



The massive growth in ETF investments: Do they calm or distort the market?

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Abstract

The demand for ETFs is increasing globally every year and it is one of the most popular investment products. What concerns both academics and practitioners is the question of which effect the boom in passive investments will have on the market. In this conceptual paper, we discuss on a conceptual-theoretical level which effects ETFs can have on the capital market and place the importance of active managers and informed investors at the forefront of considerations. We argue for a long-term balance between ETFs and informed investments and against a market-destructive effect of ETFs, taking into account the respective market advantages.

1 Introduction

Exchange-traded funds (ETFs) are considered a fundamental innovation in both retail and professional investment and can be defined as securities that track and therefore move like an index of sectors, regions, or commodities (Lettau & Madhavan, 2018). It is a passively managed product where the fund manager does not select specific shares. Instead, the adjustment takes place via an automatic trading computer system. Thus, conscious decisions are no longer made by a real person, but market movements are replicated. Thereby, instead of an active fund and portfolio management, passive management is increasingly coming to the fore. ETFs are traded daily on the stock exchange, similar to shares. While \$1.3t were invested in ETFs at the beginning of 2010, this figure had risen to \$7.74t by the end of 2020 (Blackrock, 2018). In 2018, they accounted for 13% of global assets outstanding across all classes of funds (Deutsche Bundesbank, 2018). Assets in global ETFs are expected to more than double to \$12t by the end of 2023 and could reach as much as \$25t by the end of 2027 (Blackrock, 2018).

Some researchers already call ETFs a market disruption (Madhavan, 2016). The so-called passive funds work without an expensive management team and instead rely on the replication of predefined indices. ETF innovation in the market and the shift from actively to passively managed investment is based on digitalization.

Computers replace active managers which keeps the costs low from an investor's point of view and enables faster investing. Another benefit is that ETFs allow high diversification and are considered an ideal investment property (Lettau & Madhavan, 2018). Various studies show that the performance of ETFs is in many cases on average even higher than that of active fund managers.

The strong growth in passive investments of around 700% in the last 10 years (Heath et al., 2021) has caused some research results that empirically analyzed the impact of individual ETFs on underlying index funds. Some papers conclude that ETFs positively influence the underlying securities by increasing their liquidity in non-turbulent times (e.g. Hedge & McDermott, 2004; Richie & Madura, 2007) and information efficiency as information is priced in faster in the ETF than in the underlying assets (Glosten et al., 2020; Liebi, 2020). However, most researchers found negative impacts. Pan and Zeng (2017) conclude that ETFs lead to higher illiquidity in the underlying assets in turbulent times. Furthermore, Ben-David et al. (2017), Curcio et al. (2012), Dannhauser (2017), Krause et al. (2014), Wang and Xu (2019), and Xu and Yin (2017) find that ETFs increase the volatility of underlying assets. Therefore, stocks with higher ownership by ETFs display higher volatility than similar securities without ETF ownership (Bhattacharya & O'Hara, 2017). Due to these contradictory results, Liebi (2020) concludes that both the negative and positive relationships coexist. Krause et al. (2014) discover that ETFs may or may not influence the liquidity of the underlying securities. However, they state that ETFs should be taken into consideration when modeling the future volatility of their primary securities (Krause et al., 2014). Overall, a critical analysis of the overarching market effects of the ETF growth on the financial market stability is missing.

Digitalization and the possibility of blind investment decisions only based on indices raise the question of how these innovations fit into the capital market which is structured according to old scientific theories in its basic features. The most popular narrative on basic capital market functions is the efficient-market theory (Fama, 1970) on which we base our conceptual framework. ETFs mean maximum diversification with minimum transaction costs by saving costs for active investment managers and relying entirely on the replication of indices. How does this fit to capital market efficiency theory, being the scientific basis for today's capital market design, building on responsible and rational investors and efficient capital allocation? What does a reversal of previous market logic mean for the stability and long-term growth of markets? Overall, we raise the question of whether ETFs contribute to a calming or distortion of the market. Therefore, we analyze the developments around ETFs from a market-theory perspective.

After a brief introduction of the history of ETFs, we discuss the potential effects of ETFs based on the efficient market hypothesis and derive implications of our argumentation.

