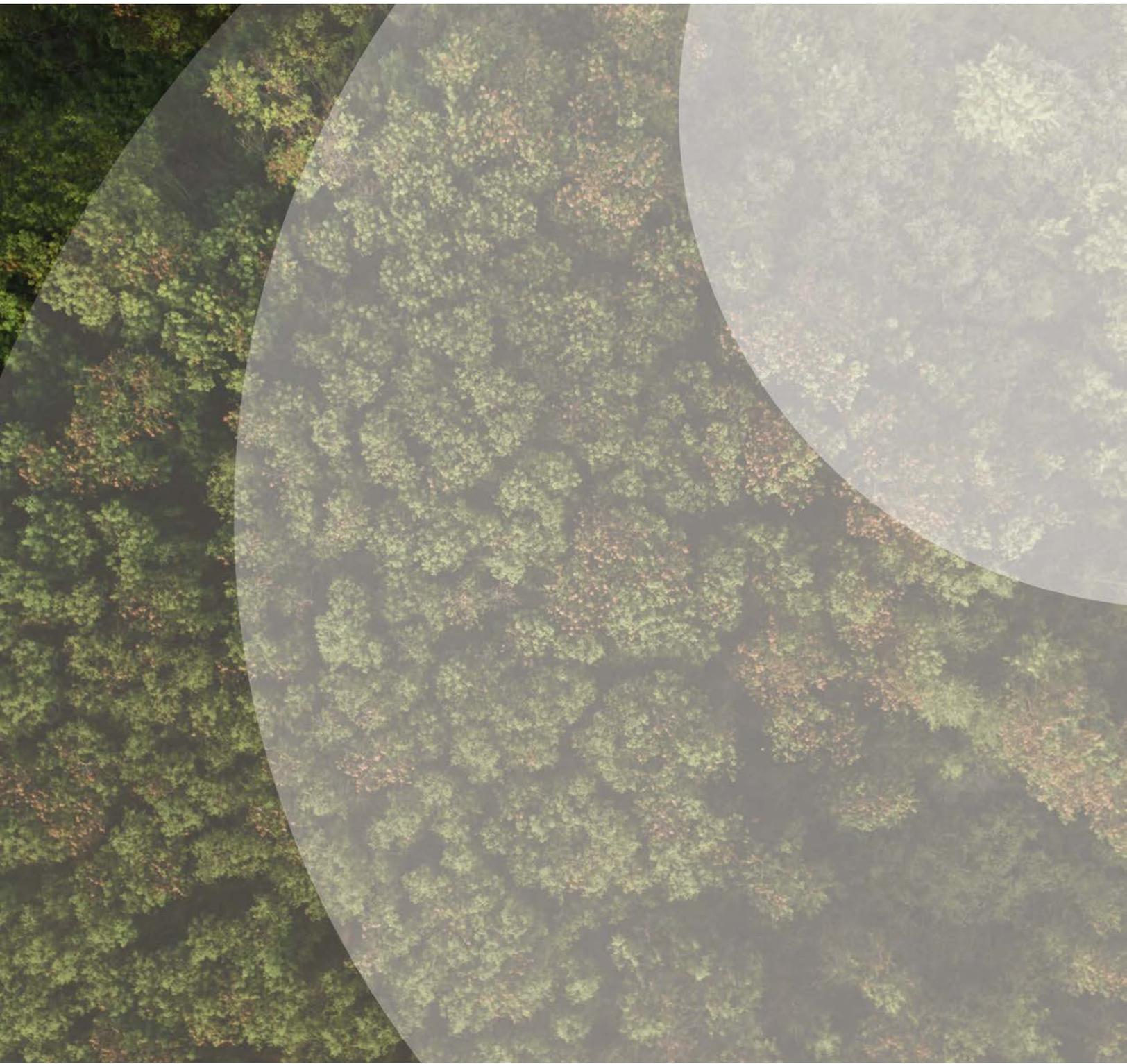


Research

The growth of passive investing: Has there been an impact on the US equity market?

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The growth of passive investing: Has there been an impact on the US equity market?

New papers, articles and blogs about the growth of passive investing in the US equity market and the possible risks that growth represents are becoming a weekly, if not daily, event, or so it seems. A simple web search on “the dangers of passive investing” brings up 300,000 links; a restricted search confined to links from 2017 with that exact phrase yields 10,100 hits.¹

In this paper, we review the growth of passive investing over the last 18 years; report on research documenting some of the benefits passive investing offers; review key papers regarding concerns of corporate governance and accurate pricing; and conclude by calling for more robust research on this vital issue that affects investors, the market and the economy.

Generally we observe:

- It is critical to distinguish between passive investing per se and specialized investment structures and vehicles that are used as means to invest in index-based products such as exchange-traded funds (ETFs), stock index futures and options.
- Passive market share of ETFs and open-ended mutual funds (OEFs) has grown from 12% in January 1998 to 46% at the end of December 2016. ETFs represented 4% of the passive component at the start of 1998, but by the end of our period, December 2016, had grown to 46%.² A large part of the recent growth in passive assets, thus, has been in ETFs.
- Beyond the generally accepted evidence of lower costs and after-fee performance, research in international markets suggests that the growth of passive investing is associated with a reduction in active fees, a reduction in closet indexing by active managers, and improved performance of those managers who can be classified as truly active.
- There are concerns that index fund providers and large institutional investors that are heavily invested in passive vehicles have not been vigilant in corporate governance, but these entities have moved to improve their corporate governance programs and transparency on their voting decisions. Recent academic research finds evidence that passive investing has been associated with distinct governance characteristics regarding key aspects of corporate behavior. More research is needed on this issue. Additionally, index construction methodology and constituent requirements can impact governance issues, as FTSE Russell’s new minimum voting rights threshold demonstrates.³
- The role that investors play in price discovery is central to the market and the economy, according to financial theory. The increase in passive market share has raised concerns about whether passive investing has damaged or will damage the market’s ability to define accurate prices. More focused and defined research needs to be done in this area to determine whether prices have indeed decoupled from fundamental value; and to isolate what role passive investing has played in that decoupling (if it exists) compared to the impact of many other major changes in the world and the economy over the last 20 years. Research on the Japanese equity market, where passive market share is now reported at 70%, may offer insights.⁴

¹ As of July 13, 2017; www.google.com

² Source: Morningstar.

³ FTSE Russell July 2017a and 2017b. See References section for full citations for all sources.

⁴ Bank of America Merrill Lynch 2017.

What is passive investing?

For the purpose of this study, we define passive investment as a subset of a larger group of investments that has commonly been identified by market participants as “index-based investing.” Index-based investing is a very broad term that — depending on the source — includes many investing structures and strategies. For our purposes, we define passive investing as investment in an open-ended mutual fund (OEF) or an exchange traded fund (ETF) that is designed to replicate or accurately track the performance of a capitalization-weighted index of a market or market segment.

