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How Do ETFs Influence Financial Markets?

ETFs have attracted considerable attention in recent years. Yet despite growing concerns about the impact of ETF trading on the behavior of financial markets not one theoretical model exists to analyze that impact. Until now that is—SFI's Semyon Malamud has developed such a powerful tool.

An exchange-traded fund (ETF) is an investment fund traded on a stock exchange. Most ETFs are passive, index-tracking funds that mimic the performance of a specific index. A wide variety of ETFs—using different ETF holdings including stocks, commodities, or bonds—are actively traded in financial markets.

“In 2015, total ETF assets surpassed USD 3 trillion... average annual growth rate since the early 1990s has been 26 percent.”

Two major features distinguish ETFs from open-end mutual funds. First, retail investors can buy and sell ETF shares on a stock exchange through a broker-dealer. Second, ETF shares can only be created by financial institutions called “authorized participants” (APs). These serve as broker-dealers and ETF market makers on the stock exchange and have a special agreement with the ETF issuer. A key ETF variable is a fund's net asset value (NAV)—the sum of all its assets less any liabilities, all divided by the number of shares outstanding. ETFs and other exchange-traded products have experienced tremendous growth in recent years, attracting considerable attention from investors, regulators, and academics alike. In 2015, total ETF assets surpassed USD 3 trillion, according to Markit. The average annual growth rate of ETF assets since the early 1990s has been 26 percent—twice that of actively managed assets.

“Do ETFs increase volatility and systemic risk? Should ETF trading be regulated or even prohibited?”

All this naturally raises concerns about the impact of ETF trading on the behavior of financial markets. Do ETFs increase volatility and systemic risk? Does ETF trading “steal” liquidity from the underlying “simple” securities? Should ETF trading and the creation of new ETF products be regulated, or even prohibited?

About the Author



Semyon Malamud

Semyon Malamud is SFI Associate Professor of Finance at EPFL and holds an SFI Senior Chair. He obtained his PhD in Mathematics from ETH and his main research interest lies in asset pricing.

The full paper can be found at <http://bit.ly/1TnQgkj>.

Key Words

Exchange-traded fund
Liquidity
Volatility
Systemic risk

Numerous research papers have empirically investigated both the pricing of ETFs and their impact on market risk and liquidity. Most argue that ETF trading increases both volatility and systemic risk by channeling new demand and supply shocks into the ETF basket securities. A particular topic of ongoing debate has been regulatory concerns with regard to the hidden risks to which ETF investors are exposed and the threat that ETFs pose to market stability. Indeed, the US Securities and Exchange Commission has begun investigating the role of ETFs in raising market volatility.

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Despite all these concerns, not one single theoretical model that could be used to analyze the impact of ETFs on the functioning of financial markets has been developed. Without such an equilibrium model, it is difficult to assess the role and interactions of all the complex mechanisms that shape the underlying market structure. SFI’s Semyon Malamud remedies this state of affairs with his recently developed and powerful modeling approach.

The key difference between ETFs and other financial securities is the presence of the creation/redemption mechanism. A realistic model of ETFs must include this mechanism. The analytical solution developed by Malamud in his model allows the effects of the mechanism on the underlying prices, volatility, and liquidity to be explicitly characterized. The ETF creation/redemption mechanism serves two purposes. First, ETF issuers effectively offer an additional primary market to APs—a market that serves as a source of complementary liquidity and therefore improves liquidity in the secondary ETF market. Second, the mechanism ensures that ETF shares trade in-line with the underlying NAV: if the ETF price deviates from the NAV—that is, if an ETF trades at a premium or at a discount, APs can exploit this arbitrage opportunity by taking opposite positions in the ETF and the underlying basket and then offloading this inventory to the ETF issuer at the end of the trading day.

“The ETF creation/redemption mechanism may serve as a shock propagation channel.”

Despite this built-in arbitrage mechanism, ETF prices constantly exhibit puzzling deviations from their NAVs. For example, the iPath S&P GSCI Crude Oil Total Return Index exchange-traded note’s (OIL) price rose to a 48 percent premium over its NAV in January 2016. In his paper, Malamud shows that—surprisingly—the creation/redemption mechanism itself may be the cause of such inefficiencies. In fact, one of Malamud’s key conclusions is that the mechanism may serve as a shock propagation channel that transfers temporary demand shocks into the future. Sometimes it may be optimal—in terms of lower volatility, higher liquidity, or higher social welfare—to increase creation/redemption fees in order to control ETF growth and limit this shock propagation channel.

The constant growth of the ETF universe naturally raises the question of whether the number of ETFs is excessive and whether the introduction of new ETFs, which may only destabilize the existing market structure, should be regulated. Malamud shows that this may, indeed, be the case.

“ETFs may be both a blessing and a curse.”

Introducing new, properly designed ETFs may be welfare improving, reduce overall volatility and systemic risk, and improve liquidity. At the same time, if new ETFs do not span a sufficient number of useful new risk dimensions for the different ETF investor clienteles, their effect may be detrimental for welfare.

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