Appendix

Contents

A.1 Measures of Bond Liquidity

We measure bond liquidity in three ways. All three proxies take larger values when liquidity is lower, so they should be interpreted as proxies for illiquidity rather than liquidity. We calculate these measures for each bond on a daily basis by using TRACE data.

First, we use the Effective Tick Size ($Tick$), which infers the effective bid-ask spread from the clustering of trade prices on round price increments (Holden, 2009, Goyenko et al., 2009). To illustrate, Goyenko et al. (2009) explain that "we assume that price clustering is completely determined by spread size. For example, if the spread is $\$\frac{1}{4}$, the model assumes that the bid and ask prices employ only even quarters. The quote could be $\$25\frac{1}{4}$ bid, $\$25\frac{1}{2}$ offered, but never $\$25\frac{3}{8}$ bid, $\$25\frac{5}{8}$ offered. Thus, if odd-eighth transaction prices are observed, one infers that the spread must be $\$\frac{1}{8}$. This implies that the simple frequency with which closing prices occur in particular price clusters can be used to estimate the spread probabilities."

Second, we use the Imputed Roundtrip Cost (IRC), a standard proxy for bid-ask spread in fixed-income markets. Developed by Feldhutter (2012), this measure is based on the differences between the highest and lowest prices for a given bond that are likely part of the same round-trip trade. Round-trip trades are imputed for a given bond on a given day if there are two or three trades of the same volume within 15 minutes. The highest trade price is assumed to be an investor buying from a dealer, the lowest price an investor selling to a dealer, and the investor round-trip cost to be the highest minus the lowest price. A bond's IRC on a given day is the average round-trip cost for that bond on that day.

Finally, we use the Inter-Quartile Range (IQR), which is the inter-quartile range of a bond's prices on a given day. For each bond on each day, we first compute three metrics from the distribution of the bond's trade prices on that day: the average price, $\bar{p}$, and the 25th and 75th percentiles, p_{25} and p_{75}. The IQR is then given by $100 \times (p_{75} - p_{25})/\bar{p}$. Developed by Song and Zhou (2007) and Pu (2009), IQR reduces the effect of outliers on measured illiquidity compared to other measures. Nevertheless, it may also underestimate illiquidity by excluding the tails of the bond price distribution.

A.2 Proofs

We prove all of our theoretical results in a general setting, in which the ETF's endowment portfolio can include not only the index portfolio but also some amount of cash. Specifically,

let α_0 denote the fraction of the ETF's initial portfolio that is invested in cash, so that the remaining fraction, $1-\alpha_0$, is invested in the equal-weighted index portfolio of the N securities. Our results and their proofs hold for any $0 \leq \alpha_0 \leq 1$.

Proof of Proposition 1. Consider the AP's profit maximization problem (2). Suppose the AP's participation constraint is not binding. The first-order condition is given by

$$\alpha + (1-\alpha)\mu - p_E - \phi(1-\alpha)^2 x = 0\,. \tag{A1}$$

Solving for x, we immediately obtain equation (3). Combining equation (3) with the market clearing condition $x = \pi_c - \pi_s$ immediately yields the equilibrium ETF price in equation (4).

At the market-clearing ETF price p_E, the AP's participation constraint is given by

$$\Gamma = \frac{1}{2}\phi(1-\alpha)^2(\pi_c - \pi_s)^2 - \lambda I \geq 0\,,$$

which gives the cutoff basket count at which the AP breaks even:

$$\bar{I} = \frac{\phi(1-\alpha)^2(\pi_c - \pi_s)^2}{2\lambda}\,, \tag{A2}$$

concluding the proof. □

Example. We now present an example to illustrate the evolution of the ETF portfolio with a given ETF basket. Suppose $N = 2$, $\alpha_0 = 0.2$, $I = 1$, $\alpha = 0.6$, and $\pi_c - \pi_s = -0.5$. The following table summarizes the evolution of the ETF portfolio over time.

Date		ETF shares	Cash	Security 1	Security 2
$t = 0$	Initial ETF portfolio	1	0.2	0.4	0.4
$t = 1$	Portfolio delivered for creations	0.5	0.3	0.2	0
$t = 2$	Resulting ETF portfolio	1.5	0.5	0.6	0.4

In words, row 1 shows that at $t = 0$, the ETF holds a portfolio whose weight on cash is 0.2 and whose weights on both of the unique security names, security 1 and security 2, are 0.4. The ETF issues a total of 1 ETF share at $t = 0$.

Row 2 shows that at $t = 1$, there is a net demand for 0.5 ETF shares, so the AP creates 0.5 ETF shares by delivering a portfolio to the ETF according to the creation basket. The creation basket contains cash and security 1 only, with a portfolio weight of 0.6 on cash and 0.4 on security 1. This implies that the AP delivers 0.3 units of cash and 0.2 units of security 1 to the ETF, in exchange for 0.5 ETF shares to be created.

Row 3 describes the situation after the in-kind creation. The ETF portfolio, which corresponds to a total of $1.5 = 1 + 0.5$ ETF shares, includes $0.5 = 0.2 + 0.3$ units of of cash, $0.6 = 0.2 + 0.4$ units of of security 1, and $0.4 = 0.4 + 0$ units of security 2. Scaling the portfolio weights to add up to one, these weights are given by a 3×1 vector:

$$w_E = \left(\frac{1}{3}, \frac{2}{5}, \frac{4}{15} \right) .$$

The three weights correspond to cash, security 1, and security 2, respectively.

Proof of statements following equation (5). Denote $\delta_\pi \equiv \pi_c - \pi_s$. Generalizing the above example, the date-2 ETF portfolio weights are given by the $(N+1) \times 1$ vector

$$w_E = \left(\underbrace{\frac{\alpha_0 - \delta_\pi \alpha}{1 - \delta_\pi}}_{\text{cash}}; \underbrace{\frac{(1-\alpha_0)I - \delta_\pi(1-\alpha)N}{(1-\delta_\pi)IN}, ..., \frac{(1-\alpha_0)I - \delta_\pi(1-\alpha)N}{(1-\delta_\pi)IN}}_{I \text{ basket securities}}; \underbrace{\frac{1-\alpha_0}{(1-\delta_\pi)N}, ..., \frac{1-\alpha_0}{(1-\delta_\pi)N}}_{N-I \text{ non-basket securities}} \right) . \tag{A3}$$

Thus, the expected value and variance of the date-2 ETF portfolio is given by

$$\mu_E = \frac{\alpha_0 - \delta_\pi \alpha}{1 - \delta_\pi} + \frac{1 - \alpha_0 - \delta_\pi(1-\alpha)}{1 - \delta_\pi} \mu \,, \tag{A4}$$

$$\sigma_E^2 = \frac{(1-\alpha_0)(1 - 2\delta_\pi(1-\alpha) - \alpha_0)I + \delta_\pi^2(1-\alpha)^2 N}{(1-\delta_\pi)^2 IN} \sigma^2 \,. \tag{A5}$$

Straightforward calculation shows that

$$\frac{\partial \mu_E}{\partial \alpha} = \frac{\delta_\pi(\mu - 1)}{1 - \delta_\pi} ,$$

which is negative (positive) when $\delta_\pi < 0$ ($\delta_\pi > 0$), that is, when creations (redemptions) happen. In other words, more cash in the basket reduces the ETF portfolio's expected time-2 payoff after creations, but increases it after redemptions. We also have

$$\frac{\partial \sigma_E^2}{\partial I} = -\frac{(1-\alpha)^2 \delta_\pi^2 \sigma^2}{(1-\delta_\pi)^2 I^2} < 0 \,. \tag{A6}$$

Consider the ETF's ex-ante welfare maximization problem (1) and re-arrange terms:

$$\begin{aligned} \mathrm{E}[W] &= \pi_c u(p_E) + \pi_s E[u(2v_E - p_E)] + (1 - \pi_c - \pi_s) E[u(v_E)] \\ &= \delta_\pi p_E + V(\mu_E, \sigma_E^2) \,, \end{aligned} \tag{A7}$$

where

$$V(\mu_E, \sigma_E^2) = (1 - \pi_c - \pi_s) \left(\mu_E - \frac{\rho \sigma_E^2}{2} \right) + \pi_s \left(2\mu_E - 2\rho\sigma_E^2 \right) , \tag{A8}$$

which gives the closed-form expressions for the re-expressed objective function (5), and μ_E and σ_E^2 are given by (A4) and (A5), respectively. It is straightforward that $V(\mu_E, \sigma_E^2)$ increases with μ_E and decreases with σ_E^2. Note that p_E depends on transaction costs ϕ and λ, whereas $V(\mu_E, \sigma_E^2)$ does not.

Proof of Proposition 2. First, we consider the optimal choice of α. The ETF chooses α to maximize $\mathrm{E}[W]$ in equation (A7), where $V(\mu_E, \sigma_E^2)$ comes from equation (A8):

$$\begin{aligned} \mathrm{E}[W] &= \delta_\pi p_E + V(\mu_E, \sigma_E^2) \\ &= \delta_\pi p_E + (1 - \pi_c - \pi_s)\left(\mu_E - \frac{\rho\sigma_E^2}{2}\right) + \pi_s\left(2\mu_E - 2\rho\sigma_E^2\right) . \end{aligned} \tag{A9}$$

We substitute for p_E, μ_E, and σ_E^2 from equations (4), (A4), and (A5), respectively. All of them are functions of α. We then differentiate $\mathrm{E}[W]$ in equation (A9) with respect to α, obtaining the first-order condition

$$\frac{\delta_\pi\left[(1 - \pi_c + 3\pi_s)((1-\alpha)\delta_\pi N - (1-\alpha_0)I)\rho\sigma^2 + 2(1-\alpha)\delta_\pi(1-\delta_\pi)^2\phi IN\right]}{(1-\delta_\pi)^2 IN} = 0\,, \tag{A10}$$

from which we obtain a closed-form solution,

$$\alpha^* = 1 - \frac{(1 - \pi_c + 3\pi_s)(1-\alpha_0)I\rho\sigma^2}{(1 - \pi_c + 3\pi_s)\delta_\pi N\rho\sigma^2 + 2\delta_\pi(1-\delta_\pi)^2\phi IN}\,. \tag{A11}$$

This is a valid solution as long as $\delta_\pi > 0$. If $\delta_\pi \leq 0$ then we obtain $\alpha^* = 1$, given the restriction $0 \leq \alpha \leq 1$. From equation (A11), we immediately see that

$$\lim_{\phi \to +\infty} \alpha^* = 1\,.$$

When the illiquidity parameter ϕ approaches infinity, α^* approaches one. Therefore, $\alpha^* > 0$ when ϕ is sufficiently large, as stated in part (i) of the proposition.