2 A brief history of exchange-traded funds

ETFs were implemented in the 1990s as an outcome of a proposal that aimed at securing market stability after the crash of 1987 (Balchunas, 2016). On October 19th, 1987 - also called the Black Monday - the Dow Jones Industrial Average (DJIA) decreased by more than 24% within one day which denoted the most critical stock market loss in the record of the DJIA (Liebi, 2020). As a reaction to the market crash, the Security Exchange Commission (SEC) found that the origin of the collapse were index futures and program trading. As soon as markets started to deteriorate, investors sold index futures causing S&P 500 index futures to fall by 29%. As index futures traded at a discount, program traders went long the index futures and shorted the underlying stocks (Liebi, 2020). This exerted further negative pressure on the respective equities. The Black Monday demonstrated how a shock in the future market can spread to the stock market (Carlson, 2007). The SEC demanded a single product that allows investors to trade an entire portfolio of securities (Liebi, 2020), expecting that liquidity would increase and volatility would decrease. Back then, the idea was called basket-trading products and is now known as ETFs (Lettau & Madhavan, 2018). Therefore, the oldest US-listed ETF that tracks the S&P 500 index and is called SPDR was introduced in 1993. After the launch of the SPDR, new exchange-traded funds were established that mirror wide domestic and international indexes, as well as more specialized industry, geographic, or national indexes (Lettau & Madhavan, 2018). Over the past 15 years, total ETF assets have been twenty-folded, while mutual funds have grown only 130%. Today, there are over 6,400 ETFs listed globally with total assets of over \$3.7t. In the U.S., seven ETFs are among the top ten most traded securities (Liebi, 2020).

3 Effects on capital market efficiencies

3.1 Theoretical background

Simply put, the market efficiency hypothesis (MEH) assumes that security prices fully reflect all available information (Fama, 1991). Fama (1965a) defines an “efficient” market as a market where a high number of rational profit-maximizers actively compete with each other. By attempting to foresee future market values based on nearly costlessly available information for all participants at all times (Fama, 1965b), the market participants generate fully informed prices (Fama, 1965b). Accordingly, after the deduction of costs, no market participant can achieve an information advantage that would mean an excess return. This situation entails that the actual prices of individual securities display adequate approximations of the intrinsic values of securities at any point in time and when an intrinsic value changes, the actual price will adapt ‘instantaneously’ (Fama, 1965a). Furthermore, Fama puts the theory of random walks forward which is associated with the MEH and a term liberally adopted in the finance literature (Malkiel, 2003). It compares stock market price developments with a random walk. The assumption that new information, and therefore market prices, evolves randomly makes the stock market unforeseeable (Malkiel, 2005). Given that capital markets are efficient, the logic entails that this randomly evolved information is immediately mirrored in the stock prices. As a result, tomorrow’s changes in prices will only indicate tomorrow’s new information and will be independent of the price movements today (Malkiel, 2003). Thus, the theory presupposes that preceding prices cannot be utilized to anticipate future prices in useful ways. Instead, future prices are not more foreseeable than the route of random numbers (Fama, 1965b). Consequently, it is expected that uninformed investors acquiring a diversified portfolio at current market prices will not gain lower returns than experts (Malkiel, 2003). To put it differently, the profits of a professional investor are not expected to be greater than they would be from randomly selected securities of the same riskiness of a naive buy-and-hold model (Fama, 1965a; Fama 1965b). If this is indeed the case, the work of analysts does not add value to stock market analysis (Fama, 1965b).

Nevertheless, the conditions of an efficient market, including no transaction costs in trading, costless information availability to all market participants at the same time, and an overall agreement on implications of available information on current prices, are not met in practice (Fama, 1970). The survival of the theory is based on the fact that all conditions are sufficient, but not necessary. Fama (1970) states that as long as all information is accessible for a sufficient number of rational investors, the market may be efficient. He maintains that large transaction costs might not hinder the full reflection of available information and if there are no investors who can persistently make better predictions of prices (Fama, 1970). However, every condition represents a potential source of market inefficiency (Fama, 1970).

The theory is not uncontroversial in the scientific community and is regularly questioned. However, it has never been refuted and remains one of the most important theories in economics.

3.2 Theoretical implications

What does the efficient market hypothesis signify for the massive investments in ETFs? Assuming that the random walk theory applies in a way that future prices cannot be predicted, and markets are efficient, it can be expected that ETFs outperform actively managed funds due to lower transaction costs (Sharpe, 1991). This argument alone is widely studied, and different results are confirming or denying this statement. We hypothesize that previously contradictory findings on the relation between ETFs and market stability are based on the differentiation that ETFs can outperform active managers in efficient markets where active managers have no information advantage (Sharpe, 1991). Active investors only have an advantage over ETFs if their informational advantages compensate for their increased costs. However, such information advantages do not exist by definition in an efficient market. Active managers comprise the group of active portfolio managers and active market participants/informed investors who make decisions based on information (Sharpe, 1991). It is well known that the EMH does not hold in reality and that active managers, in some cases, can have information advantages due to specializations in niche markets (Anadu et al., 2020; Antti, 2017). Therefore, active managers can only outperform ETFs after costs when they benefit from information asymmetries. Staying in a theoretical frame, assuming that no information advantages exist, ETFs can systematically outperform active managers. This leads to the question of which consequences are connected to the competitive advantage of ETFs.

