

SECTOR IN-DEPTH

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Asset Managers - Global

Passive Market Share to Overtake Active in the US No Later than 2024

Summary Opinion

Passive investments – ETFs and index funds – account for \$6 trillion of global assets. Now 28.5% of assets under management (AUM) in the US, their US market share is rapidly expanding, driven by lower cost and better performance relative to actively managed funds. In 2016, US passive inflows totaled \$505 billion, whereas outflows from actively managed funds totaled \$340 billion¹. Passive investments' expansion has been further supported by global financial regulation, which has encouraged greater disclosures of fund fees and potential conflicts of interest on the part of fund distributors. (See, "[Industry Flows Actively Moving to Passive](#)," 25 July 2016). By analyzing the adoption rate of passive investments over the past decade, we forecast the point at which the market share of passively managed funds will exceed 50% of US AUM².

Passive funds provide investors with a more efficient technology and US market share will accelerate, exceeding 50% by 2024 at the latest.

We view the passive phenomenon as comparable to the adoption of a new technology. Investor adoption of passive and low-cost investment products will continue irrespective of market environments, and we estimate that passive investments will overtake active market share between 2021 and 2024. We arrived at our conclusions using two approaches: 1) a simple regression analysis of market share versus time, and 2) by fitting recent AUM data for passive funds to a diffusion model that projects near-term market share growth. (Please see Appendix for a detailed discussion, including the parameters we used in our modeling.)

Asset managers that have core competencies in ETFs and other passive strategies will benefit from this growth.

Investors will continue to shift to beta investments, whether smart, simple or exotic, given their lower costs, better performance and transparency. Beneficiaries include Vanguard (unrated), [BlackRock](#) (A1 stable), [State Street](#) (A1 stable), Dimensional Fund Advisors (unrated) and [Invesco](#) (A2 stable), all of which have a large presence in traditional ETFs and index funds as well as in smart beta (factor-based indexing) products.

There's plenty of room for global growth in passive funds.

Penetration in the highly developed US financial markets is only 28.5%. In the rest of the world, penetration is significantly smaller, approximately 5%-15%, in part owing to less investor awareness of passive products, sales practices that may not favor the best interests of investors, and less shareholder-friendly corporate governance. However, as global and emerging markets mature, there will be opportunities for broader expansion.

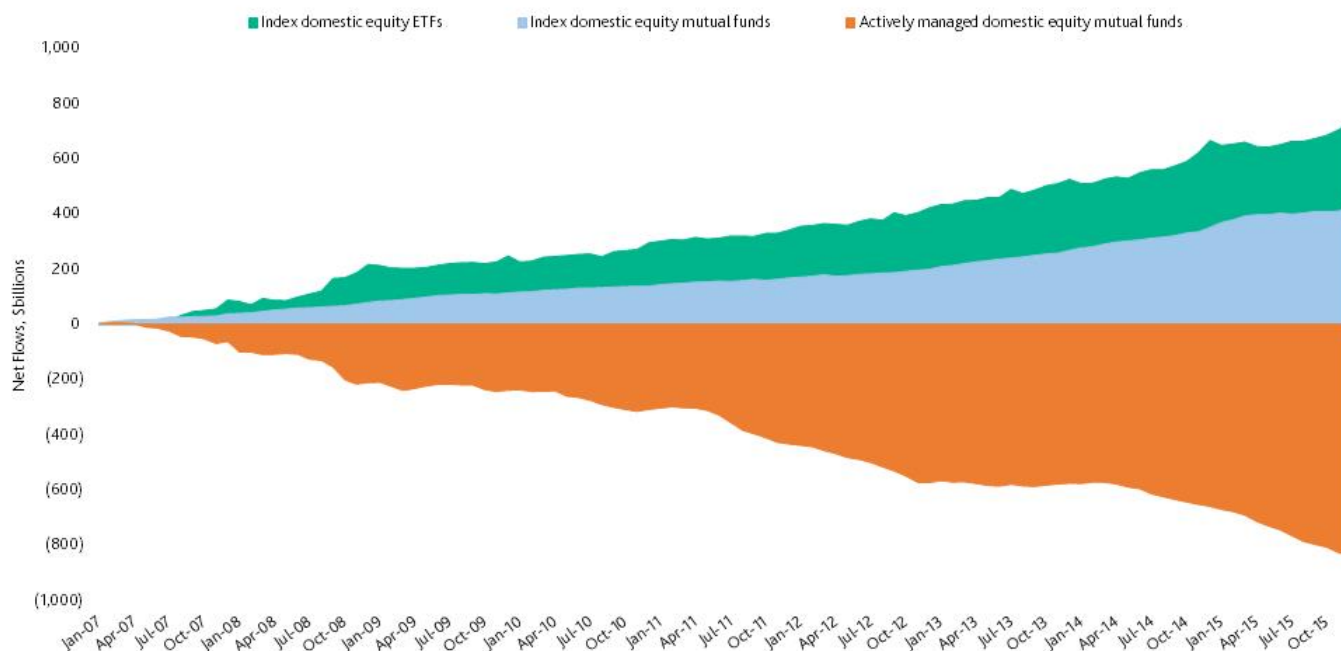
Passive Investments Will Exceed 50% of US Market Share by 2024 at the Latest