To prove part (iii), we differentiate α^* in equation (A11) with respect to ϕ:

$$\frac{\mathrm{d}\alpha^*}{\mathrm{d}\phi} = \frac{2(1 - \pi_c + 3\pi_s)(1-\alpha_0)(1-\delta_\pi)^2 I^2\rho\sigma^2}{\delta_\pi\left(2(1-\delta_\pi)^2 I\phi + (1 - \pi_c + 3\pi_s)\rho\sigma^2\right)^2 N} > 0\,,$$

as long as $\delta_\pi > 0$. If $\delta_\pi \leq 0$ then α^* does not depend on ϕ. Therefore, α^* is weakly increasing in ϕ. Another way to see the result is to use the implicit function theorem. Denoting the left-hand side of equation (A10) by W_α, we obtain

$$\begin{aligned} \frac{\mathrm{d}\alpha^*}{\mathrm{d}\phi} &= -\frac{\partial W_\alpha}{\partial\phi}\left(\frac{\partial W_\alpha}{\partial\alpha}\right)^{-1} \\ &= \frac{2(1-\delta_\pi)^2(1-\alpha)I}{(1 - \pi_c + 3\pi_s)\rho\sigma^2 + 2(1-\delta_\pi)^2\phi I} \geq 0\,, \end{aligned}$$

when $\alpha \leq 1$.

Next, we consider the optimal basket count. From Proposition 1, the AP's participation constraint is not binding if and only if $I \leq \bar{I}$, where $\bar{I}$ is in equation (A2). When $I \leq \bar{I}$, equation (4) implies that p_E does not depend on I. Therefore, based on equation (A7), E[W] depends on I only through $V(\mu_E, \sigma_E^2)$, which is increasing in I, according to equation (A6). As a result, the ETF chooses an I as large as possible subject to the AP's participation constraint $I \leq \bar{I}$ and the feasibility constraint $I \leq N$, implying that

$$I^* = \min\{\bar{I}, N\}\,.$$

Note that I^* decreases in λ because $\bar{I}$ decreases in λ. In addition,

$$\lim_{\lambda \to +\infty} I^* = \lim_{\lambda \to +\infty} \bar{I} = 0\,.$$

Therefore, $I^* < N$ when λ is sufficiently large, as stated in part (ii) of the proposition.

Finally, we turn to part (iv) of the proposition. Let $w_{E,i}$ and $w_{B,i}$ denote the portfolio weights of security i in the ETF portfolio and the benchmark index portfolio, respectively. Since the returns of the N securities are i.i.d. with volatility σ^2, the tracking error of the ETF's security portfolio simplifies to

$$\Delta = \text{Var}\left(\sum_{i=1}^{N}(w_{E,i} - w_{B,i})\tilde{r}_i\right) = \sigma^2 \sum_{i}^{N}(w_{E,i} - w_{B,i})^2\ ,$$

where $\tilde{r}_i$ is the return on security i. Recognizing that $w_{B,i} = 1/N$ and substituting for $w_{E,i}$ from equation (A3), we obtain

$$\frac{\partial \Delta}{\partial I} = -\frac{(1-\alpha)^2 \delta_\pi^2 \sigma^2}{(1-\delta_\pi)^2 I^2} < 0\,.$$

Because I^* decreases in λ and Δ depends on λ only through I, we have that Δ is increasing in λ, concluding the proof of part (iv) of the proposition. □

A.3 Model Extension: CARA Utility

In our baseline model, we use a mean-variance utility function to obtain analytical solutions. In this section, we replace mean-variance utility with CARA utility, $u(c) = -\exp(-\rho c)$, where c represents the agent's total lifetime consumption. We maintain all other assumptions of the baseline model, setting $\alpha_0 = 0$ to simplify the exposition. We solve the model numerically and show that its main results continue to hold.

The results regarding the optimal basket count hold automatically because, according to the proof of Proposition 2, the ETF's optimal basket count choice depends on the AP's participation constraint but not on the agents' utility function.

The results regarding the optimal basket cash share also continue to hold under CARA utility, as we show numerically. After solving the model for many combinations of plausible parameter values, we find that the equilibrium basket cash share is always strictly between 0 and 1, and that this share is increasing with security illiquidity. In addition, we obtain the same results in the special case of $\sigma = 0$, in which the risk-based motive for holding cash is absent and ETF cash holdings are driven solely by liquidity transformation.

Under CARA utility, the ETF is maximizing an objective function given by

$$\max_{\alpha} \pi_c \left(-e^{-\rho p_E}\right) + \pi_s \left(-e^{-\rho\left(2\mu_E - 2\rho\sigma_E^2 - p_E\right)}\right) + (1 - \pi_c - \pi_s)\left(-e^{-\rho\left(\mu_E - \frac{1}{2}\rho\sigma_E^2\right)}\right), \tag{A12}$$

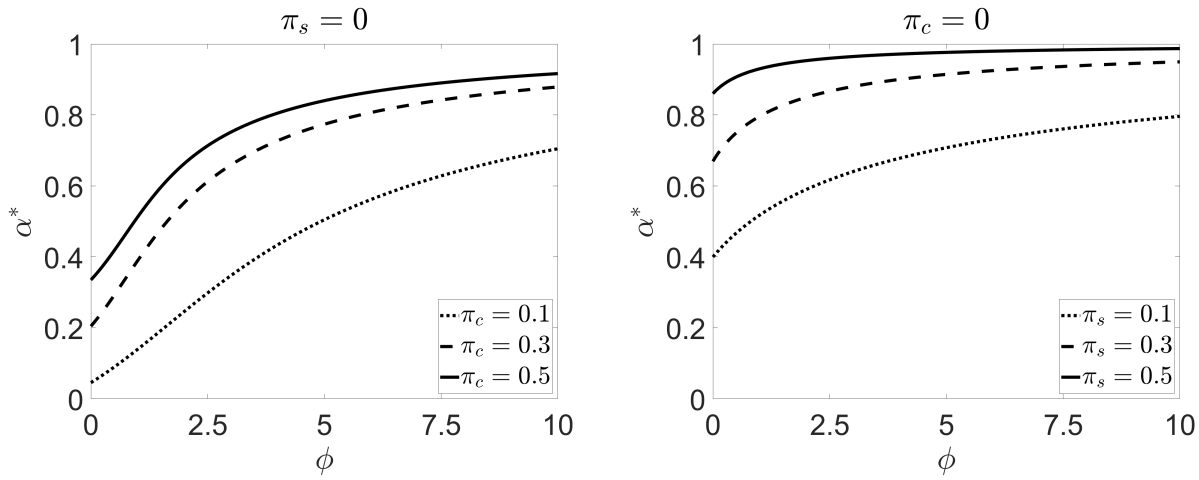
where we highlight the focus on optimizing the basket cash share, α. In equation (A12), the values of p_E, μ_E, and σ_E^2 are the same as in the baseline model (i.e., they are given in equations (4), (A4), and (A5), respectively). Denote $\delta_\pi = \pi_c - \pi_s$, as before. Differentiating the expression in equation (A12) with respect to α, we obtain the first-order condition

$$\begin{aligned}
0 \;=\;& \pi_c(1 - \mu + 2(1-\alpha)\phi\delta_\pi)\exp\left(-\rho\left(\alpha + \mu - \alpha\mu - (1-\alpha)^2\phi\delta_\pi\right)\right) \\
+\;& \pi_s\left(\mu - 1 - 2(1-\alpha)\phi\delta_\pi + \frac{2(\mu-1)\delta_\pi}{1-\delta_\pi} + \frac{4\rho\sigma^2\delta_\pi((1-\alpha)N\delta_\pi - I)}{IN(1-\delta_\pi)^2}\right) \\
& \exp\left(-\rho\left(\alpha\mu - \mu - \alpha + (1-\alpha)^2\phi\delta_\pi + \frac{2(\mu(1-(1-\alpha)\delta_\pi - \alpha\delta_\pi))}{1-\delta_\pi} - \frac{2\rho\sigma^2\left((1-\alpha)^2N\delta_\pi^2 - 2(1-\alpha)\delta_\pi I + I\right)}{IN(1-\delta_\pi)^2}\right)\right) \\
+\;& (1 - \pi_c - \pi_s)\left(\frac{(\mu-1)\delta_\pi}{1-\delta_\pi} + \frac{\rho\sigma^2\delta_\pi((1-\alpha)N\delta_\pi - I)}{IN(1-\delta_\pi)^2}\right) \\
& \exp\left(-\rho\left(\frac{\mu(1-\delta_\pi(1-\alpha)) - \alpha\delta_\pi}{1-\delta_\pi} - \frac{\rho\sigma^2\left((1-\alpha)^2N\delta_\pi^2 - 2(1-\alpha)\delta_\pi I + I\right)}{2IN(1-\delta_\pi)^2}\right)\right).
\end{aligned} \tag{A13}$$

This equation cannot be solved analytically. We solve it numerically for many sets of parameter values. To illustrate the results, we use the parameters $N = 10, I = 1, \rho = 1, \mu = 2, \sigma = 1$. We plot the optimal basket cash weight α^* against the illiquidity parameter ϕ and vary both π_c and π_s to show the comparative statics. Figure A.1 displays the results.

The left-hand panel of Figure A.1 considers the case in which the ETF expects redemptions (i.e., $\pi_c > \pi_s$); the right-hand panel considers creations (i.e., $\pi_c < \pi_s$). In both cases, the ETF optimally chooses a basket cash share strictly between 0 and 1. Moreover, the optimal basket cash share is higher when the demand for liquidity transformation is higher in either of two ways: (i) when the security is more illiquid (i.e., when ϕ is larger) or (ii) when the imbalance in the secondary market for ETF shares is larger (i.e., when $|\pi_c - \pi_s|$

Figure A.1: ETF optimal basket cash share with CARA utility



Parameters: $N = 10, I = 1, \rho = 1, \mu = 2, \sigma = 1$

is larger). We find the same patterns for a wide range of parameter values for which the first-order condition is numerically solvable. Even though we have not been able to derive analytical proofs, our extensive parameter search has not found a counterexample.

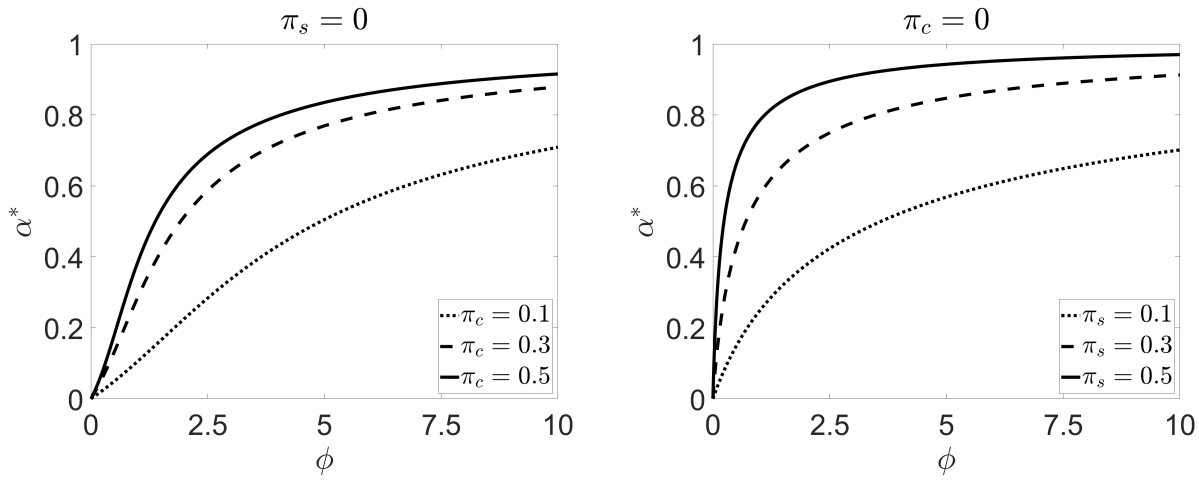
In addition to demonstrating the robustness of our theoretical results to an alternative utility function, the CARA utility framework provides useful insights into the special case of $\sigma = 0$. In this case, the standard risk-based motive for holding cash is shut down and ETF cash holdings are driven solely by liquidity transformation. (In the baseline model with mean-variance utility, the optimal basket cash share is invariant to ϕ when $\sigma = 0$, precluding the analysis of how the cash share responds to a higher need for liquidity transformation.) Conveniently, when $\sigma = 0$, the first-order condition in equation (A13) does not depend on N or I. This first-order condition quickly yields the following result.

