Objective: Evaluate effects of the Fed’s corporate bond purchase facilities in 2020

- Corporate bond yield spreads and bid-ask spreads: Announcement effects large, purchase effects small, exit effects small
- Issuance: Higher probability of issuance, no clear effect on offering amount, longer maturity of offerings
- Intermediation: Increase in dealer inventories, for both bank-affiliated and stand-alone dealers
FEDERAL RESERVE COVID RESPONSE

- Rates reduced (Fed funds, primary credit, USD swap lines)
- Restarted/introduced facilities to stabilize money markets and bond markets following outflows from prime money market funds and from mutual funds
- Bond purchases covering Treasuries, MBS, corporate bonds, municipal bonds, and ABS
WHY DID THE FED BUY CORPORATE BONDS IN 2020?

- Covid was a corporate crisis and the shock hit at an unfortunate time:
  - Lot of corporate bonds:
    - US non-financial corporations: Bonds outstanding up from $2.9T in 2007Q4 to $5.8T in 2019Q4
    - About half were rated just above junk when COVID hit
  - Many owned by mutual funds: Unstable funding
Large outflows from bond mutual funds in days leading up to Fed’s March 23 announcement:

Source: Vissing-Jorgensen, 2020
Contributed to large yield distortions in investment-grade bonds:

Source: Vissing-Jorgensen (2020)
Perhaps investment grade mutual funds initially had safety attribute but lost it as their risk increased?

- Assets sliding down the curved part of the price-default curve (losing convenience feature) should see abnormally large yield changes relative to the change in their default risk ($dP/d(\text{Default})$ is higher)

![Graph showing the price-default curve and a bond fund moving down as the price-risk curve increases its risk from point A to B.](image)
Further market dysfunction could eventually have caused re-financing problems and a financial crisis (life insurer particularly vulnerable)

- But corporate credit facilities may also have been directed at:
  1. Treasury market
  2. Smaller firms (SMEs)
Relation to Treasury market: Mutual funds had purchased both a lot of corporate bonds and a lot of Treasury debt.
Faced with outflows, funds were disproportionately selling Treasuries (more liquid)

Along with foreign and hedge fund Treasury selling, this lead to a sharp Treasury yield spike: 10yr up 64 bps from March 9-18

Source: Vissing-Jorgensen, 2020
Relation to SMEs:

- As COVID hit, large firms were drawing down credit lines at banks in vast amounts:

Source: Acharya and Steffen, 2020
• The Fed may have worried, that credit line drawdowns would **constrain lending to smaller bank-reliant firms**
Reinvigorating corporate bond markets via corporate QE **may indirectly help small firms**

- **ECBs Corporate Sector Purchase Program: Crowded in SME lending** (large firms use up less of bank lending capacity)

- **SME customers of banks with higher (ex-ante) large-firm credit line exposure** borrowed less during COVID than other SMEs: Kapan and Minoiu (2020), for both lending standards, PPP loans and syndicated loans
March 15, 5 pm (Sunday):
- Lowering of Fed funds target, primary credit rate, USD swap line rate
- At least $500B Treasury purchases, at least $200B MBS purchases

March 23, 8 am (Monday):
- Unlimited Treasury, MBS purchases
- $300B in lending ($30B credit protection from Treasury), via:
  1. Corporate bond purchases: Investment grade issuers only. <5yr + ETFs (any maturity) (SMCCF), <4yr (PMCCF)
  2. Term Asset-Backed Securities Loan Facility (TALF): Lending against AAA-rated ABS
  3. CPFF, MMLF expanded with more muni debt
  4. Main Street Lending Program (MSLP) will be forthcoming

April 9, 8:30 am (Monday):
- Corporate bond purchases (plus TALF) expanded: Up to $850B, $85B credit protection
  Adding fallen angels and high yield ETFs
- Main Street Lending Program: Up to $600B, $75B credit protection
  Municipal Liquidity Facility (MLF): Up to $500B, $35B credit protection
TINY PURCHASES UNDER THE CORPORATE CREDIT FACILITIES!

Corporate purchases were tiny: **Nothing** until May 12, **almost nothing** after that: $14.2B in total

Treasury purchases were huge: >$1T in 2020Q1 alone, greater than Treasury purchase total for QE1/QE2/QE3

Yet, many credit CCFs with being **instrumental in turning bond markets around** (along with Treasury and MBS purchases)

**Why?**

- Large *yield effects upon announcement*
- **Resurgence of corporate bond issuance** in months after announcement

![US corp bond issuance, monthly](source: SIFMA)
• Whether it’s what you say or what you buy is by now largely resolved: For corporate bonds in 2020 it was what you said