Trends driving flows into passive products will continue

The US active mutual fund industry has been in net outflow since 2007, while passive funds have grown, largely by taking share from active management (Exhibit 1).

Exhibit 1

Cumulative Inflows into Domestic Index Mutual Funds vs. Outflows from Actively Managed Mutual Funds



Note: Equity mutual funds include net new cash flow and reinvested dividends. Data exclude mutual funds that invest primarily in other mutual funds
Source: ICI

The main driver of flows out of active funds into passive funds has been investors' growing awareness that, by definition, actively managed investments, in aggregate, cannot deliver above average performance, and that investing is therefore a zero-sum game – for every winner, there must be a loser(s). We estimate the structural underperformance in active funds at about 200bps per annum – the sum of fees and frictional costs, before investment underperformance and survivorship bias are accounted for (please see our 25 July 2016 report, [Industry Flows Actively Moving to Passive](#)). In addition to investment underperformance, actively managed funds incur higher costs, with net expense ratios that average 84bps across equity funds (versus 11bps for an index fund)³. Additionally, the performance and cost advantages of passive investing apply across asset classes. To date, growth has largely been in the most liquid equity markets, but we believe the advancement of ETF and indexing technology will eventually be applied to more public asset classes. Investors' growing awareness of passive investing's performance and cost advantages, combined with the relatively recent creation of a "passive option" in the form of low-cost passive index funds, ETFs and robo-advisors, have helped solidify a trend we expect to continue.

Regulation has also been a supportive driver of flows into passive funds. For example, in the US, the Department of Labor's new fiduciary rule could further accelerate the shift to passive, and cause sales behavior to change, leading to a distribution-led outflow from actively managed funds. Under the new rule, advisors will be expected to ensure investments are in the best interests of their clients, rather than merely suitable for them. In practice, it will become more difficult for advisors to place their clients into higher