PROPOSITION **3.** *A zero basket cash share, $\alpha^* = 0$, is optimal when $\phi = 0$ and $\sigma = 0$.*

The proposition states that if the N underlying securities are risk-free and liquidity transformation is of no concern, it is optimal for the ETF to include zero cash in its CR/RD basket. Figure A.2 illustrates this result, plotting α^* against ϕ for the same parameters as before, except for $\sigma = 0$. (Figure A.2 is the counterpart of Figure A.1, except that it has $\sigma = 0$.) The figure shows that the ETF's optimal basket includes no cash when the underlying securities are perfectly liquid (i.e., $\alpha^* = 0$ when $\phi = 0$, as in Proposition 3). In addition, the basket includes more cash when the underlying securities are less liquid, just like in Figure A.1 (i.e., α^* is increasing in ϕ). Given that $\sigma = 0$, the presence of cash in the

basket is completely driven by the ETF's desire to transform liquidity. When there is no need for liquidity transformation, there is no need for cash in the basket, and a higher need for liquidity transformation calls for more basket cash.

Figure A.2: ETF optimal basket cash share with CARA utility and $\sigma = 0$



Parameters: $\rho = 1, \mu = 2, \sigma = 0$

A.4 Index Rebalancing

The vast majority of fixed-income indexes rebalance on a monthly basis, at month-ends. Monthly rebalancing applies to all of the indexes that we use in our analysis, as we confirm by manually checking the prospectuses of ETFs tracking those indexes. The only exception is WisdomTree indexes, which remove downgraded bonds monthly but do the rest of their rebalancing quarterly. We treat the monthly bond removals by WisdomTree as rebalancing for our purposes because they, too, cause jumps in index portfolio weights, albeit of smaller magnitudes compared to regular index rebalancing.

To illustrate the effects of index rebalancing on index composition, we turn to one of the largest bond ETFs, the iShares 1-5 Year Investment Grade Corporate Bond ETF (IGSB). This ETF, which has over $22 billion under management as of February 2022, tracks the ICE BofA US Corporate (1-5Y) index. We calculate daily changes in index composition by first computing the first difference in each bond's daily index weights and then summing the absolute values of these differences across bonds. Figure A.4 plots the time series of these daily changes (black dash-dot line). We observe that changes in index composition tend to be zero, except for positive spikes at monthly intervals.

Figure A.4 also plots the time series of the ETF's deviations from the index (blue solid line). To compute this deviation on a given day, we first calculate the difference between the ETF portfolio weights and index weights for each bond, and then sum the absolute values of these differences across all bonds in the ETF's portfolio. Comparing the solid and dash-dot lines, we see that the ETF deviations from the index tend to spike at about the same time as do the changes in index composition.

The presence of monthly spikes in ETFs' index deviations alleviates the concern that index rebalancing is fully anticipated by ETFs and incorporated into their basket management strategies before the rebalancing date. Conversations with fund managers confirm that index rebalancing cannot be fully predicted ex ante. Furthermore, even if the rebalancing were fully anticipated, the ETF would presumably not want to adjust its portfolio too much ahead of the rebalancing date, because such forward-looking portfolio adjustments create tracking error. Consistent with this argument, Li (2021) reports that equity ETFs mostly rebalance on the reconstitution day. While the levels of index deviations vary across ETFs, their patterns largely resemble those in Figure A.4.

In our index data, month-end rebalancing is often reported on the first day of the following month. There are also instances of delayed reporting when the rebalancing date is shifted by a day or two. To address these occasional reporting discrepancies, we take the day with the largest change in index composition in each month as that month's rebalancing date.

A.5 Appendix Figures and Tables

Figures

Tables

Bond Fixed Effects

Basket Inclusion Indicator Variable

3 Day Bond Liquidity

ETF Ownership Control

Shared Indexes Control

Zero Trading Days Control

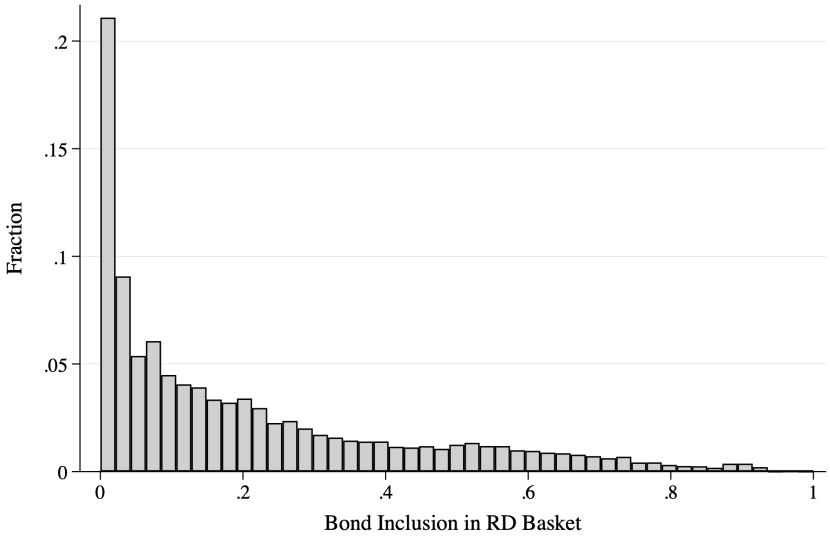
All Controls

Alternate Basket Imbalance Measure

Figure A.3: Distributions of Basket Inclusion Probabilities

This figure shows the empirical distribution of basket inclusion probabilities for all bonds held by corporate bond ETFs. The basket inclusion probability for a given bond held by a given ETF is calculated as the number of times this bond appears in this ETF's CR (RD) basket divided by the total number of the ETF's CR (RD) baskets. This figure supports the discussion in Section 3.2.

(a) Redemption Basket



(b) Creation Basket

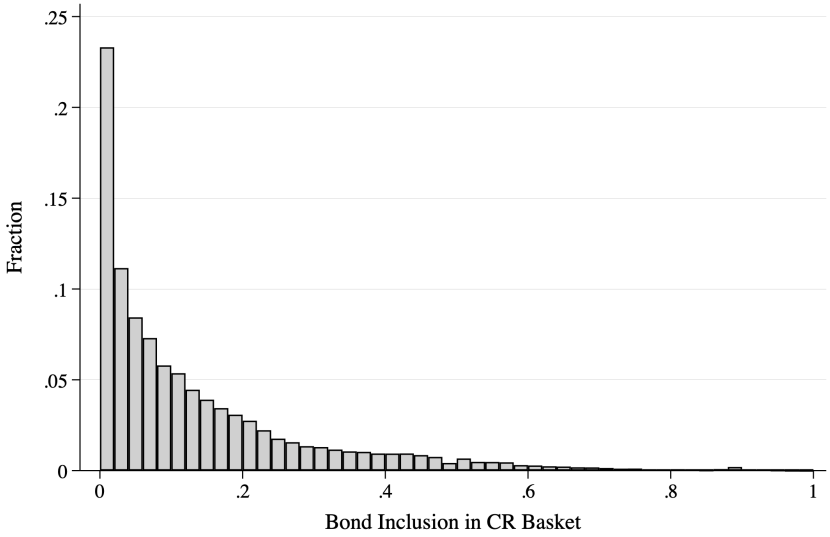


Figure A.4: Changes in Index Composition and ETF Index Deviations

This figure shows the time series of the changes in index composition (black dash-dot line) and ETF index deviations (blue solid line) for the iShares 1-5 Year Investment Grade Corporate Bond ETF (IGSB). To compute daily changes in index composition, we first compute the first difference in each bond's daily index weights and then sum the absolute values of these differences across bonds. To compute the ETF's index deviation on a given day, we first calculate the difference between the ETF portfolio weights and index weights for each bond, and then sum the absolute values of these differences across all bonds in the ETF's portfolio.

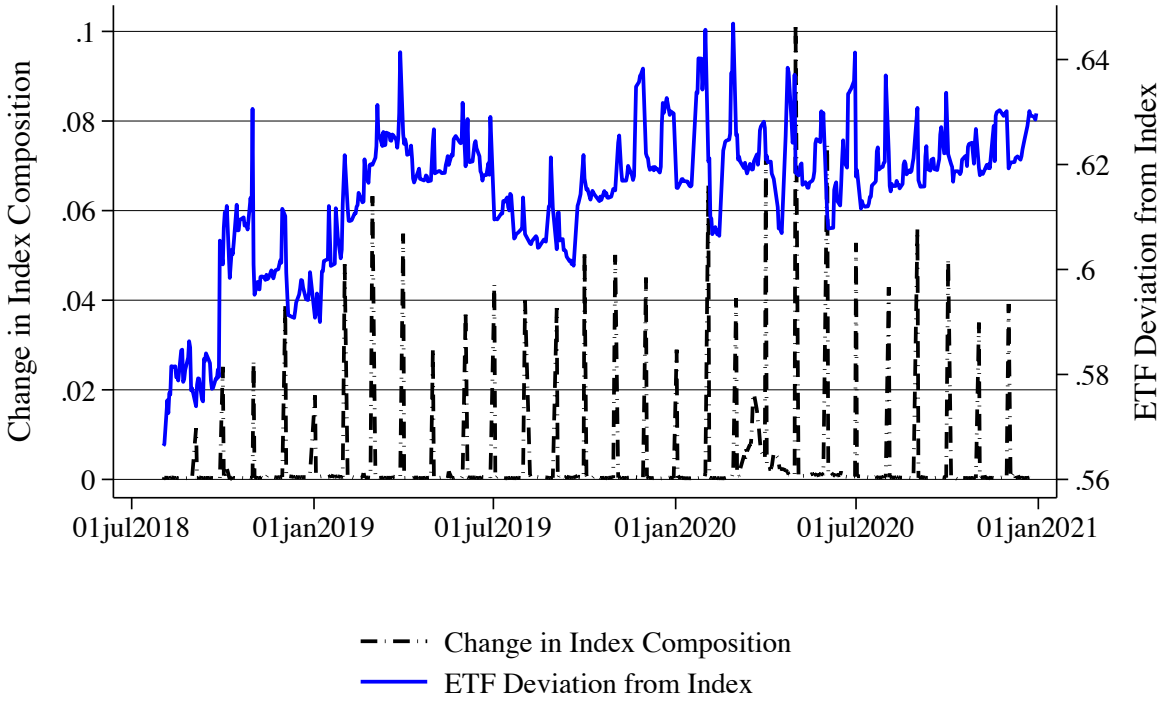


Table A.1: Summary Statistics

This table shows summary statistics for the full ETF-level sample (panel (a)), the ETF-level sample for which index data is available (panel (b)), and the bond-level sample (panel (c)). The bond-level sample includes all bonds that appear in ETF portfolios.