• Effects must (if any) have worked like Draghi’s whatever-it-takes speech in July 2012 and the ECB’s OMT program:
  o You announce you’re ready to purchase huge amounts
  o This changes investors’ risk-perceptions
  o Therefore, you don’t actually have to deliver on huge purchases to stabilize the market

• It’s like announcing deposit insurance in the middle of a bank run, except that this one was a flight from mutual funds and ETFs
  • Falato, Hortacsu and Goldstein (2020), Fig 6: Outflow reverse after announcements

• By contrast, there was nothing magic about Treasury QE:
  Treasury selling was not due to credit (or inflation) risk but liquidity needs (Vising-Jorgensen, 2020)
  o Mutual funds w/outflows, foreign central banks (FX intervention), hedge funds unwinding levered Treasury basis trades
  o So, the Fed had to deliver on huge Treasury purchases: For Treasuries, it was what you bought more than what you say
Announcements do not line up with Treasury yield spike reversal:

Vertical lines mark 3/15, 3/23, 4/9

But yield spike reversed as Fed purchases increased sharply starting March 19:
1. Asset pricing effects: Announcement effects/purchase effects

2. Effects on borrowing quantities: Did CCFs cause the resurgence of issuance?

3. Effects on real variables (consumption, investment, employment) or realized/expected inflation
   - **Eligible firms**: Did they need funds? How were issuance proceeds used?
   - **Ineligible firms**: Did they benefit indirectly via less constrained banks?
   - **Broader effects**: Would failure to step in have made the COVID crisis a financial crisis?

4. Lack of side effects: Moral hazard? Bubbles?
Comment 1. How solid is the announcement effect evidence? (In this and related papers)

Challenges:

- Fed announced many things on 3/23
- Cares Act negotiated in days leading up to passing on 3/27 (passed Senate on 3/25)
- COVID news got somewhat better: Growth rate of new cases fell
High frequency evidence in Haddad, Moreira and Muir (RFS) based on ETFs

March 23: Large IG bond returns
- IG return: Implies yield down 70 bps
- ST IG (<5yr) return: Implies yield down 200 bps

April 9: Large HY returns (newly eligible via ETFs)

Announcements also affected CDS rates
Current paper: Individual bonds (also in final version of Haddad et al, but not sure who did it first)

- Useful to ensure effects are not only for ETFs.
  But harder: Illiquidity $\rightarrow$ Four-day window $\rightarrow$ Less well identified

- Result: SMCCF eligible: <5yr term and inv. grade
  March 23: Treatment effect = -66 bps
  April 9: Treatment effect = +22 bps

$$\Delta M_{b,t} = \alpha_t + \beta_{b,t} \text{SM-CFF eligible}_{b,t} + \gamma_t \text{Bond characteristics}_{b,t} + \epsilon_{b,t}$$
Concern 1. No control for maturity: It’s yield spreads, but shorter spreads tend to have higher “beta” in crises

Controls: log(age), log(amount outstanding), log(offering amount), dummies for callable, secured, shelf registration

• Different pre-trends for Eligible IG and Ineligible IG are problematic
Competing paper by Gilchrist, Wei, Yue and Zakrajsek (2020): Term and rating controls

- **Approach 1:** Regression discontinuity in maturity. Controlling for quadratic in time to maturity. Run for IG only. 
  - Total treatment effect (across March 23, April 9) of 60 bps (two-week pre and post periods)

- **Approach 2:** Pairs of bonds for each company. Treated: Longest eligible. Control: Shortest ineligible. Run for IG only. 
  - Total treatment effect (across March 23, April 9) of 23 bps (10-day pre and post periods)

**Concern 2:** HY were treated on April 9: Newly eligible via ETF purchases

- Fallen angels were treated on April 9: Newly eligible
  - Too small estimated treatment effect (wrong sign even)
  - Need to include fallen angel dummy and HY dummy. Can still identify effect of direct purchases within firm

Gilchrist, Wei, Yue and Zakrajsek (2020): 18 fallen angels, approach 2 (within firm)

- 123 bps treatment effect on April 9 (5-day pre and post periods, even larger effect for 10-day pre and post periods)
Concern 3. Effects of the Cares Act (relevant for cross-firm comparisons)

Suggestion: Go over Cares Act in detail, drop the more affected industries

Avg. stock return, March 23 to 25, by industry

- 72: Accommodation and food services
  - Got size exception for PPP (500 is per location)
- 48: Includes airlines, got bailout
- 62: Includes hospitals, got bailout
  etc.