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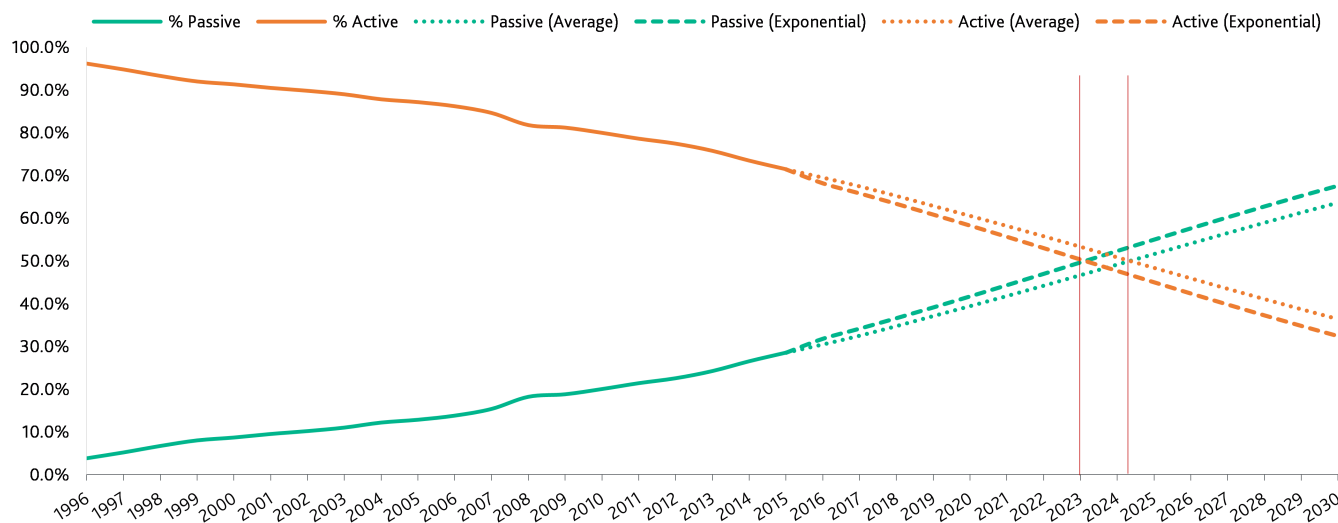
cost and more complex investment products. Certain types of illiquid investments will also become less practical to sell. Selling low-fee index products, on the other hand, will eliminate many apparent conflicts of interests and minimize an advisor's fiduciary risk. If more investor-friendly regulations are enacted, this could accelerate the trend towards passive, particularly in Europe, where sales distribution has a large influence on the placement of assets.

Forecasting methods

We used two approaches to estimate the time it will take for passive investments to exceed active market share in the US. The first approach uses both a linear and exponential regression, using the rate of adoption of passive investments from 2011 to 2016, and projecting that rate into the future.

Exhibit 2

Forecast: Passive to Exceed 50% Market Share by 2023-24 Linear and Exponential Regression Models



Note: See Appendix for technical details
Source: Moody's Investors Service Calculations

Passive investments are best viewed as a disintermediating technology

The Fourth Law of Motion: "For investors as a whole, returns decrease as motion increases." – Warren Buffett

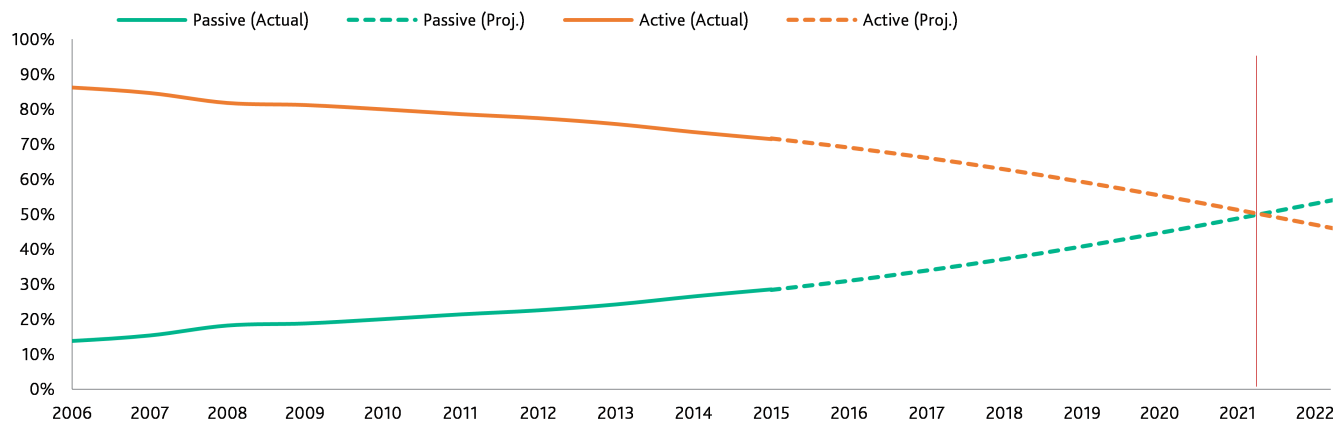
Although they are a very simple form of investment, index funds and ETFs are an innovative technology in that they allow investors to bypass middlemen (the high fees and frictional costs of active managers, sales people, brokers and advisors). In effect, the 'passive option' is a relatively new form of disintermediating technology. A passive fund is a more efficient tool than an actively managed fund to access the underlying returns of stocks for several reasons: 1) low fees, 2) low turnover minimizing trading costs and errors, 3) transparent exposure to a passive pool of securities. In the end, the profits from US corporations are transferred to the end investor more efficiently, with less of the return diverted to management fees, trading costs and the small number of truly superior active managers.