(a) ETF-level (Full Sample)

	Mean	Std Dev	p25	p50	p75
AUM (Million $)	2127	5547	77	340	1346
ETF Days	748	251	547	823	969
Bonds in Portfolio	753	1008	186	323	1004
Bonds in Reported Basket	424	485	121	223	556
Bonds in Realized RD Basket	147	137	52	97	205
Bonds in Realized CR Basket	104	90	51	78	119
Proportion of RD Days	0.058	0.096	0.003	0.012	0.058
Proportion of CR Days	0.169	0.169	0.022	0.107	0.274
Proportion of No Change Days	0.773	0.240	0.679	0.847	0.966
Observations	118				

(b) ETF-level (Index-merged Sample)

	Mean	Std Dev	p25	p50	p75
AUM (Million $)	2702	5645	118	576	1723
ETF Days	585	289	364	575	790
Bonds in Index	1153	1217	297	536	1847
Bonds in Portfolio	835	849	256	414	1126
Bonds in Reported Basket	696	683	170	523	924
Bonds in Realized RD Basket	138	123	54	91	242
Bonds in Realized CR Basket	128	96	74	97	172
Proportion of RD Days	0.078	0.112	0.006	0.016	0.139
Proportion of CR Days	0.208	0.190	0.044	0.155	0.342
Proportion of No Change Days	0.715	0.269	0.635	0.806	0.931
Observations	57				

(c) Bond-level

	Mean	Std Dev	p25	p50	p75
Days Held by ETFs	615	383	281	572	987
Days in RD Baskets	57	93	1	14	72
Days in CR Baskets	92	121	4	36	141
RD Basket Share	0.208	0.130	0.114	0.188	0.282
CR Basket Share	0.181	0.120	0.096	0.148	0.244
Effective Tick	0.003	0.001	0.002	0.002	0.003
IRC	0.193	0.148	0.095	0.149	0.247
IQR	0.003	0.002	0.002	0.003	0.004
Observations	18,746				

Table A.2: Cash and ETF Liquidity

This table reports the slope estimates from the regressions of ETF cash ratios on the average illiquidity of the non-cash securities in the ETF's portfolio. The three measures of index illiquidity are the effective tick size (IL1), imputed roundtrip cost (IL2), and interquartile range (IL3). The three types of cash ratios are the proportion of cash in ETF portfolio holdings (panel (a)), in reported ETF baskets (panel (b)), and in realized baskets (panel (c)) Observations are at the ETF-day level. An issuer-time fixed effect is included. Standard errors are reported in parentheses. One, two, and three stars indicate statistical significance at the 10%, 5%, and 1% level, respectively.

(a) Cash in Holdings

	IL1	IL2	IL3
IL	0.15***	0.11***	0.19***
	(0.01)	(0.01)	(0.01)
Observations	30,780	30,762	30,741
Adjusted R2	0.19	0.19	0.19

(b) Cash in Reported Baskets

	(1)	(2)	(3)
Illiquidity IL1	0.38***		
	(0.02)		
Illiquidity IL2		0.22***	
		(0.02)	
Illiquidity IL3			0.48***
			(0.02)
Observations	36,078	36,072	36,070
Adjusted R2	0.44	0.44	0.44

(c) Cash in Realized Baskets

	RD Basket			CR Basket		
	(1)	(2)	(3)	(4)	(5)	(6)
Illiquidity IL1	1.14			1.79***		
	(0.95)			(0.61)		
Illiquidity IL2		1.46			0.51	
		(1.01)			(0.63)	
Illiquidity IL3			0.68			2.10***
			(0.99)			(0.75)
Observations	1,849	1,849	1,849	5,568	5,568	5,568
Adjusted R2	0.14	0.14	0.14	0.18	0.17	0.18

Table A.3: Tracking Error and ETF Liquidity

This table reports the slope estimates from the regressions of ETF tracking error on the average illiquidity of the non-cash securities in the ETF's portfolio. The three measures of index illiquidity are the effective tick size (IL1), imputed roundtrip cost (IL2), and interquartile range (IL3). Both measures of tracking error are monthly standard deviations of daily differences between ETF returns and index returns. For Tracking Error 1, ETF returns are computed from ETF share prices and index returns come from Bloomberg. For Tracking Error 2, both ETF and index returns are computed from the prices of the underlying bonds. Observations are at the ETF-day level. An issuer-time fixed effect is included. Standard errors are reported in parentheses. One, two, and three stars indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Tracking Error 1			Tracking Error 2		
	(1)	(2)	(3)	(4)	(5)	(6)
Illiquidity IL1	0.55***			0.36***		
	(0.01)			(0.02)		
Illiquidity IL2		0.40***			0.32***	
		(0.01)			(0.01)	
Illiquidity IL3			0.61***			0.38***
			(0.01)			(0.02)
Observations	24,855	24,845	24,826	5,075	5,070	5,072
Adjusted R^2	0.67	0.61	0.65	0.41	0.42	0.39

A.5.1 Bond Fixed Effect

Table A.4: OLS Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 5 in the paper, except that it also includes bond fixed effects.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-0.94***	-0.55**	-0.18	-0.12***	-0.08***	-0.03*
	(0.20)	(0.23)	(0.19)	(0.02)	(0.02)	(0.02)
CR	-0.90***	-0.48***	-0.54***	-0.10***	-0.06***	-0.06***
	(0.11)	(0.12)	(0.11)	(0.02)	(0.02)	(0.01)
Bond IL	6.92***	6.10***	11.78***	6.91***	6.09***	11.78***
	(0.14)	(0.14)	(0.26)	(0.14)	(0.14)	(0.26)
Avg Basket Size	-0.24	-0.29	-0.07	-0.24	-0.27	-0.08
	(0.19)	(0.21)	(0.20)	(0.19)	(0.21)	(0.20)
Amount Outstanding				-7.26***	-2.47	-1.77
				(1.60)	(1.54)	(1.71)
Observations	3253720	2830696	2900900	3253720	2830696	2900900
Adjusted R^2	0.24	0.15	0.46	0.24	0.15	0.46

Table A.5: First Stage Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 6 in the paper, except that it also includes bond fixed effects.

(a) Number of Baskets

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	1.10***	1.11***	1.10***	-0.19***	-0.20***	-0.20***
	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)	(0.05)
CR Instrument	-0.50***	-0.49***	-0.50***	-2.57***	-2.58***	-2.58***
	(0.04)	(0.04)	(0.05)	(0.12)	(0.13)	(0.13)
Bond IL	-0.20***	-0.16***	-0.06	-0.37***	-0.24***	-0.34***
	(0.04)	(0.03)	(0.05)	(0.05)	(0.04)	(0.07)
Avg Basket Size	7.38***	7.38***	7.51***	9.29***	9.25***	9.41***
	(0.68)	(0.68)	(0.69)	(0.77)	(0.77)	(0.78)
Observations	3391879	3304865	3230572	3391879	3304865	3230572
Adjusted R^2	0.50	0.50	0.50	0.43	0.43	0.43

(b) Basket Shares

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	10.91***	11.04***	10.83***	-1.18***	-1.22***	-1.18***
	(1.08)	(1.09)	(1.08)	(0.39)	(0.39)	(0.40)
CR Instrument	-5.80***	-5.71***	-5.82***	-18.18***	-18.11***	-18.15***
	(0.53)	(0.52)	(0.53)	(0.86)	(0.85)	(0.85)
Bond IL	-2.67***	-2.09***	-1.20***	-2.50***	-2.10***	-1.95***
	(0.37)	(0.30)	(0.45)	(0.42)	(0.31)	(0.68)
Avg Basket Size	57.01***	57.05***	58.05***	63.33***	62.83***	63.80***
	(5.85)	(5.86)	(5.92)	(5.63)	(5.62)	(5.69)
Amount Outstanding	65.23***	65.67***	66.07***	119.85***	119.58***	121.69***
	(8.44)	(8.35)	(8.53)	(10.76)	(10.70)	(10.95)
Observations	3391879	3304865	3230572	3391879	3304865	3230572
Adjusted R^2	0.43	0.43	0.43	0.38	0.38	0.38

Table A.6: IV Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 7 in the paper, except that it also includes bond fixed effects.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-10.50**	-12.18**	-4.11	-1.04**	-1.23**	-0.40
	(5.03)	(5.61)	(4.25)	(0.51)	(0.57)	(0.44)
CR	-7.50***	-5.89**	-7.16***	-1.07***	-0.82**	-1.07***
	(2.17)	(2.46)	(1.81)	(0.34)	(0.38)	(0.28)
Bond IL	6.48***	5.72***	11.10***	6.45***	5.71***	11.09***
	(0.09)	(0.09)	(0.10)	(0.09)	(0.09)	(0.10)
Avg Basket Size	1.04**	1.36***	0.55	0.80**	1.09**	0.43
	(0.47)	(0.52)	(0.40)	(0.39)	(0.44)	(0.34)
Amount Outstanding				-6.87***	-1.41	-1.14
				(1.05)	(1.16)	(0.88)
Observations	2020227	1753297	1803180	2020227	1753297	1803180
Adjusted R^2	-0.00	-0.00	0.00	-0.00	-0.00	0.00

Table A.7: Basket Inclusion on COVID Bond Liquidity

This table is the counterpart of Table 8 in the paper, except that it also includes bond fixed effects.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	1.27	2.11*	2.16	0.25**	0.27**	0.40**
	(1.04)	(1.15)	(1.64)	(0.12)	(0.12)	(0.19)
CR	-1.86*	-1.87**	-1.06	-0.05	-0.13	-0.01
	(0.95)	(0.90)	(1.24)	(0.12)	(0.11)	(0.17)
Bond IL	-7.96***	-7.59***	-6.05***	-7.96***	-7.59***	-6.05***
	(1.50)	(1.47)	(1.98)	(1.50)	(1.47)	(1.98)
Avg Basket Size	-0.86	1.26	1.19	-1.15	1.21	0.95
	(1.44)	(1.37)	(2.48)	(1.42)	(1.34)	(2.48)
Amount Outstanding				-24.24	-14.29	27.27
				(19.58)	(14.81)	(44.19)
Observations	111277	99710	100816	111277	99710	100816
Adjusted R^2	0.28	0.08	0.38	0.28	0.08	0.38

Table A.8: Basket Imbalance on Bond Liquidity

This table is the counterpart of Table 9 in the paper, except that it also includes bond fixed effects.

	(1) IL1	(2) IL2	(3) IL3
Num Baskets	-2.42***	-1.13***	-0.98***
	(0.28)	(0.30)	(0.28)
Num Baskets × CR Imbal	0.29	0.29	-0.14
	(0.20)	(0.19)	(0.18)
Num Baskets × RD Imbal	0.93*	1.11*	1.79***
	(0.50)	(0.66)	(0.61)
Bond IL	6.91***	6.09***	11.77***
	(0.14)	(0.14)	(0.26)
Avg Basket Size	-0.30	-0.35*	-0.11
	(0.19)	(0.20)	(0.20)
Observations	3253720	2830696	2900900
Adjusted R^2	0.24	0.15	0.46

A.5.2 Indicator Variable for Basket Inclusion

Table A.9: OLS Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 5 in the paper, except that it uses a different measure of basket inclusion and considers specifications both with and without bond fixed effects. Basket inclusion is measured by a dummy variable that is equal to one if the bond is included in the CR or RD basket of at least one ETF.

