Innovation Matters

By Jim Atkinson

October 2018

Innovative companies tend to enjoy greater profits, faster growth, higher profit margins and/or higher returns on capital than their peers. Not surprising, these benefits can result in greater stock market performance.[1] This explains the title of this report: Innovation matters.

"How about you just shout out innovative ideas and I'll keep writing them down until this Post-it is all filled up."

While we like to think of innovation as a relatively new concept, it has been an area of academic study for over 100 years.[2]

Rapid Change & Competition

Thus, while innovation is not a new concept, it is difficult to argue with the notion that innovation and change are occurring at an ever-increasing rate. Rapid change is a given and the rate of change is increasing.[3] This puts a great deal of pressure on businesses. Automation, information technology, the network effect, and advantages of scale are all contributing to increasing pressure on profit margins in a wide variety of industries. One article in the Harvard Business Review put it this way:

We live in an era of risk and instability. Globalization, new technologies, and greater transparency have combined to upend the business environment...Since 1980 the volatility of business operating margins, largely static since the 1950s, has

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1 See Praveen Kumar and Dongmei Li, *Capital Investment, Innovative Capacity, and Stock Returns,* University of Houston 2016.
2 Joseph Schumpter wrote about economics and innovation as early as 1911 in his now famous book *The Theory of Economic Development*. For more information see Schumpeterian Profits in the American Economy: Theory and Measurement by William D. Nordhaus of Yale University April 2, 2004.
3 It's not just a perception thing. See *Adaptability: The New Competitive Advantage* by Martin Reeves and Mike Deimler of the Harvard Business Review July-August 2011 issue. https://hbr.org/2011/07/adaptability-the-new-competitive-advantage

> *more than doubled, as has the size of the gap between winners (companies with high operating margins) and losers (those with low ones).*[4]

This puts a premium on innovation: innovators enjoy the competitive advantages of innovation; non-innovators suffer from shrinking sales, declining profit margins and low returns on capital. Quite often the non-innovators become irrelevant or simply cannot survive.

How Innovation Matters

Innovation can make a difference in a variety of ways.

Faster Profit Growth

Perhaps the most important benefit of innovation is that it can accelerate economic growth rates. This is often due to the ability to introduce new products that meet previously unmet consumer needs — as in the introduction of an improved product or an entirely new product category.

> *"Sustained high profitability may result when a firm repeatedly introduces valuable innovations that service previously unmet consumer demands."* [5]

The profits from any single innovation can be limited in time since competition grows as time progresses.

> *"An innovative new product tends to face low competition at the point of introduction and therefore earns relatively high profits. These high profits attract imitators, which increases the level of competition faced by the product as time passes."* [6]

Innovative companies protect against this inevitability through a process of continuous innovation.

> *"…an innovation explanation recognizes that relatively high profits may persist at the firm level even though competition is relatively intense. In such a case, the excess profits associated with any single innovation are transitory, but firms successfully introduce multiple innovations over time."* [7]

This is why truly innovative companies seek continuous innovation.

Larger Profit Margins

Innovation can lead to higher market share for the innovator. This is because innovators often introduce new products, and new product categories or enhancements of existing products.

> *"Innovators…should take market share from non-innovators and grow at their expense, until such time as the quasi-monopoly position is undermined first by imitations of new products and processes, and ultimately by yet newer products. In the long run, therefore, innovators will grow faster, be more (dynamically) efficient, and ultimately be more profitable than non-innovators."* [8]

New product innovation can create what is often referred to as a moat; a competitive advantage that competitors find hard to breach providing a barrier around the innovator's market share. This competitive edge, which affords greater pricing power, often results in greater profit margins.

Greater profit margins can also be achieved by cost advantages which can result from process innovation. Process innovation can include the

4 Reeves and Deimler 2011.
5 Peter W. Roberts, Graduate School of Industrial Administration, Carnegie Mellon University, *Product Innovation, Product-Market Competition and Persistent Profitability in the US Pharmaceutical Industry*. 1999
6 Roberts, 1999.
7 Roberts, 1999.
8 Mica Ariana Mansury and James H Love, Economics and Strategy Group, Aston Business School, Aston University, Birmingham, UK. *Innovation, Productivity and Growth in US Business Services: a Firm-level Analysis.* 2008