The broader category of index-based investing can include a number of other investing structures, which we exclude from our definition of passive investing. Among these are:

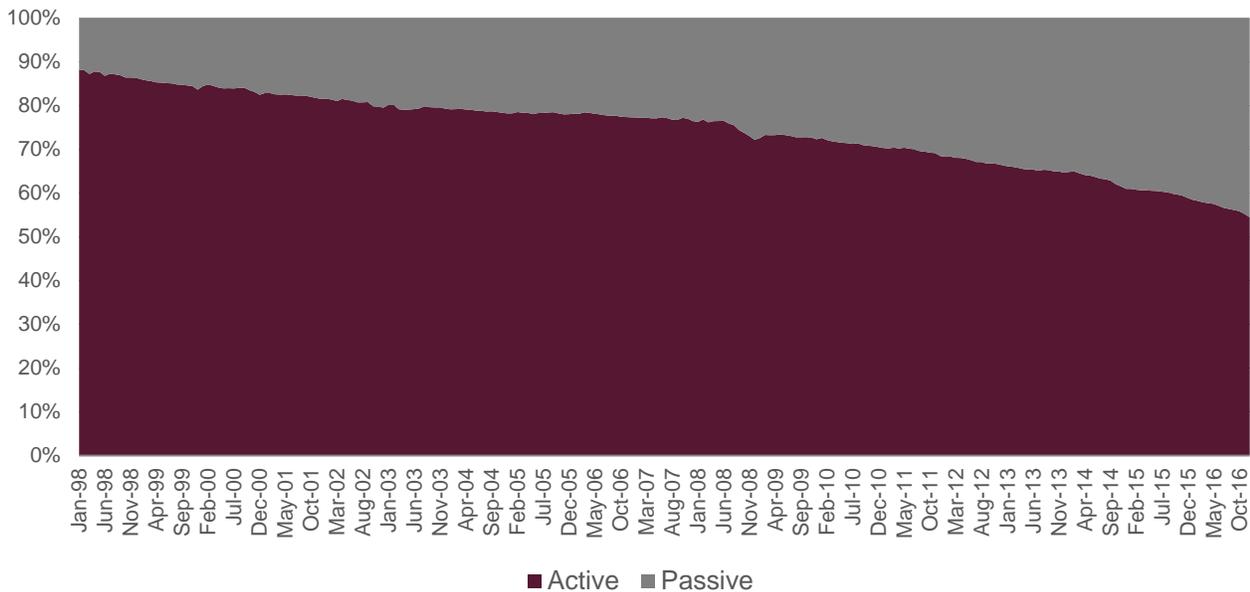
- Smart beta index-based OEFs and ETFs, including (but not necessarily limited to) funds tracking alternatively-weighted market indexes; factor or factor-tilted indexes (single or multi-factor); dynamic but rules-based strategy indexes; and others.
- Using stock index derivatives to gain exposure to stock indexes, including the use of stock index futures; options; options on futures; index swaps; and other structured products.

More controversial is the classification of active funds and investment products that are benchmarked to market-cap weighted indexes as a form of index-based investing. Typically, such investment vehicles are constrained in terms of how much they may deviate in performance from the underlying market-cap weighted benchmark. In some assignments, deviations in holdings positions are constrained. There have been criticisms that using cap-weighted market indexes as performance benchmarks and investment guidelines for active managers has had consequences, for example, that such practice has contributed to (or is even possibly the sole cause) of the low volatility anomaly. We also exclude this category of products from our definition of passive investment.

The growth of passive investing in the US equity market

How much have passive assets grown in US equity investment? How big of an issue is this, really? In Figure 1 we chart the percentage of assets in US equity OEFs and ETFs, both passive and active, from January 1998 through December 2016. The proportion of total US equity fund assets in passive vehicles has clearly grown over this time, starting at 12% at the beginning of the period and ending at 46% as of December 2016. The largest movement into passive began in the summer of 2008, continuing through December (the Lehman bankruptcy occurred in late September), but there was subsequent reduction: by June 2009, the percentage in passive assets had reduced slightly (the bull market in equities began in late March 2009). Nevertheless, the percentage of invested assets in passive is closing in on 50% as of December 2016.

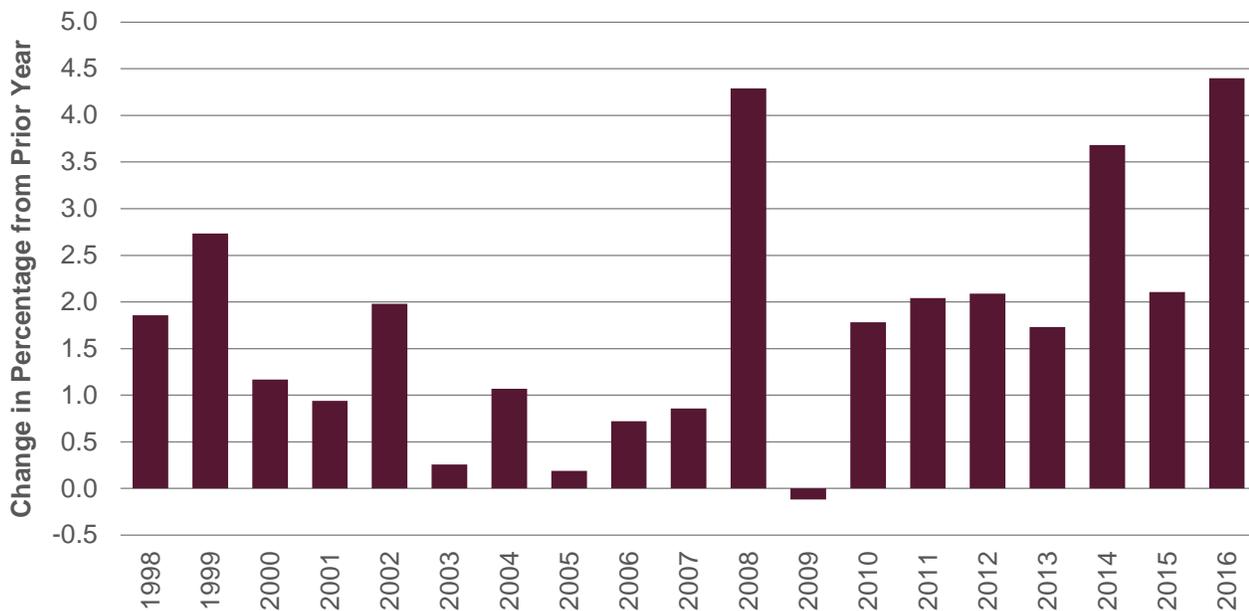
Figure 1. Percentage of active and passive investments (based on OEFs and ETFs) in US equity from January 1998–December 2016:



Source: Morningstar. Data as of March 22, 2017. Please see the end for important legal disclosures.