	IL1		IL2		IL3	
	(1)	(2)	(3)	(4)	(5)	(6)
RD Basket Inclusion	-5.30***	-1.28***	-2.61***	-0.98***	-2.89***	-0.33
	(0.30)	(0.24)	(0.32)	(0.26)	(0.27)	(0.21)
CR Basket Inclusion	-5.02***	-1.15***	-1.70***	-0.70***	-2.84***	-0.68***
	(0.21)	(0.17)	(0.21)	(0.18)	(0.21)	(0.16)
Bond IL	12.77***	6.92***	11.80***	6.09***	19.71***	11.78***
	(0.19)	(0.14)	(0.19)	(0.14)	(0.36)	(0.26)
Avg Basket Size	-0.77***	-0.22	-1.32***	-0.25	-2.11***	-0.06
	(0.27)	(0.19)	(0.28)	(0.21)	(0.27)	(0.20)
Issuer-Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Maturity-Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Bond FE	No	Yes	No	Yes	No	Yes
Observations	3254055	3253720	2831031	2830696	2901286	2900900
Adjusted R^2	0.23	0.24	0.13	0.15	0.44	0.46

Table A.10: First Stage Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 6 in the paper, except that it uses a different measure of basket inclusion and considers specifications both with and without bond fixed effects. Basket inclusion is measured by a dummy variable that is equal to one if the bond is included in the CR or RD basket of at least one ETF.

(a) Firm-Time and Maturity-Time Fixed Effects

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	0.95***	0.96***	0.94***	-0.04	-0.04	-0.04
	(0.09)	(0.09)	(0.09)	(0.04)	(0.04)	(0.04)
CR Instrument	-0.42***	-0.42***	-0.42***	-1.46***	-1.46***	-1.46***
	(0.04)	(0.04)	(0.05)	(0.07)	(0.07)	(0.07)
Bond IL	-0.80***	-0.47***	-0.61***	-1.20***	-0.60***	-1.01***
	(0.05)	(0.04)	(0.07)	(0.06)	(0.05)	(0.11)
Avg Basket Size	6.11***	6.09***	6.16***	7.20***	7.14***	7.22***
	(0.56)	(0.57)	(0.57)	(0.55)	(0.55)	(0.55)
Observations	3391931	3304918	3230624	3391931	3304918	3230624
Adjusted R^2	0.42	0.42	0.42	0.35	0.35	0.35

(b) Issuer-Time, Maturity-Time, and Bond Fixed Effects

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	0.91***	0.92***	0.90***	-0.12***	-0.12***	-0.12***
	(0.09)	(0.09)	(0.09)	(0.03)	(0.03)	(0.03)
CR Instrument	-0.45***	-0.45***	-0.46***	-1.51***	-1.50***	-1.50***
	(0.04)	(0.04)	(0.04)	(0.07)	(0.07)	(0.07)
Bond IL	-0.20***	-0.16***	-0.08**	-0.23***	-0.18***	-0.20***
	(0.03)	(0.02)	(0.04)	(0.04)	(0.03)	(0.05)
Avg Basket Size	5.52***	5.52***	5.62***	6.29***	6.25***	6.33***
	(0.55)	(0.55)	(0.56)	(0.52)	(0.52)	(0.53)
Observations	3391879	3304865	3230572	3391879	3304865	3230572
Adjusted R^2	0.45	0.45	0.45	0.39	0.39	0.39

Table A.11: IV Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 7 in the paper, except that it uses a different measure of basket inclusion and considers specifications both with and without bond fixed effects. Basket inclusion is measured by a dummy variable that is equal to one if the bond is included in the CR or RD basket of at least one ETF.

	IL1		IL2		IL3	
	(1)	(2)	(3)	(4)	(5)	(6)
RD Basket Inclusion	-18.89***	-13.07**	-18.83***	-15.27**	-9.22*	-5.30
	(6.11)	(6.18)	(6.83)	(6.92)	(5.28)	(5.33)
CR Basket Inclusion	-6.35	-13.26***	-9.23*	-10.24**	-15.63***	-13.06***
	(4.21)	(4.03)	(4.84)	(4.59)	(3.60)	(3.41)
Bond IL	11.75***	6.46***	11.12***	5.72***	17.99***	11.09***
	(0.13)	(0.09)	(0.10)	(0.09)	(0.11)	(0.10)
Avg Basket Size	0.44	1.05**	1.28**	1.34***	-0.05	0.63*
	(0.45)	(0.44)	(0.51)	(0.49)	(0.39)	(0.38)
Issuer-Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Maturity-Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Bond FE	No	Yes	No	Yes	No	Yes
Observations	2020546	2020227	1753639	1753297	1803581	1803180
Adjusted R^2	0.01	-0.00	0.01	-0.00	0.02	0.00

Table A.12: Basket Inclusion on COVID Bond Liquidity

This table is the counterpart of Table 8 in the paper, except that it uses a different measure of basket inclusion and considers specifications both with and without bond fixed effects. Basket inclusion is measured by a dummy variable that is equal to one if the bond is included in the CR or RD basket of at least one ETF.

	IL1		IL2		IL3	
	(1)	(2)	(3)	(4)	(5)	(6)
RD Basket Inclusion	2.08	2.91**	5.07***	3.10**	6.65***	4.49*
	(1.35)	(1.40)	(1.48)	(1.35)	(2.37)	(2.22)
CR Basket Inclusion	0.65	-0.64	-0.68	-2.05*	6.23**	-0.22
	(1.78)	(1.42)	(1.11)	(1.18)	(2.63)	(1.99)
Bond IL	9.50***	-7.95***	8.05***	-7.59***	15.34***	-6.05***
	(0.62)	(1.50)	(0.54)	(1.47)	(0.74)	(1.98)
Avg Basket Size	-0.27	-1.19	-1.29	1.25	-0.96	0.90
	(1.15)	(1.43)	(0.95)	(1.33)	(2.04)	(2.49)
Issuer-Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Maturity-Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Bond FE	No	Yes	No	Yes	No	Yes
Observations	111707	111277	100263	99710	101341	100816
Adjusted R^2	0.26	0.28	0.07	0.08	0.36	0.38

A.5.3 Effect of Basket Inclusion on 3-Day Bond Liquidity

Table A.13: OLS Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 5 in the paper for 3-day-ahead bond liquidity, calculated as the average of $t+1$, $t+2$, and $t+3$ bond liquidity.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-5.00***	-2.48***	-2.47***	-0.20***	-0.15***	-0.11***
	(0.28)	(0.28)	(0.29)	(0.02)	(0.02)	(0.02)
CR	-4.35***	-1.20***	-2.45***	-0.20***	-0.03*	-0.15***
	(0.16)	(0.14)	(0.15)	(0.02)	(0.02)	(0.02)
Bond IL	12.20***	12.96***	17.70***	10.99***	12.76***	17.20***
	(0.19)	(0.23)	(0.35)	(0.17)	(0.22)	(0.34)
Avg Basket Size	-1.20***	-1.92***	-2.67***	-1.50***	-2.00***	-2.83***
	(0.30)	(0.30)	(0.29)	(0.26)	(0.29)	(0.27)
Amount Outstanding				-14.08***	-6.13***	-7.33***
				(0.37)	(0.41)	(0.38)
Observations	4551644	4254774	4196240	4551644	4254774	4196240
Adjusted R^2	0.30	0.18	0.48	0.30	0.18	0.48

Table A.14: IV Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 7 in the paper for 3-day-ahead bond liquidity, calculated as the average of $t+1$, $t+2$, and $t+3$ bond liquidity.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-8.66**	-5.40	-10.29***	-0.34	-0.32	-0.83**
	(3.80)	(4.14)	(3.25)	(0.40)	(0.43)	(0.34)
CR	-7.15***	-6.24***	-10.74***	-1.86***	-1.23***	-1.84***
	(1.82)	(2.02)	(1.54)	(0.26)	(0.29)	(0.22)
Bond IL	11.18***	12.25***	16.18***	10.00***	12.06***	15.85***
	(0.08)	(0.07)	(0.08)	(0.07)	(0.07)	(0.07)
Avg Basket Size	0.12	0.33	0.30	0.39	0.41	0.28
	(0.36)	(0.40)	(0.31)	(0.31)	(0.34)	(0.27)
Amount Outstanding				-11.69***	-4.42***	-3.88***
				(0.37)	(0.42)	(0.32)
Observations	2807592	2626760	2589840	2807592	2626760	2589840
Adjusted R^2	0.01	0.01	0.02	0.01	0.01	0.01

Table A.15: Basket Inclusion on COVID Bond Liquidity

This table is the counterpart of Table 8 in the paper for 3-day-ahead bond liquidity, calculated as the average of $t+1$, $t+2$, and $t+3$ bond liquidity.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	1.56	4.69***	6.05***	0.11	0.30***	0.34**
	(0.94)	(0.96)	(1.46)	(0.10)	(0.10)	(0.17)
CR	0.34	-0.00	3.60*	0.17	-0.03	0.32*
	(1.30)	(0.83)	(2.08)	(0.10)	(0.08)	(0.18)
Bond IL	9.21***	7.26***	13.57***	9.17***	7.21***	13.11***
	(0.58)	(0.53)	(0.68)	(0.59)	(0.53)	(0.65)
Avg Basket Size	1.53	-1.46	0.87	1.25	-1.30	0.91
	(1.19)	(0.93)	(1.87)	(1.12)	(0.96)	(1.65)
Amount Outstanding				2.10	4.35***	14.85***
				(2.08)	(1.35)	(3.17)
Observations	152571	145920	142237	152571	145920	142237
Adjusted R^2	0.32	0.11	0.40	0.32	0.11	0.41

Table A.16: Basket Imbalance on Bond Liquidity

This table is the counterpart of Table 9 in the paper for 3-day-ahead bond liquidity, calculated as the average of $t+1$, $t+2$, and $t+3$ bond liquidity.