In our second approach to near-term forecasting, we used this technology adoption framework and assumed a diffusion process stipulating that short-term market share change is primarily influenced by existing market share. Our diffusion assumption implies a simple closed-form model with fairly good fit to market share data since the financial crisis (see Appendix). Our model indicates a range of four to five years (2021-22) for passive funds to reach 50% market share relative to active. Exhibits 3 and 4 show the evolution of market share over the last decade and our forecast. Exhibit 4 details our base case forecast as well as our faster adoption and slower adoption scenarios.

Further supporting this framework are two additional points:

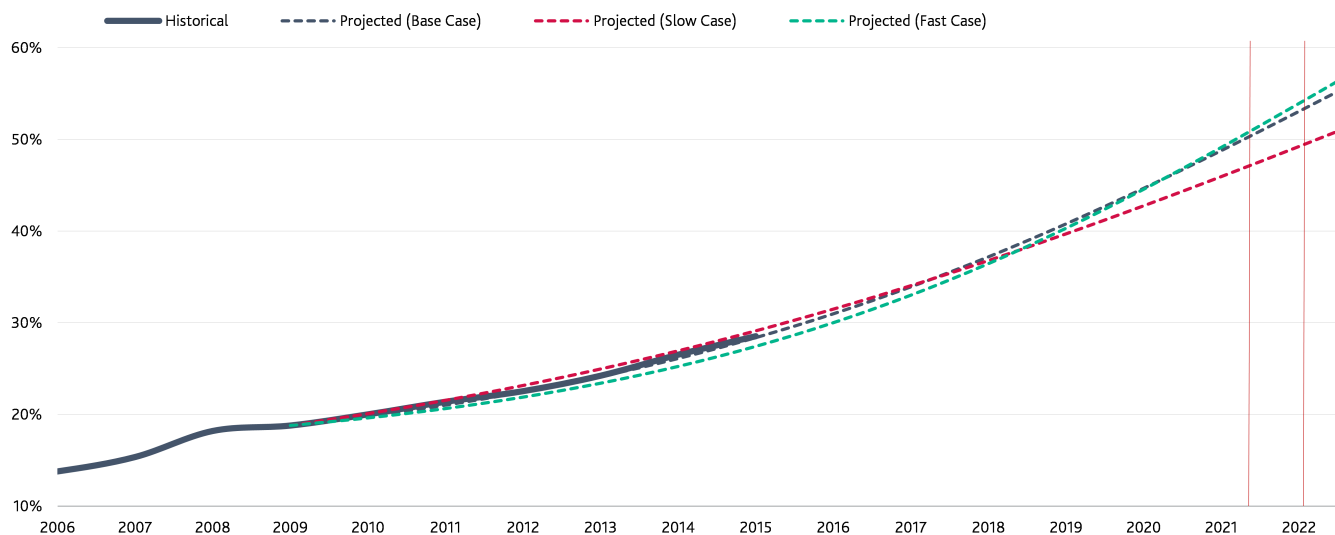
- 1) At 30% adoption, passive has reached a critical mass which is causing the new technology's rate of adoption to accelerate.
- 2) The dynamics of new net flows into the industry are going exclusively into the new technology, passive investments, and bypassing the old technology, active funds. To further illustrate this point, a single firm, Vanguard – a low-cost, largely passive provider – takes in more net flows than the rest of the asset management industry, combined, and has done so for several years now.