The rate of growth in the passive market share in US equity investing has been increasing over time. In Figure 2 we chart the year-over-year difference in the proportion of total assets that was in passive funds, from 1998 to 2016. In only one of these years — 2009 — did that proportion fall; every other year saw an increase in passive market share. The average yearly increase for the first 10 years (1998 to 2007) was 1.18%; from 2008 to 2016, the average increased to 2.44% even with 2009 included, the one year in our sample that passive market share declined.

Figure 2. Year-over-Year change in percentage of total OEFs and ETFs in passive funds: US Equity



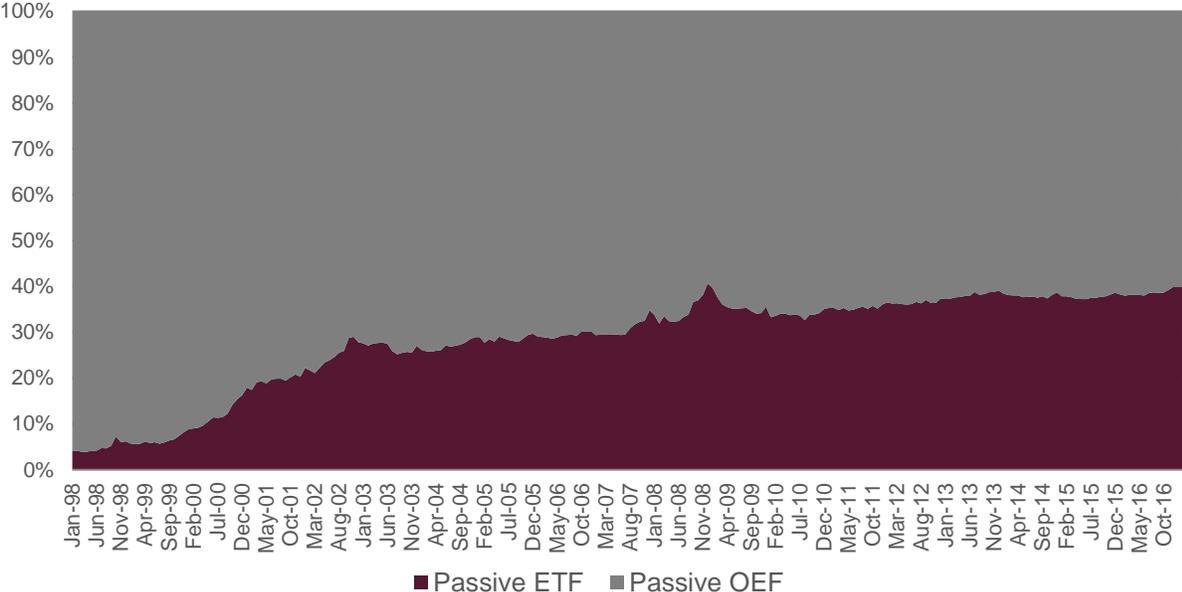
Source: Morningstar. Data as of March 22, 2017. Please see the end for important legal disclosures.

Does market performance explain or drive this pattern of growth in passive assets? Over 2008 — a year when the Russell 3000® Index of the US equity market recorded an index return of negative 37.3% — there was a very large spike in passive market share; in 2009, the one year in our sample when passive assets declined, the Russell 3000 posted a 28.3% return. There is, in fact, a slight negative correlation (-0.33) between the returns of the Russell 3000 Index — the broad benchmark of the US equity market — and the change in passive market share during our sample period. So generally, across this time period, market share for passive assets tended to increase more during the years when the Russell 3000 return was lower than the prior year; that rate of growth tended to slow or, in one instance, turned negative in years when the Russell 3000 return increased. But there are major exceptions to this pattern. For example, 2016 — a year when the Russell 3000 Index posted a 12.7% return (and a substantial increase over the prior year's return of 0.5%) — saw the largest increase in market share for passive vehicles: 4.4%. So while market performance (as represented by the Russell 3000 Index) has been influential, it has not been the sole or even a consistent driver of investors' selections of passive funds over active.

ETF or OEF?

What about the growth of ETFs? What role have they played in the overall growth of passive investing? Figure 3 charts the percentage of total passive assets accounted for by ETFs and OEFs over our sample period of January 1998 to December 2016. At the beginning of the sample period the passive market share for ETFs was 4%; by its end that share had grown to 40%. Thus, a notable proportion of the growth of overall passive investing in the US equity market has been in ETFs. ETFs differ from OEFs in many ways; perhaps the most significant are that they are listed on exchanges, are priced and can be traded throughout the day, and have preferential tax treatment.

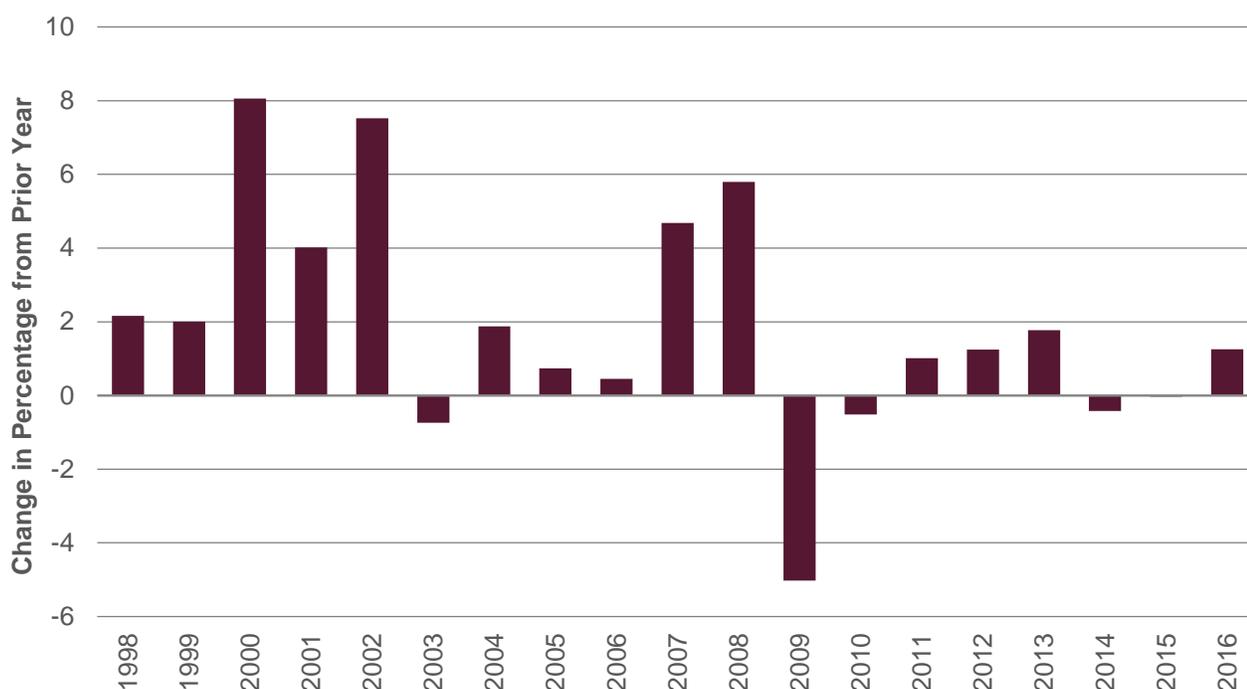
Figure 3. Percentage of total US equity passive assets in ETFs and OEFs January 1998–December 2016