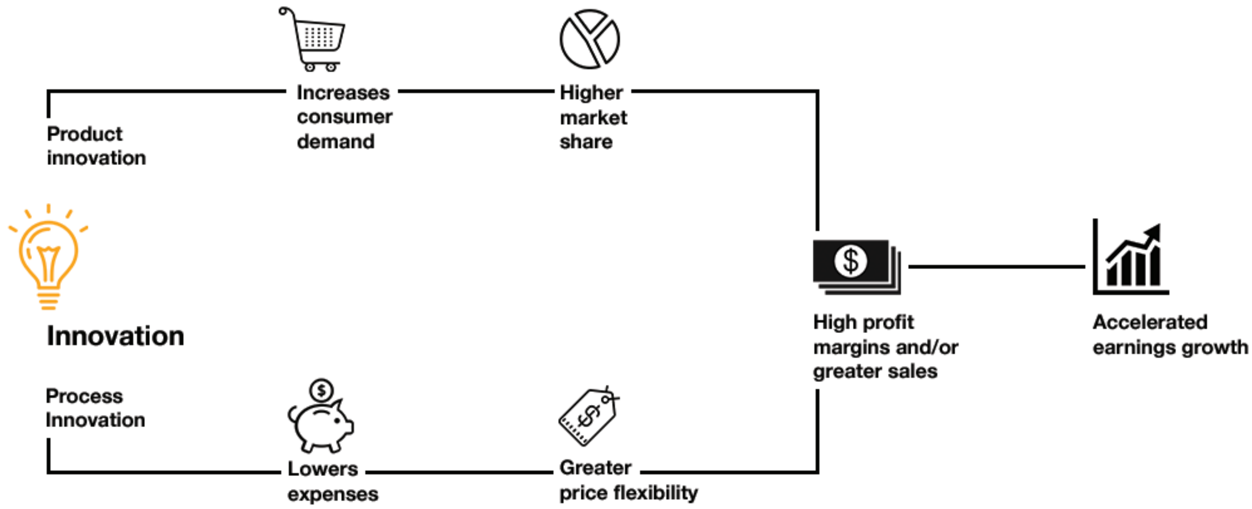

Figure 1. How both product and process innovation matter when attempting to reach high profits/increased profits.

way a company does business; a business model can be highly innovative. "A better business model often will beat a better idea or technology."[9]

Just in time delivery, an innovation that has been largely credited to a Toyota, was able to provide a sustainable competitive advantage. By reducing the amount of inventory required at each stage of the manufacturing process Toyota gained a substantial cost advantage. While this innovation was copied by manufacturers worldwide, Toyota gained market share on its global competitors. Where it was once one-half the size of the largest automobile manufacturers it is now the world's largest.[10] This suggests that while one can copy specific innovations it is more difficult to systematically innovate. And it is systematic innovation that wins the day.

According to the Economist, one study characterized the average savings among American firms adopting just in time processes as "…a 70% reduction in inventory, a 50% reduction in labor costs and an 80% reduction in space requirements."[11] The strategy that preceded *Just in time* delivery was known as "just in case;" manufacturers would maintain excess inventory to meet a wide variety of production and sales circumstances.

This competitive advantage of just in time delivery is most obviously found in cost savings but can include "improved service offered to customers, more effective operations, improved working environment and lower costs…"[12] Sometimes, it pays to save money.

Competitive Threats

In a hyper competitive business environment innovation may provide some protection against adverse business conditions. Economist Paul Geroski found that,

9 Henry Chesbrough, Executive Director, Center for Open Innovation, University California Berkeley. *Business Model Innovation: It's Not Just About Technology Anymore*, 2007.
10 Note that ranking the largest automobile manufacturers is a bit of a sticky wicket. This ranking from Forbes from May 30, 2017 has Toyota "firmly" on top. https://www.forbes.com/sites/bertelschmitt/2017/05/30/worlds-largest-automakers-renault-nissan-outranks-volkswagen-could-pass-1-toyota/#48881137e51a
11 The Economist Online Extra *Just-in-time* July 6, 2009.
12 *Just-In-Time Manufacturing, An Introduction* (Second Edition) T.C.E. Cheng and S. Podolsky. Published by Chapman & Hall 1996.

> *"...the process of innovating may affect a firm's general competitive abilities, sharpening its ability to perceive environmental threats and opportunities, and then to respond flexibly to them."*[13]

This sharpened ability can help guard against unexpected innovation from industry peers or new entrants or allow a business an enhanced ability to weather recessions or business downturns.

Stock Performance

Our interest in innovation is a direct result of our belief that innovative companies provide superior stock market returns. In a 2016 study, Praveen Kumar and Dongmei Li of the University of Houston found that "...innovative capacity is positively related to subsequent cumulative stock returns..."[14] In other words, the equities of innovative companies have the ability to outperform their non-innovative peers. This shouldn't be too much of a surprise given that **based on a large number of academic studies, we know that innovative companies tend to enjoy greater profits, faster profit growth, larger profit margins and other profit metrics as compared to non-innovative firms.**

Another study found that firms that have been successful innovators

> *"...in the past earn substantially higher future stockmarket returns than firms that invest identical amounts in R&D but that have poor track (innovation) records..."*[15]

This same study found that these firms can be identified, "...a firm's ability to innovate is predictable (and) persistent."[16] This predictability and persistence means that those who understand and appreciate innovation are able to identify these companies.