Exhibit 3
Base Case Forecast: Passive to exceed 50% market share by 2021
 Diffusion Model



Note: See Appendix for technical details
 Source: Moody's Investors Service Calculations

Exhibit 4
Forecast Ranges: Passive to Exceed 50% Market Share by 2021-22
 Diffusion Model – Parameter Estimates Result in Tight Forecast Range



[1] We calibrated our model's parameters using passive fund market share data since the financial crisis. The evolution of market share over the period 2009-15 was fairly consistent with the assumptions implicit in our diffusion model. As a result there was good agreement between modeled market share and actual market share over this period. Our three forecast cases – modeling slow, medium, and fast adoption of passive funds – were determined by estimating model parameters over a variety of historical periods. The range of outcomes to achieve 50% market share was relatively narrow, with passive funds to exceed active funds by 2022. We note, however, that our parameter fits are based on a relatively short history.

[2] See Appendix for technical details.
 Source: Moody's Investors Service Calculations

Asset Managers Big and Smart in Beta Will Benefit From Passives' Growth

Given the cost advantages and outperformance of passive investments over active, asset managers' investments into beta products will accelerate. In the next five to ten years, investors will continue shifting to beta investments of all types – simple, smart, and exotic. Many asset managers have invested heavily in simple beta products, and in the US, a few firms (Vanguard, BlackRock, State Street) dominate the space. We expect the next battleground for investor dollars to be in smart beta and multifactor funds, which will undercut traditional active products and offer similar potential expected return profiles. (Please see [Smart Beta 2.0: The Next Battleground for Asset Management Dollars Heats Up](#), August 2015).

Exhibit 5

Leading Firms in Smart Beta⁴

Manager	Smart Beta ETF AUM	Total ETF AUM	% Smart Beta
BlackRock	239,502	1,006,015	24%
Vanguard	127,136	629,118	20%
Invesco	45,874	112,875	41%
State Street	41,288	507,522	8%
WisdomTree	39,407	40,562	97%

AUM in \$millions as of 17 Jan 2017

Source: Smart beta and total ETF AUM figures sourced from ETF.com, and are based on ETF.com fund category labels

Advice and technology surrounding asset allocation and beta management will also be an area of growth. In this respect, we consider “robo-advisors” to be at the intersection of several powerful trends. Robo-advisors provide automated, rules-based asset allocation for clients, typically using passive and low-cost products in constructing portfolios. Although the total AUM managed by robo-advisors is very small, their business models are resonating strongly with investors, particularly younger millennials. As a result, they are a new and fast-growing distribution channel for ETFs and index funds (please see “[Digital Adaptation Shapes Tomorrow's Asset Managers](#),” May 2016). As robo-advisors' financial investment technology improves, and if they are able to maintain their low costs, we see strong growth ahead in this sub-sector.

Exhibit 6

Top Five Largest Robo-Advisors (by AUM)

Advisor	AUM (\$B)
Vanguard Personal Advisor [1]	52.0
Schwab Intelligent Portfolios [1]	12.3
Betterment [2]	7.0
Wealthfront [1]	4.7
Personal Capital [1]	3.5

[1] AUM as of 31 December 2016

[2] AUM as of 15 January 2017

[3] The universe considered for this list was only Robo-Advisors with a business-to-consumer business model. AUM as of 31 December 2016.