Source Morningstar: Data as of March 22, 2017. Please see the end for important legal disclosures.

In contrast to what we found for total passive market share (correlation with equity market performance as measured by the Russell 3000 Index while negative was not high), preference for passive ETFs over passive OEFs is highly correlated with equity market returns. In Figure 4 we see that the greatest period of growth in ETF passive market share was from 2000 to 2003; there is a second spike in 2007–2008, after which ETF market share declines in 2009 and 2010. The correlation of passive market share of ETFs with Russell 3000 Index returns based on calendar years during our period is -0.77. Figure 4 charts the year-over-year growth of ETF assets, which shines a spotlight on the movement of passive assets into ETFs during years when the Russell 3000 Index decreased in value; in this sample those years were 2000, 2001, 2002 and 2008 (the Russell 3000 Index had a return of -7.5%, -11.5%, -21.5% and -37.31% during those years, respectively).

Figure 4. Year-over-year change in ETF market share of passive funds: US Equity



Source Morningstar: Data as of March 22, 2017. Please see the end for important legal disclosures.

Research as to the benefits of passive investing: What is the evidence?

Most research — both academic and practitioner — has focused on active rather than passive investing, primarily on the important questions of whether active managers can outperform their market benchmarks, and whether fees for active managers are worth it. William Sharpe’s seminal three-page 1991 article on the arithmetic of active management still holds primacy of place in this space; the math shows that in the aggregate active managers must underperform the passive market benchmark by the amount of their fees⁵ because active investing is a “zero-sum game.”⁶

Sharpe notes, as have others, that his math holds for the performance of active investors/managers taken together, allowing for the possibility that specific, individual managers may indeed outperform after their fees. Recent reports indicate, however, that not only have active US managers underperformed their market

⁵ Sharpe 1991.

⁶ Fama and French 2009 make the case that after fees are taken into consideration, active management is a negative sum game.

benchmarks in aggregate, but almost all have underperformed on an individual basis.⁷ Active managers have begun to move away from a focus on promises of outperformance of benchmarks, focusing on other benefits from their services, such as risk control for individual portfolios or funds, and price discovery for the market in general.⁸

The performance of active management implies an advantage of passive investment based on fee structures. Sharpe in fact makes that explicit: the arithmetic proves that in aggregate, passive investment must have greater returns than the active side, the differential being exactly the difference in fees. So a clear benefit of passive investing is the lower fees that passive investors pay, leading to greater returns from investment. Additional benefits may accrue from passive investment. Cremers et al. 2016 offer substantial research on what happens to markets when passive investing begins and grows. They offer evidence to demonstrate the growth of index-based funds in non-US markets has been associated with declining active fees, as well as a reduction in closet indexing by active managers and an improvement in performance of managers they identify as truly active.

ETFs afford investors certain advantages compared to mutual funds, and occasionally those ETF benefits — tax advantages and intra-day trading/exchange listing — are ascribed to passive investing. ETFs also may offer easier and cheaper avenues for hedging and shorting.⁹ Here we classify those as benefits of the ETF structure only and do not count them as characteristic of passive investment as a whole.

Research and evidence as to the disadvantages of passive investing

The growth of passive investing stands accused of causing, or at least contributing to, many past and present problems of the market place and economy as well as playing a presumed causative role in a variety of future doomsday scenarios. It is not possible to address all of these issues in a paper of this size; we confine our discussion to the two key issues of corporate governance and price distortion, and limit our attention primarily to empirical evidence as to how passive investment has affected these vital aspects of the market.

Corporate governance concerns

Academics and practitioners alike have questioned whether and how corporate governance has been affected by the growth of passive investment. This is a legitimate concern: certainly at first glance it is reasonable to suspect that passive investors and fund managers would be less engaged in monitoring and influencing company management policies and behavior than active investors. Purchases and sales of stocks by passive investors are not based on the idiosyncratic characteristics of individual companies; passive investors do not buy or sell shares based on evaluations of company actions or projected changes in value; passive investors buy and hold all stocks in the underlying index at the weights determined by the market¹⁰ regardless of how companies are managed.

Passive index-based fund providers, as well as large institutional investors who have a significant amount invested in passive assets, have responded publicly to those challenging them on their governance practices, arguing that their inability to sell makes them more — rather than less — focused and concerned about company governance. They have pointed out that oversight obligations are the same for all fiduciary entities whether assets are passively or actively invested. Additionally, passive fund managers have made the point that investment performance affects their bottom line as it does for their active counterparts, and that passive investment constraints require governance and guidance that is focused on long-term positive performance

⁷ Anderson 2017.

⁸ Anderson 2017.

⁹ Li and Zhu 2017.

¹⁰ Index provider construction rules govern the selection of index constituents; which market prices are used; and how free-float weights are determined.

rather than short-term spikes or drops that active managers can exploit. Large passive index-based fund providers have published new governance guidelines and policies, now regularly report on proxy voting, and have overall increased the size of their governance divisions.¹¹ Index fund providers and large institutional investors formed a new coalition on governance in January 2017.¹²

Recent academic research in this area reveals that the issues here are quite complex, and that the concerns about the quality of corporate governance are not necessarily confined to passive investors, nor is corporate governance activity solely captured by proxy voting patterns.¹³ This is a fairly new area of focus for academic/empirical research, one that needs more attention. Davis and Kim (2007) highlight the problems inherent in the increasing size and prominence of mutual fund companies — both active and passive — within corporate defined contribution retirement plans as well as open-ended funds. They note that those mutual fund companies, even when their largest funds are actively invested, may face conflicts of interest when the stocks in their funds are companies that are also their clients for 401(k)/retirement plans, potentially influencing their behavior vis-a-vis company governance. Davis and Kim find over their sample period that mutual funds tended to utilize their ability to reduce and close out active positions by selling rather than voting against management if there were problems.