In the literature as well as in practice, the significance of ETFs for financial market stability is discussed controversially. The literature primarily refers to the discussion of the extent to which ETFs influence underlying securities. What is lacking are academic discussions on the question of whether ETFs calm or distort the whole (capital-)market. By having a market advantage, ETFs are supposed to replace a share of informed investors in the market (Qin & Singal, 2015), as ETFs do not base investment decisions on newly available information. This might decrease market efficiency as prices do not represent adequate approximations of their intrinsic values

anymore (Dannhauser, 2017; Israelil et al., 2017; Qin, Singal, 2015) which, in turn, leads to a decoupling of value and price (Antti, 2017; Bolla et al., 2016; Brogaard et al., 2018). However, these assumptions are based solely on the ideal-typical function of the capital market and disregard other movements. Also, what is missing in the literature so far is taking into account the active managers who are nevertheless present in the market. The described market inefficiencies can only destabilize the market if passive investments exceed active investments. According to the following line of argumentation, we hypothesize that the ETF market will not grow to have a destabilizing effect.

As soon as price inefficiencies arise through ETFs, for example in the form of over- or undervaluations, active managers will have a clear competitive advantage and market participants will exploit the inefficiencies to their advantage, for example by short-selling. By the time ETFs have a high share in a market, inefficiencies might arise. However, as soon as they arise, ETFs lose their comparative advantage. We argue that this destabilizing effect is not long-term but short-term until active managers and informed investors exploit it. Therefore, the theory that ETFs destabilize the market in terms of market efficiency is rather hypothetical, as there will never be such a strong presence of ETFs on the market in the long term. We argue that in the long run there will be a balance between ETFs and active managers, each of which will exploit its inherent advantages until they outweigh those of the other. Active managers will only be replaced by ETFs in the future if they do not price in information.

4 Implications

Since ETFs only replicate predefined indices, they do not base their investment decisions on all available information. This might have the consequence that actual prices of individual securities do not display adequate approximations of the intrinsic value of the security (Antti, 2017; Bolla et al., 2016; Brogaard et al., 2018). Therefore, it can be argued they pose a potential threat to the efficiency of financial markets defined as a market where security prices fully reflect all available information (Fama, 1991). However, we argue that this creates an arbitrage opportunity for active investors and that they will exploit it using their ability to include information available to them. Relying on the EMH and the random walk theory, it seems plausible that due to market advantages (price, diversification) ETFs will be the investment vehicle for uninformed investors. Then, only the core of investors who have an information advantage compared to ETFs will remain in the market. Thus, instead of cursing passive investments and ETFs, the self-stabilizing forces of the market should now be taken into account when considering market effects. The task of research and politics is rather to steer the new market effects into a stabilizing unit to shape the increasing introduction of digitalization into the capital market.

Nevertheless, we base our theoretical argumentation on assumptions that have not been held in every case in the past. Various financial crashes in the past have shown that markets cannot always be said to be efficient and rational. It can be argued that informed investors will balance the price inefficiencies that ETFs might cause in the short run. Nevertheless, other destabilizing factors on the underlying securities cannot be excluded. These include for example the factors liquidity, volatility, and co-movement of single underlying assets (see e.g. Ben-David et al., 2017; Curcio et al., 2012; Dannhauser, 2017; Krause et al., 2014; Pan & Zeng, 2017; Wang & Xu, 2019; Xu & Yin, 2017). Thus, it is important to keep a critical perspective on the effects of new financial products. Especially the inclusion of artificial intelligence in ETF products might change our assumption that ETFs cannot be considered informed investors.

Another research opportunity is to look at the implications of ETFs for the control systems within companies. As Heath et al. (2021) state, the exercise of voting is an important instrument of governance, but passive investors surrender their voting rights to the ETF provider. Thus, with the projected growth in ETFs, there will be a concentration of power of the large ETF providers through voting rights in companies. On the one hand, investment companies like Blackrock show that they are pushing hard for a more sustainable orientation of companies, however, on the other hand, the concentration of power is to be seen as disadvantageous, as it undermines the principle of governance and control functions of listed companies.

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