



# Tail-risk hedging, dividend chasing, and investment constraints: The use of exchange-traded notes by mutual funds



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## ABSTRACT

Our study examines mutual fund demand for a newly designed security, exchange-traded notes (ETNs). We find strong evidence that mutual fund long positions in ETNs significantly underperform and that the motivations to hold ETNs lie outside of maximizing returns. Mutual funds hold ETNs to hedge tail risk and to gain access to higher dividend yields. Mutual funds have a strong preference for derivative-like ETNs although this preference is unrelated to contractual constraints. Finally, we show that skilled timing of ETN investments is limited to the short-sales market.

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## 1. Introduction

Mutual funds in the United States hold over \$16.3 trillion in assets.<sup>1</sup> Given the size of the mutual fund industry, numerous studies examine mutual fund holdings of equities (Daniel et al., 1997), derivatives (Koski and Pontiff, 1999; Cici and Palacios, 2015), short positions (Chen et al., 2013), and, most recently, exchange-traded funds (Sherrill et al., 2017). We investigate the possible incentives that prompt mutual funds to purchase exchange-traded notes (ETNs). Our focus is on several motivations, including maximizing returns, reducing risk, gaining access to dividend yields, and holding derivative-like securities without having to worry about derivative-related investment constraints.

Our results, like those found for exchange-traded funds (ETFs) by Sherrill et al. (2017), show that ETN investments made by mutual funds tend to underperform. The question thus arises: If fund managers do not select ETNs based on the ability to outperform, why are they investing in ETNs? To answer this, we associate a range of ETN features with mutual fund holdings of ETNs. Our findings provide evidence that certain ETNs offer return patterns that fund managers value in specific situations. We show that demand for ETN characteristics related to risk reduction and access to dividend yields are important considerations for mutual fund managers. For example, fund managers make allocation decisions to ETNs tracking the Chicago Board Options Exchange Volatility Index (VIX) in a manner consistent with the hedging of left-tail risk. Likewise, mutual funds hold ETNs linked to master limited partnerships (MLP) when high dividend-yielding securities are most attractive (Jiang and Sun, 2015). Mutual funds display a preference for derivative-like ETNs although no evidence exists that mutual fund-specific requirements or constraints drive this preference. We conclude that the small losses funds experience on long positions in ETNs may be viewed as fees paid by fund managers for access to the complex risk-return profiles that ETNs offer.

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<sup>1</sup> From the Investment Company Institute. Data as of year-end 2016. [https://www.ici.org/pdf/2017\\_factbook.pdf](https://www.ici.org/pdf/2017_factbook.pdf)

After considering the motivations for fund managers to hold ETNs, we finish by looking at short positions and find that mutual fund managers demonstrate skill when short-selling ETNs. ETN characteristics provide a unique test of skill in mutual fund short positions. Specifically, we show that the mechanics of the short-sale market are associated with skilled trading, but long positions in inverse ETNs provide no evidence of skilled trading by fund managers.

Our examination of mutual funds' investments in ETNs shows support for portfolio management motivations rarely included in academic models or empirical analyses. We show that simple models of mutual fund ability can be inadequate when explaining portfolio allocation decisions among specialized security designs, such as that of ETNs. A wide range of incentives can motivate fund managers to hold securities to enhance portfolio risk-return characteristics in ways that would be difficult to achieve with traditional equities. Because ETNs allow access to return patterns that may have been too costly or restrictive for fund managers with traditional securities, we are able to document fund managers' preferences for novel return profiles and characteristics. We therefore unite two areas of academic research: portfolio management and security design.

We organize the remainder of our paper as follows: Section 2 provides a brief overview of ETNs and describes our motivation and hypotheses; Section 3 outlines the data sources and testing methodologies used; Section 4 presents the results of our analysis; Section 5 discusses our results and the implications for future research.

## 2. Background, motivation, and hypotheses

Determining why portfolio managers choose to hold securities that do not outperform can be difficult. Prior research documents a range of incentives that prompt fund managers to pursue goals other than shareholder return maximization, including decisions concerning risk-taking (Brown et al., 1996; Golec and Starks, 2004; Kempf et al., 2009; Huang et al., 2011), style tilts (Chevalier and Ellison, 1999; Chan et al., 2002; ter Horst et al., 2004), and herding (Boyson, 2010; Jiang and Sun, 2014). We extend these works by showing that managerial incentives deviate from simple return maximization in the case of ETNs.

### 2.1. Structure and history of ETNs

ETNs are market-listed unsecured debt securities whose principal value tracks a designated market index.<sup>2</sup> ETNs have no underlying portfolio holdings and are backed by the credit of the issuing institution, usually a global investment bank (although issuers' default risks are not found to be reflected in ETN prices (Cserna et al., 2012)). The June 2006 introduction of ETNs in the US created a new opportunity for mutual funds. Because ETNs hold no underlying securities, tracking indices with difficult or impossible-to-hold underlying constituent securities (e.g., the VIX) is possible. ETNs, therefore, may offer returns that are similar to those obtained through derivatives positions, insurance contracts, and unlisted securities. However, ETNs are classified as market-traded bonds and are not subject to the constraints on senior securities imposed by the Investment Company Act of 1940 and many mutual fund prospectuses. Due to this distinction, ETNs allow mutual funds to hold a security that meets regulatory and contractual guidelines, while providing returns that mimic those of securities the fund may be constrained from holding.

### 2.2. Selection of ETNs based on fund managers' skilled forecasting

The simplest explanation for why mutual fund managers choose to hold ETNs is that these managers possess the skill or private information that allows them to outperform through ETN investments. Because ETNs are relatively new, illiquid, and complex securities, market inefficiencies could exist for ETNs even when more liquid securities, such as common stocks, show little evidence of future price predictability. We base our initial hypothesis on the possibility that mutual fund managers select ETNs with predictable future prices. Our first alternative hypothesis is as follows:

**H<sub>1</sub>:** Mutual fund managers select ETNs based on skilled forecasts of ETN returns, which implies a positive association between ETN holdings and future ETN returns.

Because simple and persistent return predictability is rare in developed financial markets, our first hypothesis likely does not fully explain mutual fund preferences for ETNs. We therefore consider several additional hypotheses based on the unique characteristics of ETNs that allow for return patterns that depart from the returns of more commonly held securities.

### 2.3. Using ETNs for tail-risk hedging

Several characteristics of ETNs make their use for hedging purposes more efficient than other securities. The ability to track indices implicitly tied to measures of market risk, such as the VIX, means that ETNs can act as protection against certain types of market risk that would otherwise be more difficult or costly for investors.

Because the VIX fluctuates and lacks a long-term time trend, investments in VIX-based ETNs should decrease by the amount of the fees charged over long horizons. While this may make VIX-based ETNs poor long-term investments in terms of unconditional returns, VIX-based ETNs increase in value when market uncertainty increases and the marginal utility of investors is high. A negative average return on these investments may be an acceptable cost for an insurance-like security that can provide a hedge against uncertainty, especially on the left-hand side of the return distribution.

<sup>2</sup> For further discussion on the basic functioning of an ETN security, see Wright et al. (2010). Cserna et al. (2012) provide a more focused analysis by looking at the counterparty risk in ETNs.

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