More recently, Appel et al.¹⁴ identify differences in corporate governance characteristics between companies that have a greater percentage of their stock held by passive investors compared to those with more active investor holdings. They utilize the Russell US Indexes in identifying stocks that are very alike but represent differences in passive compared to active investing. The largest stocks in the Russell 2000[®] Index and the smallest stocks in the Russell 1000[®] Index are assumed to be very similar in nature or fundamentals. The stocks from the top of the popular Russell 2000 Index are deemed to be more passively held, whereas the sample from the bottom of the Russell 1000 Index are assumed to be representative of active investing. Based on this demarcation, Appel et al. find that greater passive holding percentages of company stock are associated with increasing independence of directors, reduction and/or removal of anti-takeover defenses (“poison pills”), and movement away from multiple share classes where there is a differential of voting rights. Additionally, they find that increased passive ownership is associated with lower levels of stockholder activism as well as long-term improved performance. Appel et al. utilize the constituents of the Russell US Indexes to separate assets into these two categories: companies with a greater percentage of passive investors and those with more active holders. Appel et al. make a strong case that additional research is needed in this area.

Index construction rules can have a positive impact on the quality of corporate governance. As a case in point: on July 26, 2017, FTSE Russell announced new minimum voting rights thresholds for companies to be included in its indexes. Voting rights — or lack thereof — are an important element of corporate governance, and the Securities and Exchange Commission has been soliciting input on the increasing trend — particularly in the technology industry — of issuance of public stock that carry limited or no voting rights for shareholders.¹⁵ FTSE Russell enacted this rules change based on a consultation of investors and other stakeholders.¹⁶ News coverage of the FTSE Russell announcement tie this index inclusion rules change to concerns about possible deterioration of corporate governance.¹⁷

¹¹ In late 2016, the Wall Street Journal published a three-part in-depth series covering many of these recent development; these reports are summarized in Friedman et al. 2016.

¹² Kilroy 2017.

¹³ See Fichtner et al. 2017.

¹⁴ Appel et al., 2016.

¹⁵ Zanki 2017; Bertsch 2017; Kerber and Randewich 2017.

¹⁶ FTSE Russell July 2017a and July 2017b.

¹⁷ For example, Appell 2017.

In sum, legitimate concerns that the quality of corporate governance for US public companies has declined due to the growth of passive investing have prompted the purveyors of index-based investment funds as well as institutional investors heavily investing in index-based funds to take a more active role in influencing corporate governance. Recent empirical research, cited above, indicates that passive investing is in fact associated with positive governance characteristics, but more research is needed in this area. Finally, index construction rules, particularly for indexes with significant tracking assets (including passive OEFs and ETFs) have the potential to positively affect governance issues.

Price distortion

Issues of price distortion are in the forefront of most of the criticism and concern about the growth of passive investing in the US equity market.¹⁸ Critics point out that indexes and the fund products that replicate or track them do not add and remove stocks on the basis of anticipated performance (forecasted price versus current price). Passive vehicles do not distinguish between stocks that are considered by the market to be overpriced and underpriced, but they buy all the constituents of a given index at the weights and prices the market dictates.¹⁹ They buy new stocks when they enter their benchmark at the market price and in the weight determined by the index methodology and the market price, and only sell in the event that a stock is no longer eligible for index inclusion. Index-based funds are — with the exception of rebalancing and reconstitution events — buy-and-hold investment vehicles.

How could this distort stock prices? Financial market theory posits that the buying and selling of stocks by rational active investors anticipating changes in the present value or price of said stocks based on a continuous flow of information is the essence of an efficient market. In such a market, prices reflect fair or fundamental company value based upon all available information. These active investors discriminate among stocks and enterprises, and in so doing contribute a service to the market and the economy by allocating capital to companies based upon evaluations of the future worth of their projects. This activity theoretically guarantees that observable market prices are in sync with expected present value (based on available information); benefits the market as a whole as there are buyers and sellers, so active investors constitute a balanced marketplace in normal conditions; and benefits the economy in that capital is allocated to companies that are forecasted to do well, and taken away from those deemed to have less attractive prospects.²⁰ Since passive investment vehicles are by definition not active, i.e., they do not buy and sell stocks based on forecasted performance, the argument is that price discovery is inhibited by passive investing that impairs the market's ability to determine fair value, and thus allocates funds indiscriminately across companies. The greater the market share of passive investing, this argument claims, the greater the distortions.

This alleged distortion in valuations due to the increase in passive investing has, it is claimed, many additional consequences and poses many dangers to investors and the marketplace. The doomsday scenario presents a world where such a great proportion of assets are passively invested that active managers are driven from the market or are such a small percentage of investors that their attempts to move prices towards fundamental value are futile: the market does not adjust. As Keynes reportedly said, “the market can stay irrational longer than you can stay solvent.”²¹ Rather than being rewarded for informed investing, in such a world, it is argued, the active investor will be driven to extinction.

¹⁸ For a discussion of these issues from the practitioner side, see Martin (2017); from the academic, see Wurgler 2011.

¹⁹ Index provider construction rules can impact the selection of index constituents; which market prices are used; and how free-float weights are determined.

²⁰ See French 2008 for an estimation of the value of price discovery by active managers as well as the premium the market has paid for this service. An update of this research through the more recent period of declining active fees and performance would be useful.

²¹ There is no direct documentation that Keynes ever wrote or said this, but it is customarily attributed to him.

What is the evidence?

There is a persuasive logic to the argument that increasing allocation to passive rather than to active investment products has the potential to impact the validity of prices. Specific evidence for pricing distortions caused by passive investing is to date thin on the ground, however. First, demonstrating that a given price or that the market as a whole diverges from fair value is a challenging task, as fair or true value of a stock or the market is not observable.²² Determining how much of that deviation is caused by passive as opposed to active investment is also a formidable task.

This is an area that begs for research that goes beyond merely charting the growth of passive assets compared to other contemporaneous changes in the market or economy, and that applies more sophisticated estimation measures than mere correlations between observed market changes and the growth of passive assets. Empirical research needs to be more exact regarding how and when passive investing has affected pricing; in testing what level of passive investing constitutes a real concern (what is the tipping point?²³); in assessing the role of possible pricing safety valves, such as privatization, where undervalued firms may be removed from the public market;²⁴ and in untangling the impact of other major changes — among which are globalization and the technological and information revolutions — that have also taken place over this time frame (1996–2016).

Here we discuss two promising paths for future research and a greater understanding of the impact of passive investing on pricing. Central to these efforts is determining a means to separate out what assets or proportion of assets are passively controlled from those that are not. As an example of additional research that is needed on this general question of how the growth of passive investing has affected market valuations, we conclude this section by offering a brief analysis of the relationship between increasing passive market share and declining cross-sectional dispersion in stock returns.

