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

Based on BFI Working Paper 2022-65, "Steering a Ship in Illiquid Waters: Active Management of Passive Funds," by Naz Koont, Columbia Business School; Yiming Ma, Columbia Business School; Lubos Pastor, Chicago Booth; and Yao Zeng, Wharton School

While exchange-traded funds (ETFs) are typically viewed as passive index trackers, this work shows that corporate bond ETFs actively manage their portfolios, making dynamic adjustments to correct portfolio imbalances while facilitating ETF arbitrage.

Exchange-traded funds (ETFs), or baskets of securities that track an underlying index, have grown quickly since their appearance in 1993, reaching $7.2 trillion by the end of 2021 in the US alone, an amount exceeding the total assets of US fixed income mutual funds. Most ETFs track passive indexes, so to manage index deviations, ETFs rely on authorized participants (APs) to conduct arbitrage trades, in which APs create and redeem ETF shares in exchange for baskets of securities called the "creation basket" and the "redemption basket," respectively. These baskets are chosen by the ETF. (See accompanying Figure.)

This new working paper focuses on how ETFs use creation and redemption baskets to manage their portfolios. By analyzing ETF baskets and their dynamics, the authors gain new insights into the economics of ETFs. One key insight is that, despite their passive image, ETFs are remarkably active in their portfolio management. They often use baskets that deviate substantially from the underlying index and adjust those baskets dynamically.

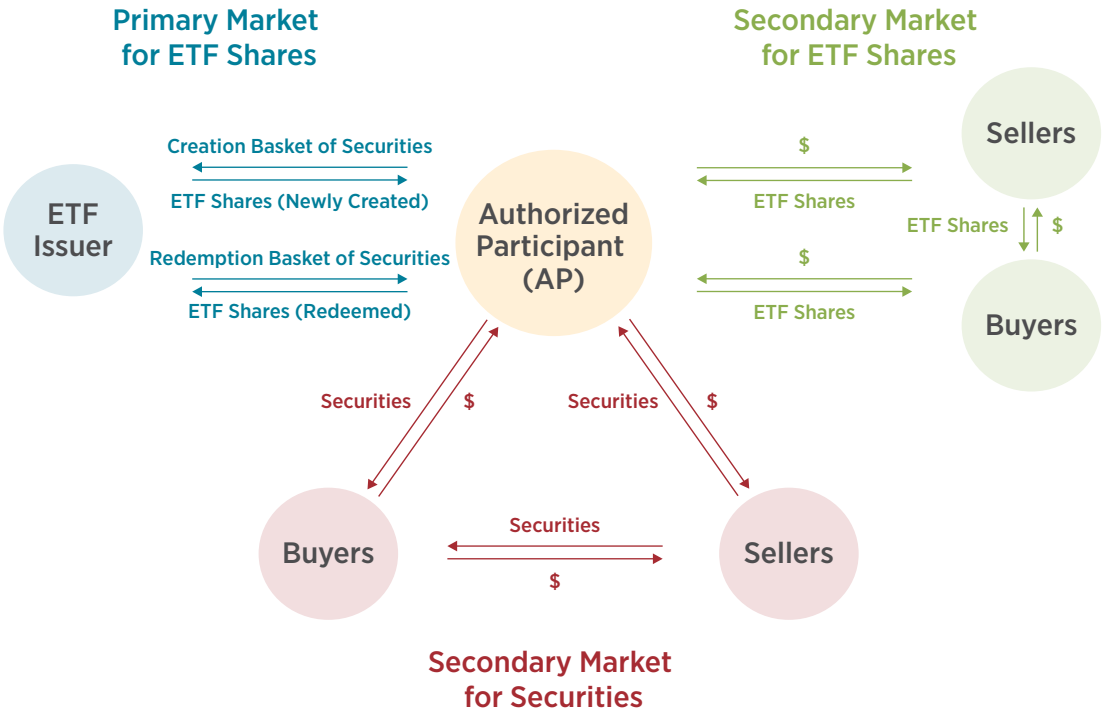
Before digging deeper into the authors' findings, it is useful to note two facts. First, ETF baskets include a fair amount of cash. The average creation (redemption) basket contains 4.6% (7.8%) of its assets in cash, based on the baskets pre-announced by the ETF at the start of a trading day. The cash proportions are even larger, 11.6% (8.2%) for creation (redemption) baskets based on realized baskets imputed from ETF holdings. Second, ETF baskets are concentrated—they include only a small subset of the bonds that appear in the underlying index. Both facts are costly to the ETF in terms of index tracking.

The authors build a model that incorporates these facts and highlights ETFs' dual role of index tracking and liquidity transformation; empirically, the authors focus on US corporate bond ETFs. (Please see the full working paper for details about methodology and modeling). In brief, the authors' key insights are the following:

- Passive ETFs actively manage their portfolios by balancing index-tracking against liquidity transformation. ETFs update their baskets frequently to steer their portfolios toward the index while maintaining the liquidity of ETF shares.

- When investors sell ETF shares, APs can buy and redeem them; when investors buy ETF shares, APs can create and sell them. By absorbing the trades of ETF investors, APs reduce the price impact of those trades. APs' arbitrage trading thus makes ETF shares more liquid in the secondary market.

Figure 1 • Exchange-Traded Funds (ETF) Arbitrage — What it is and How it Works



Notes: ETFs are investment funds that issue shares backed by a portfolio of securities. ETF shares trade in the secondary market. In the primary market, investors known as APs can create and redeem ETF shares in-kind for the underlying securities. The APs can profit from arbitrage trading across the primary and secondary markets. When ETF shares are relatively cheap in the secondary market, APs can buy them, redeem them in-kind for a basket of securities called the redemption basket, and sell these securities at a profit. When ETF shares are expensive, APs can deliver securities in the creation basket to the ETF issuer and sell the newly created ETF shares.

ETFs' active portfolio management has consequences for the liquidity of the underlying securities. The authors find that a bond's inclusion in an ETF basket has a significant state-dependent effect on the bond's liquidity. This effect is positive in normal times but negative in periods of large imbalance between creations and redemptions. For example, the COVID-19 crisis witnessed acute selling pressure in the bond market in spring 2020, which led to net redemptions from bond ETFs, which in turn strained the liquidity of the bonds concentrated in RD baskets. Given the growing role of ETFs in liquidity transformation, future episodes of ETF-induced liquidity strains seem likely. Future research can examine additional consequences of ETFs' active basket management.

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