Source: Company websites, Moody's Investors Service

Global Passive Market Share Has Significant Room to Grow

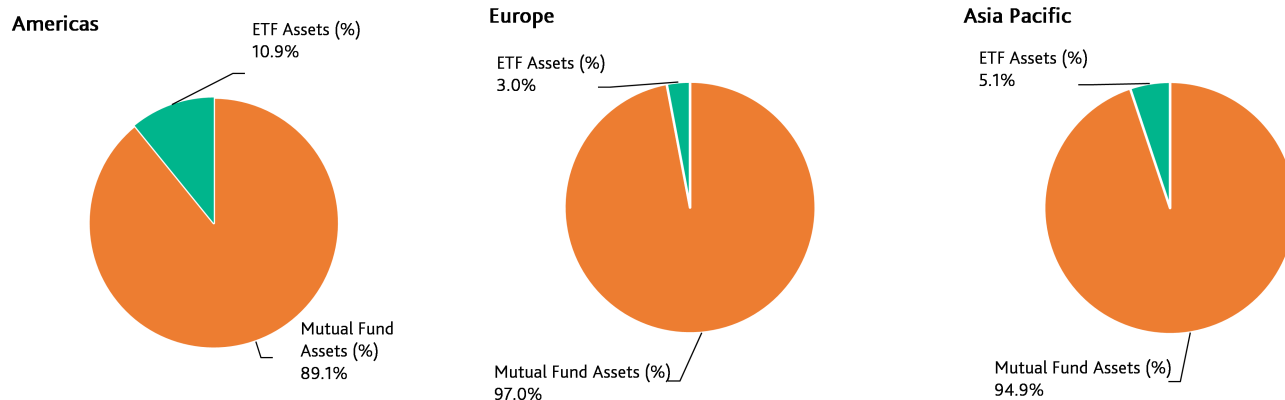
Although we believe that US passive market share has much room for potential growth, the potential overseas is even greater. We estimate passive penetration in the EU and Asia to be between 5%-15% of the market. Adoption levels are lower in these areas for several reasons, including 1) sales practices may not favor the best interests of investors and corporate governance may be less shareholder-friendly, 2) markets are overall less developed than in the US, and 3) there may be less investor awareness of passive products. However, over time, we expect passive adoption in the EU and Asia to follow a pattern similar to the US, provided that global transparency and communication improves and that global financial markets continue to mature and become more investor-friendly. Initiatives such as MiFID II in Europe aim to promote transparency of fees, which will lead to greater usage of lower-cost passive options.

Over time, active management underperforms passive across all major geographies, developed and emerging. Active management's higher fees and trading friction also drive investors' costs higher. As long as corporate governance improves to developed-market standards, passive is likely to grow overseas at a rate similar to that of the US market.

Exhibit 7

Passive Penetration Extremely Low Outside the US

ETF assets as a proxy for passive penetration, ETFs vs. mutual funds



Source: *The International Investment Funds Association*

Appendix

Five Year Average Growth Method

For this model, we assumed that passive funds' market share will continue to grow at approximately the same rate that they have been growing. To derive growth patterns, a running five-year average growth was used to predict fund growth in the following period. After deriving growth, we multiplied the estimated growth rate by last period's AUM to get the new period's AUM. This method resulted in passive funds overtaking active funds' position in the market by 2024.

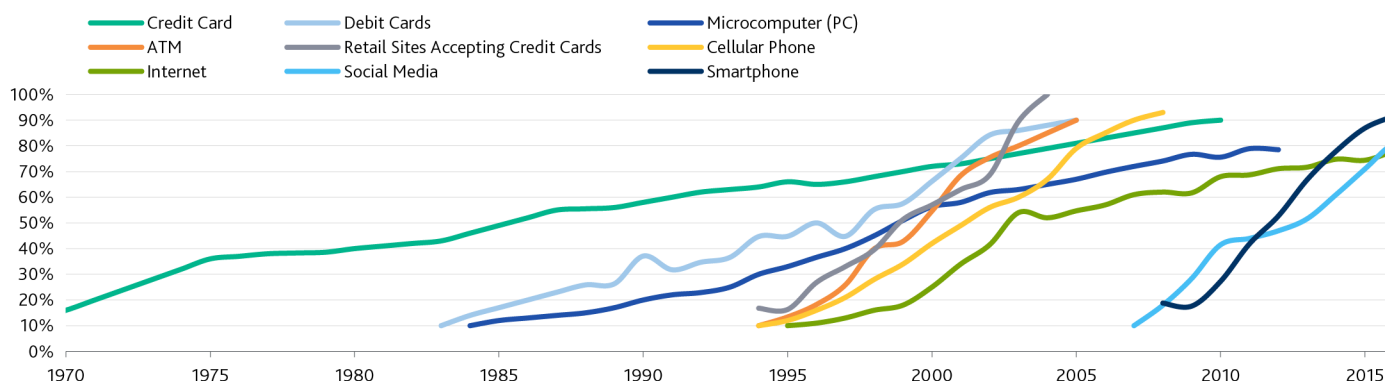
Exponential Growth Method

For this model, we assumed that passive funds' market share will continue to grow at an exponential rate. This method resulted in passive funds overtaking active funds' position in the market by 2023.