Method 1: Estimate index inclusion and reconstitution pricing impacts

The first approach exemplified by certain sections in Wurgler et al. (2011) is to identify specific instances or moments of stock inclusion or removal from popular indexes and estimate their price. The assumption here is that it is possible to identify stocks that are so alike that they should carry the same — or at least be close in — value; the only difference in valuation must then be attributed to being in or out of a given index. The most persuasive empirical evidence in the US equity market for such index inclusion/exclusion pricing effects is the S&P 500 Index inclusion premium as defined by Wurgler et al., and the Russell 2000 Index annual reconstitution pricing impacts that have been studied and measured by many, including Wurgler.

The S&P 500 inclusion premium

The S&P 500 Index is a sampled rather than an inclusive and comprehensive index regarding constituent holdings.²⁵ Some call the S&P 500 an active portfolio, rather than a market index, because of this aspect of its methodology.²⁶ From the universe of US stocks that meet S&P's minimum thresholds for liquidity and capitalization, the committee in charge of the S&P 500 Index selects 500 stocks for inclusion in the index; changes are made in S&P 500 constituents at the discretion of the committee, sometimes with short notice to the market. From 1990–2005 Wurgler et al. estimated an average 9% jump in valuations for stocks newly added to this index, while stocks that are removed suffered an even greater loss in price. This is far in excess, Wurgler claims, to any premiums/discounts due to increased/decreased liquidity impacts from

²² Grossman and Stiglitz 1980 presented the classic case why a market can never be fully efficient, nor prices fully accurate.

²³ For example, the Japan equity market is currently 70% passive, reportedly: see Bank of America Merrill Lynch 2017.

²⁴ See Cornell 2017 for a theoretical exploration of the role issuers may play in valuation when prices decouple from fair value due to increasing passive investment.

²⁵ See S&P Dow Jones Indices 2017.

²⁶ See Ferentchak 2016 as an example.

inclusion/exclusion in the index. This research, unfortunately, doesn't give us insight into whether changes in company fundamentals — which may underlie S&P inclusion/exclusion decision making — can be tied to valuation changes. Newly published research suggests that the timing of the pricing effect of S&P inclusion may have changed during a sample period of 2010–2013.²⁷ If there is an S&P price distortion effect, it could be argued that is not a consequence of passive investing per se, but rather a result of the S&P 500's discretionary aspects, in that this index is a sampling of the constituents of the market it claims to measure, i.e., it is not truly passive according to our definition.²⁸

The Russell 2000 Index reconstitution effect

The Russell US Indexes are reconstituted annually at the end of June. Much has been written on the impact that this yearly event has on the market as both passive and active managers reposition their portfolios to adapt to the changes that have been made, with a special focus on the popular Russell 2000 (small cap) Index. Changes to the Russell US Indexes' constituents are communicated to the market in advance of the day of reconstitution. Thus, active managers have leeway to adjust their holdings prior to the end of June, but purely passive portfolios are constrained to making changes only on the actual reconstitution day.

There is abundant research both academic and practitioner on the pricing effects of this event (Wurgler is one of many): stocks entering the Russell 2000 Index tend to carry a premium, whereas those moving up from the Russell 2000 Index enter the Russell 1000 Index at a discount. FTSE Russell has made changes in index methodology to reduce price pressure at reconstitution, and research supports the position that the pricing distortion caused by this event has been significantly reduced thereby (FTSE Russell 2016). Similarly to the S&P 500 inclusion impact, pricing pressure at Russell US Indexes reconstitution is a function of index methodology, but Russell has moved to modify their construction to mitigate pricing distortion effects.,

Method 2: Identify assets that have a greater proportion of passive owners across a given market

A second approach involves separating assets that are more passively held as opposed to those where the bulk of investors are active, and trying to assess if there are identifiable pricing anomalies in the more passive group. In an unpublished white paper from 2010, Wermers and Tao attempt this based on classifying mutual funds as active or passive, then classifying their holdings as more active and passive as well. They found that the more passively invested assets exhibited greater pricing anomalies than their actively-invested counterparts. Qin and Singhal (2015) likewise classify investment funds and portfolios as active and passive but also, similarly to Wurgler, focus on stocks included and excluded from the S&P 500 Index — while also examining the impact of institutional trading behavior. They find that more passively held stocks (following their definitions) exhibit greater inefficiency in terms of deviation of price behavior from a random walk and increased duration of post earnings announcement price drift. While laudable efforts, questions can be raised as to the accuracy of the classification of funds and thus assets along the active/passive divide as well as the methods of identifying price anomalies and inefficiencies.²⁹ Nonetheless, if we are to gain a clearer and more accurate understanding of how passive investing has impacted stock valuations across the market, these are promising approaches. Increased clarity and accuracy in classifying active or passive investor ownership of a company, when combined with robust analysis of pricing accuracy and distortion, should provide valuable insights.

²⁷ Kim, C. W. et al., 2017.

²⁸ See Christopherson et al. 2009 for additional information on pricing impacts due to S&P 500 Index methodology especially those prior to the S&P change to free float-adjusted weights; they offer as well an overview of best practice for market benchmark construction.

²⁹ Qin and Singal test intra-day as well as daily and weekly pricing patterns; a large proportion of passive assets are held in mutual funds which trade primarily at market close.

Additional effects passive investing is accused of causing: Looking at cross-sectional dispersion

As noted, many additional problems have been laid at passive investing's door. Many of these associations are based on simultaneity: passive investing was increasing at the same time some other aspect of the market or the economy changed, thus a causative role is assumed. Here we offer a brief insight into one of these questions: what relationship is there between the growth of passive investing and the increasing dominance of systemic factors in stock pricing at the expense of company-specific or idiosyncratic factors?

