	10.74	10.74	10.74	27.14	27.14	27.14	19.19	19.19	19.19
Loan controls	N	Y	Y	N	Y	Y	N	Y	Y

Standard errors clustered by state. $\sim p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$.

Evidence from subprime and jumbo mortgages

Forbearance/default risk did reduce credit supply for riskiest borrowers:

1. Higher mortgage rates for FHA loans (typically lower income, higher risk):
   - Higher spread of FHA to conforming loans.
   - Increase in interest rate spread for low-FICO FHA loans.
   - Also: Many lenders exit FHA + drop in low FICO share of purchase loans.
2. Similarly, higher rate spread for jumbo loans without govt-backed credit guarantee

Fed QE supported mortgage supply:

1. Higher interest rates for "superconforming" mortgages
   - These loans still securitized into agency MBS, but lower eligibility for Fed QE
2. In time series: Large drops in mortgage rates, MBS yields after QE announcements

Closing remarks

- Record boom, but intermediation frictions limited pass-through of low rates
  - Capacity constraints exacerbated by operational challenges during pandemic
  - **150-250bp** rise in gain-on-sale. **$80bn** in super-normal intermediation margins.

- Govt played significant role (credit guarantees + QE) in supporting credit supply
  - ... but guarantees not enough to fully insulate riskier lending in FHA market

- Results highlight benefits of mortgage designs that adjust automatically to downside shocks (e.g. ARMs; Eberly-Krishnamurthy 2014 design)