Diffusion Model for Adoption of Innovation

Exhibit 8

Adoption Rates by Industry



Source: Horace Dediu, Asymco

The idea of modeling the process by which technological innovation is adopted over time owes itself to work done in the 1960s, the primary contribution of which was to view the spread of innovation as a process of “social contagion”, in analogy with the spread of epidemics. The Diffusion of Innovations theory (1962), created by Professor Everett Rogers, states that the spread of innovation is influenced mainly by the following factors: the particular innovation itself, time, communication channels, and a social system⁵. Therefore, the market diffusion of a new product can be regarded as a viral process mediated by social channels, as innovators and adopters influence the pool of potential adopters.

Our diffusion model is represented by the following differential equation:

$$\frac{f(t)}{1 - F(t)} = p + qF(t)$$

where $F(t)$ is the passive fund market share at time t , $f(t)$ is the near-term rate of change in market share (i.e., $f(t)$ is the time derivative of $F(t)$), and p and q are constants which are determined using historical market share data. In calibrating our model, we focused on recent history (since 2009) because it reflects the ongoing acceleration of net inflows into passive funds.

The above model stipulates a simple social-contagion mechanism for market share evolution: specifically, near-term market share growth, $f(t)$, as a fraction of the market that has yet to adopt passive funds, $1-F(t)$, depends on current market share (represented by the $qF(t)$ term) and, to a lesser extent, on factors independent of market share (represented by the parameter p).

To initialize the model, we set market share at time zero, $F(0)$, to actual market share in 2009 (i.e., 2010 represents the model's first projection year). A convenient feature of our differential equation is that it has a closed-form solution for $F(t)$:

$$F(t) = \frac{1 - C \frac{p}{q} e^{-(p+q)t}}{1 + C e^{-(p+q)t}}$$

The constant C (16.75 in our base case) is a function of the market share for passive funds at the beginning of our forecast (18.8% in 2009) and the fitted values for p and q (in our base case, p is 23.56% and q is -3.29%). The left-hand side $-f(t)/(1-F(t))$ – of our differential equation is called the hazard rate. We estimated p and q by regressing (via linear least squares) actual hazard rates against actual market share since 2009. This data was consistent with the model's stipulated linear relationship between hazard rates and market share (R^2 over 90%). We note, however, that our parameter fits are based on a relatively short history. Depending on final parameter selections, the model indicates that passive funds capture 50% of the market between 2021 and 2022.

Moody's Related Research

Sector In-depths:

- » [Industry Flows Actively Moving to Passive, July 2016 \(1035250\)](#)
- » [Smart Beta 2.0: The Next Battleground for Asset Management Dollars Heats Up, September 2015 \(1008161\)](#)
- » [Digital Adaptation Shapes Tomorrow's Asset Managers, May 2016 \(1027563\)](#)

Sector Comment

- » [FCA Proposals to Reshape UK Asset Management Are Credit Negative for Active Managers, November 2016 \(193410\)](#)

Outlook:

- » [2017 Outlook - Active Managers' Struggles Underpin Negative Outlook, December 2016 \(1052650\)](#)

Endnotes

- [1](#) Source: Morningstar
- [2](#) Throughout this paper, we may refer to ETFs as a proxy for passive investing when passive AUM figures are unavailable. Although ETF AUM does not capture a large portion of index mutual funds or SMAs, and ETFs can be actively managed, by and large, they are passive vehicles and their growth generally follows a similar path to that of passive products. Our primary reason for using ETFs as a proxy is the limited availability of data regarding total passively managed funds, particularly outside of the US.
- [3](#) ICI, 2016 Investment Company Fact Book
- [4](#) ETF.com defines smart beta strategy as 'any index-based strategy that either chooses securities or weights securities for an intentional reason other than their market capitalization, geography or sector classification.'
- [5](#) Rogers, Everett M. *Diffusion of Innovations*. New York: Free Press, 1983. Print.

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