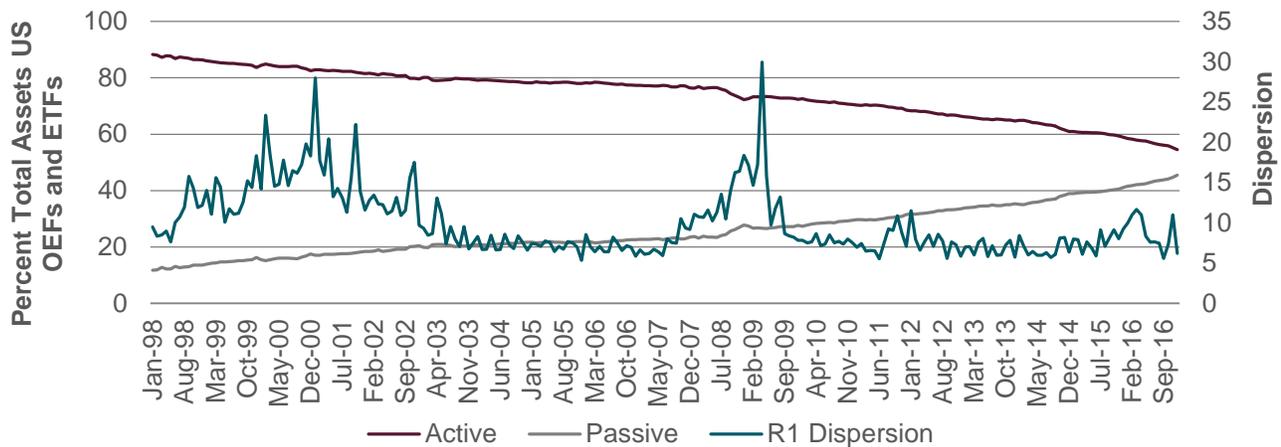
The cross-sectional dispersion of stock returns is one measure of the breadth of the opportunity set for active managers, and its decline is arguably one factor contributing to the difficulty of active managers to add value over the market benchmark in recent years. Cross-sectional return dispersion (dispersion) measures the extent to which stock returns differ at a given point in time — cross-sectionally — across a market; in other words, the extent to which investors as a whole are making distinctions among companies in terms of changing prices during a given time period. A significant amount of research has been published on dispersion, sometimes termed cross-sectional volatility; for a recent overview of the key research on this market measure, see Smith (2014).

The bulk of research on dispersion concerns its relationship to and its potential explanatory or predictive power regarding active management performance.³⁰ A growing consensus acknowledges that lower levels of dispersion means a reduced opportunity set for active managers. We note that Bouchev et al. (2011) reported overall declining values of dispersion in the US equity market, although the period of the financial crisis saw a significant spike; we ask here if that trend has continued, and if so, is that decline possibly related to or possibly caused by the growth of passive investing? If it is true, as has been claimed, that passive investing has damaged the market's ability to price US stocks, to differentiate among companies, it is logical to infer that the reduction of dispersion levels should be related to the increasing size of passive market share.

For simplicity's sake, in this exercise we calculate US equity dispersion as of each month end as the standard deviation of that month's returns across all stocks in the Russell 1000 Index. In Figure 5, we plot using the left hand axis the changing market shares of passive and active assets — the burgundy and grey lines respectively — from January 1998 to December 2016. Using the right hand axis we chart monthly US equity dispersion with the teal line. The chart does show, in line with Bouchev et al., a general decline in the level of dispersion, but we see that there are notable spikes even in the most recent period, indicating that there are still times when investors are making sharp distinctions in pricing stocks (for example, during November 2016 after the US presidential election).

³⁰ See, for example, Gorman et al 2010, and Petajisto 2013.

Figure 5. Percentage of active/passive assets and market dispersion January 1998 through December 2016



Sources: FTSE Russell, data as of December 31, 2016; Morningstar, data as of March 22, 2017. Past performance is no guarantee of future results. Please see the end for important legal disclosures.

A linear regression defining the market share of passive assets as the independent variable and US equity dispersion as the dependent variable reports that the coefficient for dispersion is strongly statistically significant; t-stat is -7.3. The coefficient is negative, indicating that there is a negative relationship (a decline) in dispersion associated with the increase of passive assets; however, the R-Squared of the regression is only 0.189, indicating that only a small percent of the variation in dispersion levels is explained by the growth of passive assets. We do not claim that this quick analysis is the last word on this question, but it is an indication that there are other, yet-to-be-determined, factors driving the behavior in dispersion over this period. This opens the door to a discussion of other factors that may have impacted market pricing behavior above and beyond the increases in passive investing.

Other factors driving change in US equity markets

What other forces and developments have been impacting the US equity market, putting pressure on active performance and possibly accounting for price distortion (if it exists) and/or declining dispersion over this period? Our sample period of 1998–2016 covers 18 years of history, during which passive market share grew. But this is also a period of astounding change in many areas, many more than we can explore in this paper. Thus, we confine our remarks to a few key developments that have impacted markets as much as, if not more than, the growth of passive investing, and that may have been and continue to be drivers of market behavior, of valuations and volatility, both at the individual stock as well as the broad market level. We focus our attention on technological change; the democratization of information; new investment structures such as derivatives and ETFs; the movement away from fundamental investing by active managers; and the growing diversification of indexes, especially smart beta.

Technological change

The first and most obvious change has been in technology. The increase in both capacity and speed of data and computational systems has transformed the world. This period has seen the development and increasing impact of quantitative investment strategies, and the rise of machine-driven algorithmic investing and high-frequency trading within the professional investment community. This has had a profound impact on investment markets.

While there has been a significant amount of research on high-frequency trading (HFT) in particular, more is needed. Brogaard et al. (2014), for example, find that HFT is associated with pricing efficiency over very short

horizons in terms of incorporating new information, but also with adverse liquidity trading patterns which can amplify pricing errors. More work is needed before we can reach an understanding on how HFT in particular, and technological change in general, has changed the US equity market.³¹

The information age

Concurrent with these technological advances within the industry has been the democratization of information, allowing access to information and computing applications to anyone who can afford a mobile device. New regulations on the dissemination of information have also been enacted, most notably the passage in 2000 of the Fair Disclosure (FD) law in the US.³² Active investors in the US no longer enjoy the special access to company information they had prior to the passage of this law. Information that once was communicated only to investment professionals is instantaneously available to the general public on their smartphones. To date, research has not identified what portion of the value-added by active management before the passage of the FD law can be attributed to special access to information, and there is a suggestion that special individuals may still be receiving information prior to or in addition to public communications.³³ Nevertheless, it is generally acknowledged that the loss of this privileged position vis-a-vis company information has impacted the performance of the active management professional community.

New investment vehicles

Derivative instruments, particularly those based on stock market indexes, have been associated with violent market moves such as the October 1987 US equity market crash and the “Flash Crash” of 2010. New derivative instruments did play a role in the equity market crash in 1987 and, in 2008, contributed to the credit market collapse — stock index futures in 1987 and CDOs and CDS in 2008. Derivatives — whether index-based or not — are normally highly leveraged, allowing for a relatively small outlay to control or affect a large part of the market. Derivatives allow taking positions and trading in sizes that dwarf the physical market; they move amounts the physical market cannot absorb. Some practitioners and academics have blamed passive investing for these ills,³⁴ but we reiterate that it is important to distinguish between the impact of passive investing and the role of investment structures.