Source: My calculation based on CRSP data
Comment 2. Purchase effects – magnitude, identification issues

Estimated effect: Less than -3 bps per cash bond purchase

Suggestion: Document total purchase effect, in addition to per purchase effect

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<tr>
<td>Total</td>
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</table>

- 1,353 cusips purchased (outside ETFs). On avg. twice → The total purchase effect is less than -6 bps, i.e., small
Concern: Are Fed purchases random? No

- “How does the SMCCF decide how many bonds or ETFs to buy each day?
  The pace of purchases is based on a percentage of average daily volumes in the respective markets. The percentage to be purchased each day is based upon an array of measures of corporate bond market functioning, the rate of change of such measures, and other indicators. Measures of corporate bond market functioning include, but are not limited to, transaction cost estimates, bid-ask spreads, credit curve shape, spread levels and volatility, trading volumes, and dealer inventories.”

- Are similar purchase strategies used cross-sectionally, to pick which bonds are purchased on a given day?
- Gilchrist, Wei, Yue and Zakrajsek (2020): Intraday purchase evidence, approach 2 (pairs of bonds)

![Credit spreads graph]

- Authors back out time of purchase from price paid and Trace data on transactions
- Looks causal: Sharp drop, no pre-trend
- Purchase effect on credit spread =3 bps per purchase
Comment 3. Issuance results – did the CCFs cause the resurgence of issuance?

Identification: Diff-in-diff

1. Issuance of IG versus HY over time
   - **Works well**: IG issuance picks up around March 23, HY around April 9

2. Issuance of <5 yr versus >5 yr maturity bonds over time
   - **This doesn’t work**: <5 yr issuance doesn’t pick up around March 23, but >5 yr issuance does

(a) By maturity

(b) By credit rating
• Authors’ interpretation of maturity result: program worked great!

“These results suggest that issuers are not issuing debt specifically targeting SMCCF purchase eligibility […] Instead, consistent with the improved overall secondary market functioning […] issuers issue across the maturity spectrum”

• What would a labor economist say?

  o If any result can be declared a victory for the program, then it’s not a good test

  o Same issue with the IG vs. HY comparison: If program was really effective at calming markets, perhaps HY issuance should be expected to pick up more (larger effect of changing risk premia on a risker asset)

  o This needs much more discussion upfront:
    Identification works of effects are narrow, not broad

Suggestion: Don’t claim maturity extension as a success of the program
Comment 4. Real effects of the corporate credit facilities?

CCF eligible firms (inv grade rated): Were their real decisions constrained by lack of funding? Probably not

1. Large increase in bank borrowing during COVID, driven by drawdown of existing credit lines by large firms
   Greenwald, Krainer and Paul (2020), Chodorow-Reich, Darmouni, Luck and Plosser (2020)

2. Even among BBB rated, only 12% maxed out their credit line. 23% of HY maxed out theirs  (Darmouni and Siani (2020))

3. Bond issuance proceeds were not used to increase investments, but mainly to increase cash (Darmouni and Siani (2020))

4. Also, if CCF eligible firms were constrained from undertaking otherwise valuable activities we should see higher announcement returns for eligible firms, but we don’t
Source: My quick attempt, based on stocks of the 3000’ish firms who also appear in Compustat and CapitalIQ

- **No discontinuity** with barely IG outperforming barely HY on March 23

Consistent with issuance results being driven by opportunistic firms (no debt due<= 2 yrs)

- **Right graph controls for MSLP eligibility** (confounding factor):

  Firms with >10,000 employees are ineligible for both Main Street Lending Program (announced same day) and PPP (negotiated same day)
CCF ineligible firms: Still unclear

Many probably were constrained:

• Only large firms borrowed more from banks (ref’s above) and their drawdowns constrained SME lending (Kapan-Minoui)
• Main Street Lending Program announcement had an effect, even for publicly traded smaller firms

| Regression discontinuity of daily stock returns on March 23 around the 10,000 employee cutoff for MLSP (my calculations) |
| Sample omits firms with <500 employees (affected by PPP) and firms in 2-digits NAICS codes 72, 71, 62, 48 (directly affected by Cares Act) |

But did they benefit indirectly from the Corporate Credit Facilities?

• It’s not clear that March 23 announcement played a role in stopping the credit line drawdowns: Stopped 1-2 weeks later
• And only about 20% of bonds issued by large firms during COVID were used to repay bank debt, Darmouni and Siani (2020)
For the Fed’s corporate credit facilities:

1. Asset pricing effects: Yes, mainly announcement effects
2. Effects on borrowing/lending quantities: Yes, along credit rating but not maturity dimension
3. Effects on real variables or inflation: Not clear, bond proceeds not used for investment, unclear effects on SMEs
4. Lack of side effects: Too early

PITCH: Focus paper on issuance effects? Most novel and perhaps most interesting, given closer link to real effects

- Announcement effects and purchase effects:
  Competing papers did a lot of clever stuff (intra-day ETFs, RD/pairs, intraday purchase)
- There’s also a crowded literature on liquidity and intermediation effects, e.g., Kargar et al (RFS), OHara and Zhou (JFE)