Steering a Ship in Illiquid Waters: Active Management of Passive Funds

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Exchange-traded funds (ETFs) are among the most important financial intermediaries, managing assets of $7.2 trillion at the end of 2021 in the US alone.Most ETFs track passive indexes.To manage index deviations, ETFs rely on authorized participants (APs) to conduct arbitrage trades in which they create and redeem ETF shares in exchange for baskets of securities called "creation baskets" and "redemption baskets," respectively.

We study how ETFs use creation and redemption baskets to manage their portfolios.Our contributions are both theoretical and empirical. Our empirical analysis focuses on US corporate bond ETFs in the years 2017 to 2020.We choose this category to emphasize the role of liquidity transformation, which is enhanced by the relative illiquidity of corporate bonds.

We make three contributions. First, we show that, despite their passive image, ETFs are remarkably active in their portfolio management. They often use baskets that deviate substantially from the underlying index by including cash and only a subset of index securities, and they adjust those baskets dynamically in a predictable fashion.

Specifically, we show that (i) bond ETF baskets include significant amounts of cash, (ii) ETF baskets are concentrated—they include only a small subset of the bonds in the underlying index, (iii) ETFs holding less liquid bonds have more cash in their baskets and larger tracking errors, (iv) ETFs dynamically adjust their creation and redemption baskets to steer their portfolios toward the index, and (v) these basket adjustments are smaller when the underlying bonds are less liquid.

Our second contribution is a theoretical model that helps us understand these facts. In our model, ETFs' active basket management emerges endogenously. When designing their baskets, ETFs balance the benefits of liquidity transformation against the costs of imperfect index tracking. For example, ETFs optimally adjust their baskets to make them cheaper to trade by including some cash and only a subset of index securities. The ' 'model's predictions are supported in the data.

Our third contribution is to show empirically that ETFs' active management has significant effects on the liquidity of the underlying bonds. Using a novel instrument for basket inclusion based on the rebalancing of bond indexes, we show that a bond's inclusion in an ETF basket improves the bond's liquidity in the full sample. This result flips, however, in periods of large imbalance between creations and redemptions. For example, during the large imbalance in March 2020, shortly after the onset of the COVID-19 pandemic, inclusion in a redemption basket worsened rather than improved a bond's liquidity. The effect of 'ETFs' active basket management on bond liquidity is thus state dependent.

The intuition is that in normal times, a bond's inclusion in an ETF basket makes the bond more liquid because shocks to investors' demand for ETF shares are largely idiosyncratic. A random mix of creations and redemptions across ETFs increases the trading activity in basket bonds, improving their liquidity. That is not the case, however, in periods when investors' liquidity shocks are systematic, resulting in imbalances between creations and redemptions. For example, large redemptions move redemption-basket bonds to APs' balance sheets. The APs, who also tend to act as market makers in these bonds, may become reluctant to purchase more of the same bonds, reducing their liquidity. The effect of basket inclusion on bond liquidity is thus state dependent: positive in normal times but negative when there is a large imbalance between creations and redemptions.