Most ETFs are not leveraged, nor are they normally derivative structures, as they hold the physical stocks. Nevertheless, they are a new type of investment vehicle. The ETF structure has certain attractive features: compared to OEFs, they are tax-advantaged, listed on exchanges, and trade intra-day. To date, almost all ETFs in the US equity market are passive, and there is no question that ETF special attributes have contributed to the growth in passive market share of ETFs, and to the growth of passive investing.

Much has been written recently about the possible dangers the aggregate size of US equity ETF assets may pose for the market, and concerns about the viability and stability of ETF trading should all holders wish to sell at the same time have been voiced.³⁵ This is an issue of investment structure, however, and not of passive investing per se. Baskets of securities of enormous size, all traded at the same time and in the same direction, would no doubt affect the market, whether passively or actively based.

³¹ See for example Jones 2013; Schreiber and Thomas 2017; Brogaard et al. 2014 and Sloth 2013.

³² Koch et al. 2013.

³³ Koch et al. 2013.

³⁴ See for example, Wurgler 2013; Sullivan and Xiong 2012. Note Wurgler does suggest that if index-based investing and trading had been limited to physical float amounts, i.e., no derivatives, at these crises moments, the outcomes may have been quite different.

³⁵ Wurgler 2011; Sullivan and Xiong 2012.

Active management diversifying strategies away from fundamental investing

Passive investing stands accused of distorting prices across stocks and the distribution of capital across the economy. Those trumpeting the boons of active management tout the value active investors provided in price discovery due to buying, selling and holding stocks based on fundamental valuations. But active management is no longer solely focused — if it ever was — on fundamentals. We discuss here briefly the growth of momentum investing strategies within the active management industry.³⁶

The efficient market hypothesis requires that under normal circumstances, past prices have no information about future prices. Academic research published in the 1990s³⁷ found evidence of a momentum factor, however, during periods prior to the significant growth of passive assets. Indeed, Asness argues that momentum premiums existed as far back as the early 1800s. Academic acceptance of the momentum factor is still mixed based on the difficulty of reconciling momentum with classic financial theory, for example, Fama and French 2015 and 2017.³⁸ Other academics have sought explanations of momentum premiums based on rational factors, such as risk, or in the new theories of behavioral finance.³⁹

The growing evidence regarding momentum premiums since the 1990s along with academic work on behavioral finance has allowed for a greater acceptance of these strategies by investors. Momentum has always been a core aspect of technical investing, but it has grown in importance and acceptance in what might be termed the fundamentally focused part of the market, due to the evidence of momentum factor existence and behavior. Hedge funds in particular have been reported as pursuing momentum strategies.⁴⁰ While passive investing may have built within it a bias toward momentum, active investors are now deliberately targeting momentum as an investment strategy. If momentum presents a growing problem for the market, it has multiple roots; it is not just a function of passive market share.

Greater clarity in the definition of momentum is required. Momentum can be used just as a term for performance chasing, or it can mean a specific factor construction. Of particular concern is the time horizon over which momentum is measured. Technical analysts and investors tend to have short horizons, although there is a great variety in approaches across that part of the investment world. In academic and sophisticated practitioner circles, for equities, the momentum measurement is commonly the last 12 months less the most recent month. Ang 2014 calls attention to the fact that momentum or buy and hold strategies beyond that 12-month time frame may backfire as the probability of reversals increases beyond a year.

Research is needed in on all these questions: is momentum a greater market force now than it has been in the past, and is that a concern; is that increase in significance — if it exists — due to the growth of passive assets or other market developments; is the momentum aspect of passive investing one that is detrimental to the investor? And finally, in what other ways has active management strayed from investing solely on the basis of fundamentals?

³⁶ Note, however, that momentum is only one of many factors that are growing in importance in active strategies.

We focus on momentum here because passive investing has been accused of having a momentum bias, see Wurgler 2013.

³⁷ Asness et al, 2015 provide a summary overview of the history research on the momentum factor.

³⁸ Academic acceptance of momentum has always been fraught; in 2016 Kenneth French and Eugene Fama removed the four-factor Carhart model (the fourth factor having been momentum) from their famed data library, although they still report returns to a momentum factor. Fama and French state that factor identification and factor models need to be guided and based upon financial theory which momentum contradicts, see Fama and French 2015 and 2017.

³⁹ Dhankar and Maheshwari 2016 give a summary of research on both rational and behavioral explanations.

⁴⁰ Burger 2017.

Increasing diversification among index types: the rise of smart beta

Many of the ill effects that passive investing is accused of would likely have more weight or credence if there were not so many indexes. While it is true that for US equities the bulk of passive assets are invested in funds tracking only a few indexes, the most recent trend is a proliferation of indexes differentiated by the approaches they employ and the stocks they contain. There are indexes for styles; sectors; factors; fundamentals; and dynamic approaches; to name only the most obvious index categories. As of May 12, 2017, Bloomberg reported that for the US equity market there are now more indexes than there are stocks.

Research is needed on whether this explosion in the number and variety of indexes and ETFs tracking them offsets at least in part whatever potential problems the growth in truly passive market share presents. Many of these indexes are classified as smart beta indexes, i.e., they are not market-cap weighted nor are they comprehensive across a market. Smart beta index-based investment products are not strictly buy and hold, and they distinguish among stocks based on factor exposures as well as, for some, fundamentals. The FTSE Russell Smart Beta Survey 2017 reports increasing allocation to smart beta investment products by asset owners.⁴¹ Evaluation of the impact the growth of passive assets has had and will have on the economy and the stock market needs to incorporate changes due to the growth of smart beta indexes and funds.

Conclusion

The growth of the passive investing market share in the US equity market has been dramatic over the 18 years from January 1998 to December 2016. Common sense supports the position that this growth may have affected investors, financial markets, and quite possibly the economy. There is a general acceptance of the position that passive investing has benefitted the investor in the area of lower fees. International findings suggest additional positive changes in markets when passive investing vehicles become available.

Concerns as to possible deterioration in corporate governance and pricing accuracy have been raised. We observe, however, that much needs to be done to ascertain the true impact that the growth of passive investing has had in these areas. First, it is vital to distinguish the effects of passive investing as opposed to those of specific investment structures such as derivatives and ETFs. Second, research needs to move beyond simple correlations between the growth of passive assets and other phenomena.

Passive asset growth has taken place concurrent with many other dramatic changes in the investment world, all of which impact the market in terms of pricing, volatility, and trends. Among these are a revolution in technology; increasing access to — and speed of — information; the appearance of new investment structures and vehicles such as ETFs; changes in active management investment strategies; and the proliferation of index products, most notably, smart beta indexes. New, carefully designed, research is needed to disentangle what impact these changes have had on the market, prices, and the economy from the impact of the contemporaneous growth of passive market share.

⁴¹ For a summary of the *Smart beta: 2017 global survey findings from asset owners*, see FTSE Russell June 2017.

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