	(1) IL1	(2) IL2	(3) IL3
Num Baskets	-13.03***	-5.83***	-7.90***
	(0.49)	(0.47)	(0.49)
Num Baskets × CR Imbal	2.23***	2.68***	2.13***
	(0.28)	(0.27)	(0.25)
Num Baskets × RD Imbal	4.04***	1.98***	3.61***
	(0.57)	(0.72)	(0.69)
Bond IL	11.96***	12.92***	17.58***
	(0.18)	(0.22)	(0.34)
Avg Basket Size	-0.71**	-1.69***	-2.33***
	(0.28)	(0.29)	(0.27)
Observations	4551644	4254774	4196240
Adjusted R^2	0.30	0.18	0.48

A.5.4 ETF Ownership

Table A.17: OLS Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 5 in the paper, with the additional ETF Ownership control. ETF Ownership is measured as the standardized daily proportion of the bond's shares held by ETFs, relative to shares outstanding.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-3.18***	-1.37***	-1.48***	-0.12***	-0.09***	-0.06***
	(0.24)	(0.26)	(0.23)	(0.02)	(0.03)	(0.02)
CR	-2.92***	-0.70***	-1.41***	-0.13***	-0.03	-0.08***
	(0.13)	(0.14)	(0.13)	(0.02)	(0.02)	(0.02)
Bond IL	12.60***	11.78***	19.58***	11.36***	11.63***	19.14***
	(0.19)	(0.19)	(0.35)	(0.17)	(0.19)	(0.35)
Avg Basket Size	-0.13	-1.14***	-1.67***	-0.93***	-1.40***	-2.09***
	(0.26)	(0.28)	(0.26)	(0.23)	(0.27)	(0.25)
ETF Ownership	-3.91***	-1.56***	-2.88***	-2.33***	-0.88***	-2.09***
	(0.23)	(0.20)	(0.22)	(0.21)	(0.20)	(0.21)
Amount Outstanding				-11.98***	-4.44***	-5.80***
				(0.30)	(0.34)	(0.32)
Observations	3254005	2830996	2901243	3254005	2830996	2901243
Adjusted R^2	0.23	0.13	0.44	0.23	0.13	0.44

Table A.18: First Stage Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 6 in the paper, with the additional ETF Ownership control. ETF Ownership is measured as the standardized daily proportion of the bond's shares held by ETFs, relative to shares outstanding.

(a) Number of Baskets

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	1.09***	1.10***	1.09***	-0.19***	-0.19***	-0.19***
	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)	(0.05)
CR Instrument	-0.57***	-0.56***	-0.57***	-2.68***	-2.70***	-2.69***
	(0.05)	(0.05)	(0.05)	(0.13)	(0.13)	(0.13)
Bond IL	-0.70***	-0.37***	-0.44***	-1.51***	-0.51***	-1.07***
	(0.05)	(0.04)	(0.07)	(0.08)	(0.05)	(0.11)
Avg Basket Size	7.71***	7.68***	7.78***	9.36***	9.30***	9.46***
	(0.72)	(0.72)	(0.73)	(0.79)	(0.79)	(0.80)
ETF Ownership	7.17***	7.20***	7.23***	12.82***	12.97***	12.91***
	(0.32)	(0.32)	(0.32)	(0.38)	(0.38)	(0.38)
Observations	3391872	3304870	3230573	3391872	3304870	3230573
Adjusted R^2	0.48	0.48	0.49	0.40	0.40	0.40

(b) Basket Shares

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	10.48***	10.60***	10.39***	-1.65***	-1.69***	-1.66***
	(1.09)	(1.10)	(1.10)	(0.41)	(0.41)	(0.41)
CR Instrument	-6.99***	-6.92***	-7.02***	-20.07***	-20.03***	-20.05***
	(0.57)	(0.56)	(0.57)	(0.88)	(0.89)	(0.88)
Bond IL	-3.09***	-2.34***	-1.83***	-3.49***	-1.68***	-2.76***
	(0.40)	(0.35)	(0.49)	(0.48)	(0.37)	(0.75)
Avg Basket Size	61.17***	60.96***	61.80***	67.77***	67.16***	68.30***
	(6.34)	(6.35)	(6.40)	(5.96)	(5.95)	(6.03)
Amount Outstanding	76.96***	77.36***	77.58***	123.73***	124.76***	124.29***
	(3.22)	(3.23)	(3.23)	(2.95)	(2.95)	(2.94)
ETF Ownership	59.05***	59.00***	59.58***	81.30***	81.63***	81.64***
	(2.60)	(2.59)	(2.61)	(2.09)	(2.09)	(2.09)
Observations	3391872	3304870	3230573	3391872	3304870	3230573
Adjusted R^2	0.42	0.42	0.42	0.37	0.37	0.37

Table A.19: IV Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 7 in the paper, with the additional ETF Ownership control. ETF Ownership is measured as the standardized daily proportion of the bond's shares held by ETFs, relative to shares outstanding.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-13.85***	-14.91***	-6.66	-1.03*	-1.42**	-0.52
	(5.10)	(5.70)	(4.32)	(0.53)	(0.59)	(0.45)
CR	-5.32**	-5.48**	-9.31***	-1.37***	-0.90**	-1.59***
	(2.16)	(2.46)	(1.82)	(0.32)	(0.36)	(0.27)
Bond IL	11.67***	11.15***	18.01***	10.44***	11.03***	17.68***
	(0.11)	(0.09)	(0.10)	(0.09)	(0.09)	(0.09)
Avg Basket Size	0.71	1.34***	-0.08	0.57	1.09***	-0.16
	(0.45)	(0.51)	(0.38)	(0.38)	(0.42)	(0.33)
ETF Ownership	-2.13***	-0.21	-1.09***	-0.56*	0.20	-0.45
	(0.38)	(0.44)	(0.33)	(0.32)	(0.37)	(0.28)
Amount Outstanding				-10.08***	-2.39***	-3.34***
				(0.40)	(0.47)	(0.35)
Observations	2020511	1753613	1803553	2020511	1753613	1803553
Adjusted R^2	0.01	0.01	0.02	0.01	0.01	0.02

Table A.20: Basket Inclusion on COVID Bond Liquidity

This table is the counterpart of Table 8 in the paper, with the additional ETF Ownership control. ETF Ownership is measured as the standardized daily proportion of the bond's shares held by ETFs, relative to shares outstanding.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	0.03	3.50***	3.00**	0.15	0.31**	0.31
	(0.96)	(1.12)	(1.42)	(0.11)	(0.13)	(0.20)
CR	-1.98	-0.96	1.82	0.05	-0.16	0.24
	(1.27)	(0.86)	(1.79)	(0.13)	(0.10)	(0.19)
Bond IL	9.45***	8.02***	15.31***	9.44***	7.95***	15.02***
	(0.62)	(0.54)	(0.74)	(0.61)	(0.53)	(0.72)
Avg Basket Size	-0.06	-1.55	-0.85	-0.61	-1.30	-0.76
	(1.20)	(0.94)	(2.05)	(1.18)	(0.96)	(1.97)
ETF Ownership	2.61**	2.00***	4.52***	2.42**	1.64**	3.41**
	(0.98)	(0.67)	(1.49)	(0.96)	(0.63)	(1.39)
Amount Outstanding				-2.12	4.06***	9.65***
				(1.69)	(1.18)	(2.83)
Observations	111690	100255	101326	111690	100255	101326
Adjusted R^2	0.26	0.07	0.36	0.26	0.07	0.36

Table A.21: Basket Imbalance on Bond Liquidity

This table is the counterpart of Table 9 in the paper, with the additional ETF Ownership control. ETF Ownership is measured as the standardized daily proportion of the bond's shares held by ETFs, relative to shares outstanding.

	(1) IL1	(2) IL2	(3) IL3
Num Baskets	-8.96***	-3.34***	-4.99***
	(0.37)	(0.39)	(0.37)
Num Baskets × CR Imbal	1.42***	1.69***	1.32***
	(0.23)	(0.22)	(0.20)
Num Baskets × RD Imbal	2.74***	1.37**	2.45***
	(0.51)	(0.69)	(0.61)
Bond IL	12.45***	11.77***	19.52***
	(0.18)	(0.19)	(0.35)
Avg Basket Size	-0.06	-1.11***	-1.60***
	(0.25)	(0.27)	(0.26)
ETF Ownership	-2.69***	-1.21***	-2.23***
	(0.23)	(0.20)	(0.21)
Observations	3254005	2830996	2901243
Adjusted R^2	0.23	0.13	0.44

A.5.5 Shared Indexes

Table A.22: OLS Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 5 in the paper, with the additional Shared Index control. This variable controls for the number of baskets or amount of shares of each bond that are included in baskets of ETFs that share their indexes with index mutual funds, where the control corresponds to the measure of basket inclusion used in a given specification.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-4.34***	-1.91***	-2.38***	-0.17***	-0.12***	-0.11***
	(0.27)	(0.28)	(0.26)	(0.02)	(0.03)	(0.02)
CR	-3.67***	-1.08***	-1.97***	-0.17***	-0.05***	-0.12***
	(0.15)	(0.14)	(0.14)	(0.02)	(0.02)	(0.02)
Bond IL	12.72***	11.81***	19.69***	11.36***	11.64***	19.18***
	(0.19)	(0.19)	(0.35)	(0.17)	(0.19)	(0.34)
Avg Basket Size	-0.79***	-1.53***	-2.05***	-1.30***	-1.66***	-2.34***
	(0.29)	(0.28)	(0.27)	(0.25)	(0.27)	(0.26)
Shared Index	1.09**	2.08***	1.12**	0.05	0.19***	0.07
	(0.54)	(0.52)	(0.49)	(0.05)	(0.05)	(0.04)
Amount Outstanding				-12.52***	-4.65***	-6.22***
				(0.31)	(0.34)	(0.33)
Observations	3255898	2832964	2902611	3255898	2832964	2902611
Adjusted R^2	0.23	0.13	0.44	0.23	0.13	0.44

Table A.23: First Stage Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 6 in the paper, with the additional Shared Index control. This variable controls for the number of baskets or amount of shares of each bond that are included in baskets of ETFs that share their indexes with index mutual funds, where the control corresponds to the measure of basket inclusion used in a given specification.

(a) Number of Baskets

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	1.08***	1.10***	1.08***	-0.19***	-0.19***	-0.19***
	(0.10)	(0.10)	(0.10)	(0.06)	(0.06)	(0.06)
CR Instrument	-0.40***	-0.39***	-0.40***	-2.38***	-2.39***	-2.39***
	(0.05)	(0.05)	(0.05)	(0.12)	(0.13)	(0.13)
Bond IL	-0.85***	-0.49***	-0.62***	-1.78***	-0.73***	-1.40***
	(0.06)	(0.04)	(0.08)	(0.10)	(0.06)	(0.14)
Avg Basket Size	7.05***	7.00***	7.10***	8.35***	8.28***	8.40***
	(0.70)	(0.70)	(0.71)	(0.77)	(0.77)	(0.78)
Shared Index	41.33***	41.41***	41.24***	67.68***	67.90***	67.74***
	(2.81)	(2.82)	(2.81)	(2.97)	(2.98)	(2.97)
Observations	3392882	3305958	3231632	3392882	3305958	3231632
Adjusted R^2	0.49	0.49	0.49	0.40	0.40	0.40

(b) Basket Shares

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	10.30***	10.41***	10.20***	-1.77***	-1.80***	-1.78***
	(1.05)	(1.05)	(1.05)	(0.44)	(0.44)	(0.44)
CR Instrument	-5.53***	-5.44***	-5.53***	-18.14***	-18.07***	-18.09***
	(0.59)	(0.58)	(0.59)	(0.86)	(0.86)	(0.86)
Bond IL	-3.75***	-3.08***	-2.87***	-4.43***	-2.68***	-4.20***
	(0.43)	(0.38)	(0.57)	(0.53)	(0.40)	(0.87)
Avg Basket Size	55.81***	55.43***	56.31***	62.55***	61.86***	62.83***
	(6.14)	(6.14)	(6.21)	(5.66)	(5.65)	(5.72)
Amount Outstanding	84.62***	85.05***	85.10***	135.52***	136.74***	135.85***
	(3.59)	(3.60)	(3.59)	(3.27)	(3.28)	(3.27)
Shared Index	34.96***	35.00***	34.83***	39.69***	39.66***	39.52***
	(2.41)	(2.42)	(2.41)	(1.84)	(1.84)	(1.84)
Observations	3392882	3305958	3231632	3392882	3305958	3231632
Adjusted R^2	0.42	0.42	0.42	0.37	0.37	0.37

Table A.24: IV Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 7 in the paper, with the additional Shared Index control. This variable controls for the number of baskets or amount of shares of each bond that are included in baskets of ETFs that share their indexes with index mutual funds, where the control corresponds to the measure of basket inclusion used in a given specification.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-15.60***	-16.52***	-7.53*	-1.17**	-1.58***	-0.59
	(5.19)	(5.77)	(4.42)	(0.54)	(0.60)	(0.47)
CR	-4.50*	-6.13**	-8.98***	-1.44***	-1.03***	-1.63***
	(2.31)	(2.64)	(1.94)	(0.33)	(0.38)	(0.28)
Bond IL	11.76***	11.15***	18.08***	10.43***	11.02***	17.71***
	(0.12)	(0.10)	(0.11)	(0.10)	(0.09)	(0.10)
Avg Basket Size	0.59	1.29***	-0.26	0.57	1.12***	-0.25
	(0.44)	(0.50)	(0.38)	(0.38)	(0.42)	(0.33)
Shared Index	6.71***	10.88***	7.21***	0.90***	1.02***	0.73***
	(2.34)	(2.68)	(2.03)	(0.19)	(0.21)	(0.16)
Amount Outstanding				-10.19***	-2.21***	-3.45***
				(0.49)	(0.57)	(0.43)
Observations	2020911	1754120	1803915	2020911	1754120	1803915
Adjusted R^2	0.01	0.01	0.02	0.01	0.01	0.01

Table A.25: Basket Inclusion on COVID Bond Liquidity

This table is the counterpart of Table 8 in the paper, with the additional Shared Index control. This variable controls for the number of baskets or amount of shares of each bond that are included in baskets of ETFs that share their indexes with index mutual funds, where the control corresponds to the measure of basket inclusion used in a given specification.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	1.76*	4.20***	5.75***	0.35***	0.34**	0.59***
	(1.03)	(1.19)	(1.57)	(0.12)	(0.14)	(0.21)
CR	-1.10	-0.29	3.37*	0.13	-0.10	0.37*
	(1.30)	(0.81)	(1.84)	(0.13)	(0.09)	(0.18)
Bond IL	9.28***	7.99***	15.39***	9.25***	7.91***	15.06***
	(0.63)	(0.56)	(0.74)	(0.63)	(0.56)	(0.71)
Avg Basket Size	0.37	-1.78*	-0.78	-0.20	-1.52	-0.82
	(1.16)	(0.99)	(2.11)	(1.12)	(1.04)	(1.99)
Shared Index	-11.16***	-1.32	-17.53***	-1.05***	-0.08	-1.57***
	(2.82)	(2.75)	(3.50)	(0.24)	(0.23)	(0.34)
Amount Outstanding				-2.13	4.26***	9.89***
				(1.76)	(1.21)	(2.95)
Observations	111720	100319	101388	111720	100319	101388
Adjusted R^2	0.26	0.07	0.36	0.26	0.07	0.36

Table A.26: Basket Imbalance on Bond Liquidity

This table is the counterpart of Table 9 in the paper, with the additional Shared Index control. This variable controls for the number of baskets of each bond that are included in baskets of ETFs that share their indexes with index mutual funds.

	(1) IL1	(2) IL2	(3) IL3
Num Baskets	-10.83***	-4.22***	-6.52***
	(0.41)	(0.41)	(0.41)
Num Baskets × CR Imbal	1.82***	1.82***	1.58***
	(0.23)	(0.23)	(0.21)
Num Baskets × RD Imbal	2.88***	1.45**	2.59***
	(0.51)	(0.69)	(0.63)
Bond IL	12.48***	11.78***	19.57***
	(0.19)	(0.19)	(0.35)
Avg Basket Size	-0.42	-1.40***	-1.81***
	(0.27)	(0.28)	(0.26)
Shared Index	0.42	1.62***	0.80*
	(0.54)	(0.51)	(0.48)
Observations	3255898	2832964	2902611
Adjusted R^2	0.23	0.13	0.44

A.5.6 Zero Trading Days

Table A.27: OLS Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 5 in the paper, with the additional Zero Trading Days control, which measures the bond's proportion of zero trading days during the past 20 week days.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-4.13***	-2.05***	-2.46***	-0.19***	-0.13***	-0.12***
	(0.25)	(0.27)	(0.24)	(0.02)	(0.03)	(0.02)
CR	-3.52***	-1.20***	-2.08***	-0.20***	-0.07***	-0.14***
	(0.14)	(0.14)	(0.13)	(0.02)	(0.02)	(0.02)
Bond IL	12.75***	11.79***	19.70***	11.30***	11.53***	19.02***
	(0.19)	(0.19)	(0.36)	(0.18)	(0.19)	(0.35)
Avg Basket Size	-0.80***	-1.45***	-2.19***	-1.53***	-1.72***	-2.63***
	(0.27)	(0.28)	(0.27)	(0.24)	(0.27)	(0.25)
Zero Trading Days	6.12***	-6.92***	-5.31***	-16.33***	-17.19***	-18.61***
	(1.07)	(1.04)	(1.35)	(0.99)	(1.12)	(1.29)
Amount Outstanding				-13.86***	-6.14***	-7.70***
				(0.31)	(0.37)	(0.33)
Observations	3254055	2831031	2901286	3254055	2831031	2901286
Adjusted R^2	0.23	0.13	0.44	0.23	0.13	0.44

Table A.28: First Stage Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 6 in the paper, with the additional Zero Trading Days control, which measures the bond's proportion of zero trading days during the past 20 week days.

(a) Number of Baskets

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	1.14***	1.16***	1.14***	-0.10*	-0.10*	-0.10*
	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)	(0.05)
CR Instrument	-0.45***	-0.44***	-0.45***	-2.47***	-2.48***	-2.48***
	(0.05)	(0.05)	(0.05)	(0.13)	(0.13)	(0.13)
Bond IL	-0.95***	-0.53***	-0.76***	-1.97***	-0.81***	-1.67***
	(0.06)	(0.04)	(0.08)	(0.09)	(0.06)	(0.13)
Avg Basket Size	8.00***	7.97***	8.07***	9.80***	9.75***	9.91***
	(0.72)	(0.72)	(0.72)	(0.79)	(0.80)	(0.80)
Zero Trading Days	-18.40***	-18.44***	-18.78***	-38.14***	-38.72***	-39.09***
	(0.86)	(0.86)	(0.88)	(1.21)	(1.23)	(1.25)
Observations	3391931	3304918	3230624	3391931	3304918	3230624
Adjusted R^2	0.48	0.48	0.48	0.40	0.40	0.40

(b) Basket Shares

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	10.96***	11.08***	10.87***	-0.99**	-1.03**	-1.00**
	(1.10)	(1.10)	(1.10)	(0.41)	(0.41)	(0.41)
CR Instrument	-6.06***	-5.98***	-6.07***	-18.72***	-18.66***	-18.69***
	(0.56)	(0.56)	(0.56)	(0.88)	(0.88)	(0.88)
Bond IL	-5.08***	-3.57***	-4.16***	-6.61***	-3.59***	-6.34***
	(0.44)	(0.38)	(0.56)	(0.52)	(0.41)	(0.84)
Avg Basket Size	64.46***	64.24***	65.11***	71.95***	71.32***	72.47***
	(6.31)	(6.32)	(6.37)	(5.95)	(5.94)	(6.01)
Amount Outstanding	75.68***	76.44***	76.80***	117.61***	118.72***	118.81***
	(3.16)	(3.17)	(3.18)	(2.93)	(2.93)	(2.94)
Zero Trading Days	-87.65***	-86.82***	-87.47***	-151.66***	-154.36***	-152.60***
	(5.37)	(5.43)	(5.47)	(6.15)	(6.27)	(6.24)
Observations	3391931	3304918	3230624	3391931	3304918	3230624
Adjusted R^2	0.41	0.41	0.41	0.36	0.36	0.36

Table A.29: IV Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 7 in the paper, with the additional Zero Trading Days control, which measures the bond's proportion of zero trading days during the past 20 week days.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-15.16***	-15.49***	-7.77*	-1.07**	-1.42**	-0.56
	(4.96)	(5.53)	(4.21)	(0.52)	(0.58)	(0.45)
CR	-3.81*	-5.30**	-8.51***	-1.43***	-1.02***	-1.67***
	(2.26)	(2.58)	(1.90)	(0.33)	(0.38)	(0.28)
Bond IL	11.78***	11.14***	18.02***	10.31***	10.93***	17.46***
	(0.12)	(0.10)	(0.11)	(0.10)	(0.09)	(0.10)
Avg Basket Size	0.55	1.26**	-0.22	0.44	1.04**	-0.28
	(0.47)	(0.53)	(0.40)	(0.40)	(0.45)	(0.34)
Zero Trading Days	2.62**	-10.14***	-11.27***	-20.14***	-17.86***	-22.42***
	(1.33)	(1.56)	(1.20)	(0.79)	(0.90)	(0.70)
Amount Outstanding				-11.86***	-3.78***	-5.12***
				(0.42)	(0.50)	(0.37)
Observations	2020546	1753639	1803581	2020546	1753639	1803581
Adjusted R^2	0.01	0.01	0.02	0.01	0.01	0.02

Table A.30: Basket Inclusion on COVID Bond Liquidity

This table is the counterpart of Table 8 in the paper, with the additional Zero Trading Days control, which measures the bond's proportion of zero trading days during the past 20 week days.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-1.02	3.45***	0.80	0.10	0.33**	0.22
	(0.95)	(1.12)	(1.39)	(0.11)	(0.13)	(0.19)
CR	-3.03**	-1.08	-0.22	0.01	-0.14	0.19
	(1.17)	(0.83)	(1.62)	(0.13)	(0.10)	(0.18)
Bond IL	8.42***	7.94***	13.48***	8.15***	7.91***	13.46***
	(0.67)	(0.54)	(0.67)	(0.64)	(0.54)	(0.67)
Avg Basket Size	-0.31	-1.53	-1.23	-1.25	-1.30	-1.74
	(1.15)	(0.97)	(1.96)	(1.17)	(0.98)	(1.95)
Zero Trading Days	-56.99***	-17.67***	-121.50***	-69.18***	-12.78***	-120.57***
	(6.61)	(4.15)	(12.86)	(5.06)	(4.27)	(10.51)
Amount Outstanding				-8.32***	3.05**	-0.28
				(1.44)	(1.22)	(2.49)
Observations	111707	100263	101341	111707	100263	101341
Adjusted R^2	0.27	0.07	0.36	0.27	0.07	0.36

Table A.31: Basket Imbalance on Bond Liquidity

This table is the counterpart of Table 9 in the paper, with the additional Zero Trading Days control, which measures the bond's proportion of zero trading days during the past 20 week days.

	(1) IL1	(2) IL2	(3) IL3
Num Baskets	-10.78***	-5.03***	-7.29***
	(0.39)	(0.41)	(0.38)
Num Baskets × CR Imbal	1.84***	2.08***	1.85***
	(0.23)	(0.23)	(0.20)
Num Baskets × RD Imbal	2.92***	1.68**	2.80***
	(0.51)	(0.69)	(0.62)
Bond IL	12.52***	11.75***	19.55***
	(0.19)	(0.19)	(0.35)
Avg Basket Size	-0.44*	-1.29***	-1.91***
	(0.26)	(0.27)	(0.26)
Zero Trading Days	2.30**	-8.49***	-7.95***
	(1.04)	(1.05)	(1.32)
Observations	3254055	2831031	2901286
Adjusted R^2	0.23	0.13	0.44

A.5.7 All Controls

Table A.32: OLS Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 5 in the paper, with all additional controls.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-3.17***	-1.61***	-1.69***	-0.13***	-0.11***	-0.07***
	(0.25)	(0.27)	(0.24)	(0.02)	(0.03)	(0.02)
CR	-2.87***	-0.94***	-1.55***	-0.14***	-0.05***	-0.09***
	(0.13)	(0.14)	(0.13)	(0.02)	(0.02)	(0.02)
Bond IL	12.55***	11.75***	19.52***	11.16***	11.52***	18.89***
	(0.19)	(0.19)	(0.35)	(0.17)	(0.19)	(0.34)
Avg Basket Size	-0.12	-1.26***	-1.56***	-0.98***	-1.59***	-2.05***
	(0.27)	(0.28)	(0.27)	(0.24)	(0.27)	(0.26)
Shared Index	1.02*	2.03***	1.05**	0.05	0.19***	0.07
	(0.54)	(0.52)	(0.48)	(0.05)	(0.05)	(0.04)
ETF Ownership	-3.71***	-1.86***	-3.13***	-2.67***	-1.30***	-2.53***
	(0.23)	(0.21)	(0.22)	(0.20)	(0.20)	(0.20)
Zero Trading Days	2.85***	-8.59***	-8.08***	-18.35***	-18.14***	-20.45***
	(1.03)	(1.05)	(1.31)	(0.98)	(1.13)	(1.28)
Amount Outstanding				-13.75***	-6.05***	-7.52***
				(0.32)	(0.37)	(0.33)
Observations	3255850	2832929	2902571	3255850	2832929	2902571
Adjusted R^2	0.23	0.13	0.44	0.23	0.13	0.44

Table A.33: First Stage Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 6 in the paper, with all additional controls.

(a) Number of Baskets

	RD Basket			CR Basket		
	IL1	IL2	IL3	IL1	IL2	IL3
RD Instrument	1.03***	1.04***	1.02***	-0.29***	-0.30***	-0.30***
	(0.10)	(0.10)	(0.10)	(0.06)	(0.06)	(0.06)
CR Instrument	-0.48***	-0.47***	-0.48***	-2.51***	-2.52***	-2.52***
	(0.05)	(0.05)	(0.05)	(0.12)	(0.12)	(0.12)
Bond IL	-0.72***	-0.40***	-0.49***	-1.57***	-0.58***	-1.22***
	(0.05)	(0.04)	(0.07)	(0.08)	(0.05)	(0.11)
Avg Basket Size	6.44***	6.40***	6.50***	7.19***	7.13***	7.27***
	(0.69)	(0.69)	(0.70)	(0.74)	(0.74)	(0.75)
Shared Index Baskets	39.89***	39.95***	39.80***	65.02***	65.15***	65.07***
	(2.81)	(2.82)	(2.81)	(2.96)	(2.96)	(2.95)
ETF Ownership	6.04***	6.05***	6.12***	10.52***	10.62***	10.64***
	(0.29)	(0.29)	(0.29)	(0.33)	(0.33)	(0.34)
Zero Trading Days	-13.54***	-13.47***	-13.74***	-29.72***	-30.06***	-30.39***
	(0.73)	(0.74)	(0.75)	(1.07)	(1.08)	(1.09)
Observations	3392825	3305907	3231578	3392825	3305907	3231578
Adjusted R^2	0.50	0.50	0.50	0.42	0.42	0.42

(b) Basket Shares

	RD Basket			CR Basket		
	(1)	(2)	(3)	(4)	(5)	(6)
RD Instrument	9.91***	10.02***	9.81***	-2.29***	-2.34***	-2.31***
	(1.05)	(1.05)	(1.05)	(0.43)	(0.44)	(0.44)
CR Instrument	-6.11***	-6.03***	-6.13***	-18.86***	-18.79***	-18.83***
	(0.58)	(0.58)	(0.59)	(0.85)	(0.85)	(0.85)
Bond IL	-3.59***	-2.72***	-2.29***	-4.61***	-2.38***	-3.80***
	(0.40)	(0.36)	(0.50)	(0.48)	(0.37)	(0.76)
Avg Basket Size	51.31***	51.02***	51.89***	56.02***	55.40***	56.44***
	(6.12)	(6.13)	(6.19)	(5.58)	(5.57)	(5.64)
Amount Outstanding	66.26***	66.82***	67.30***	105.99***	106.85***	107.12***
	(2.92)	(2.93)	(2.94)	(2.66)	(2.66)	(2.67)
Shared Index Log Shares	34.31***	34.34***	34.18***	38.81***	38.76***	38.64***
	(2.41)	(2.42)	(2.41)	(1.84)	(1.84)	(1.83)
ETF Ownership	54.55***	54.49***	55.21***	74.45***	74.63***	74.94***
	(2.56)	(2.55)	(2.57)	(2.01)	(2.00)	(2.02)
Zero Trading Days	-57.29***	-55.88***	-55.93***	-109.70***	-111.54***	-109.50***
	(4.61)	(4.67)	(4.69)	(5.17)	(5.29)	(5.25)
Observations	3392825	3305907	3231578	3392825	3305907	3231578
Adjusted R^2	0.43	0.43	0.43	0.38	0.38	0.38

Table A.34: IV Basket Inclusion on Bond Liquidity

This table is the counterpart of Table 7 in the paper, with all additional controls.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-14.36***	-16.63***	-7.27	-1.13**	-1.58**	-0.58
	(5.36)	(5.98)	(4.57)	(0.55)	(0.62)	(0.48)
CR	-6.00***	-6.34**	-9.94***	-1.65***	-1.13***	-1.83***
	(2.20)	(2.50)	(1.85)	(0.32)	(0.37)	(0.28)
Bond IL	11.65***	11.12***	17.96***	10.26***	10.92***	17.44***
	(0.11)	(0.09)	(0.10)	(0.09)	(0.09)	(0.10)
Avg Basket Size	0.75*	1.25***	-0.21	0.56	1.03***	-0.28
	(0.42)	(0.47)	(0.36)	(0.36)	(0.40)	(0.31)
Shared Index	7.49***	10.91***	7.71***	0.97***	1.05***	0.80***
	(2.20)	(2.51)	(1.91)	(0.18)	(0.20)	(0.16)
ETF Ownership	-2.05***	-0.44	-1.46***	-0.86***	-0.03	-0.84***
	(0.37)	(0.43)	(0.32)	(0.33)	(0.38)	(0.29)
Zero Trading Days	0.49	-11.00***	-12.66***	-20.97***	-18.20***	-23.07***
	(1.10)	(1.26)	(0.99)	(0.67)	(0.76)	(0.60)
Amount Outstanding				-11.74***	-3.69***	-5.02***
				(0.40)	(0.47)	(0.35)
Observations	2020878	1754096	1803889	2020878	1754096	1803889
Adjusted R^2	0.01	0.01	0.02	0.01	0.01	0.01

Table A.35: Basket Inclusion on COVID Bond Liquidity

This table is the counterpart of Table 8 in the paper, with all additional controls.

	Number of Baskets			Basket Shares		
	IL1	IL2	IL3	IL1	IL2	IL3
RD	-0.13	3.38***	2.23	0.23*	0.29*	0.41*
	(1.03)	(1.18)	(1.55)	(0.12)	(0.14)	(0.21)
CR	-2.86**	-1.05	0.22	0.03	-0.14	0.23
	(1.16)	(0.79)	(1.61)	(0.13)	(0.10)	(0.18)
Bond IL	8.15***	7.89***	13.44***	7.84***	7.86***	13.41***
	(0.68)	(0.56)	(0.68)	(0.64)	(0.55)	(0.68)
Avg Basket Size	-0.23	-2.09**	-1.63	-1.18	-1.82*	-2.15
	(1.13)	(1.00)	(1.96)	(1.13)	(1.03)	(1.93)
Shared Index	-11.21***	-1.26	-18.02***	-1.05***	-0.08	-1.59***
	(2.83)	(2.77)	(3.65)	(0.24)	(0.23)	(0.35)
ETF Ownership	0.83	1.39*	1.21	0.76	1.34*	0.92
	(0.93)	(0.69)	(1.39)	(0.92)	(0.67)	(1.35)
Zero Trading Days	-57.49***	-16.11***	-121.99***	-70.62***	-11.56**	-122.02***
	(6.66)	(4.38)	(12.47)	(5.17)	(4.59)	(10.13)
Amount Outstanding				-8.85***	2.98**	-0.63
				(1.48)	(1.23)	(2.52)
Observations	111704	100311	101375	111704	100311	101375
Adjusted R^2	0.27	0.07	0.36	0.27	0.07	0.36

Table A.36: Basket Imbalance on Bond Liquidity

This table is the counterpart of Table 9 in the paper, with all additional controls.

	(1) IL1	(2) IL2	(3) IL3
Num Baskets	-8.82***	-3.95***	-5.44***
	(0.37)	(0.40)	(0.36)
Num Baskets × CR Imbal	1.35***	1.76***	1.33***
	(0.23)	(0.23)	(0.20)
Num Baskets × RD Imbal	2.64***	1.55**	2.58***
	(0.51)	(0.69)	(0.63)
Bond IL	12.41***	11.73***	19.45***
	(0.18)	(0.19)	(0.34)
Avg Basket Size	-0.06	-1.22***	-1.49***
	(0.26)	(0.27)	(0.26)
Shared Index Baskets	0.42	1.59***	0.77
	(0.54)	(0.51)	(0.47)
ETF Ownership	-2.60***	-1.46***	-2.46***
	(0.22)	(0.20)	(0.21)
Zero Trading Days	0.67	-9.38***	-9.44***
	(1.02)	(1.06)	(1.30)
Observations	3255850	2832929	2902571
Adjusted R^2	0.23	0.13	0.44

A.5.8 Basket Imbalance

Table A.37: Basket Imbalance: Interaction with a Simpler Measure

This table is the counterpart of Table 9 in the paper, except that it considers a simpler notion of basket imbalance that is defined in equation (20).

	(1) IL1	(2) IL2	(3) IL3
Num Baskets	-10.94***	-4.29***	-6.61***
	(0.41)	(0.41)	(0.41)
Num Baskets × Imbalance	2.00***	1.86***	1.79***
	(0.22)	(0.23)	(0.19)
Bond IL	12.52***	11.78***	19.59***
	(0.19)	(0.19)	(0.35)
Avg Basket Size	-0.43*	-1.28***	-1.89***
	(0.26)	(0.27)	(0.26)
Observations	3254055	2831031	2901286
Adjusted R^2	0.23	0.13	0.44