Conclusion

There is a large volume of academic research to suggest that innovative firms enjoy a meaningful competitive edge. This edge can manifest itself in a variety of ways but in the end usually means greater profits and/or greater market share. As investment managers, we prefer to focus on cash flow return metrics in our investment process. We favor companies that produce cash flow returns that are well in excess of average, typically seeking companies that are in the top decile. We believe that starting with a universe of innovative companies puts us in an advantageous position as our starting universe is inherently biased towards companies that have a competitive edge.

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13 Geroski, P. (1995) *Innovation and Competitive Advantage*, OECD Economics Department Working Papers, No. 159 OECD Publishing

14 Kumar and Li, 2016

15 Lauren Cohen, Harvard Business School and NBER, Karl Diether, Tuck School of Business at Dartmouth College and Christopher Malloy, Harvard Business School, *Misvaluing Innovation* 2012.

16 Cohen, Diether and Malloy 2012.

Case Studies

We present two case studies, one of which is an innovative tech company, Nvidia and the other, Boeing, as an example of an innovative company in an old line durable goods industry. Both of these companies are in extremely competitive industries and have been able to fend off challengers for long periods of time. Boeing is now recognized as one of the top names in aerospace technology while Nvidia is the leading force in augmented reality and artificial intelligence.

Boeing

Boeing, the well-known aerospace and defense company, has had a long and successful history of aerospace leadership and innovation. Formed in the early twentieth-century, this durable goods manufacturer is both a process and product innovator. They have used their innovative nature to become the world's largest aerospace company.

Examples of Innovation

Quite often, large companies struggle to stay nimble and innovate with the necessary speed to remain a market leader. This often leads to disruptors displacing incumbents or dramatically reducing their market share and profitability. However, some companies have a longstanding culture of innovation. Boeing has a proven history of adapting and improving its business through innovation. When military orders reduced dramatically in a post-World War One environment, Boeing expanded into fields beyond aircraft manufacturing. In order to maintain business, Boeing used their skillset to manufacture boats and furniture instead. More recently, Boeing's success in streamlining the manufacturing of its 737 airplane has led to an assembly time of just 9 days[17]. The production methods have evolved dramatically since the first 737 was produced in 1966. A major improvement being that the aircraft is no longer assembled while stationary, but on a moving assembly line more commonly found in car production. Boeing is on target to produce 52 aircraft a month by 2018, up from 31 in 2005.

Systematic Innovation

Boeing's systematic approach to innovation is by no means effortless to maintain. Continual investment is highlighted by their annual research and development (R&D) spend of around $3 billion. According to Boeing, "…there's more innovation underway today at Boeing than at any time in [their] 101-year history."[18] They publish their "Innovation Quarterly" as a collective reminder of the innovation taking place in their offices around the world. Boeing recently established an innovation cell, HorizonX, that "applies its momentum to new business ventures to unlock the next generation of game-changing ideas, products, and markets." Innovation is not only encouraged from within. Boeing also works with the Washington University's Olin Business School, through the Boeing Center for Supply Chain Innovation to further advance their thinking on operational processes and supply chain capabilities and to meet their assembly time targets.

Market Leader

A large part of Boeing's success can be attributed to innovation, but as with any complex corporation it is not the only factor that enables its success. Boeing is a well-run, quality company with a strong balance sheet. They have shown a consistently high cash flow return on investment, and an inflation-adjusted return on capital metric. They have been generating returns above their cost of capital for many years, showing their strong cash generative abilities and ability to create value.

17 https://www.wired.com/2016/09/boeing-builds-737-just-nine-days/
18 http://www.boeing.com/innovation/

Even though Boeing is not a disruptive company, innovation is a key part of how this company drives its growth and profitability. Boeing is exposed to exciting, innovative themes. They are striving for further improvements in production times. Their latest planes use carbon fiber for the fuselage rather than aluminum which means the fuselage is lighter, stronger and able to endure a higher air pressure in the cabin. In turn, this allows people to arrive less jet lagged.[19] They are constantly working to improve the noise pollution and energy efficiency of their planes by employing modern design techniques and smart materials.

There has been a large body of academic research written on the benefits of innovation.[20] Less unifying are the theories on how one can identify 'good' investors in innovation. Identifying innovation through spending on R&D does not guarantee market leading success. However, a strong track record of spending their cash effectively and generating a return on capital can be a good indicator.

What started out as a focus on identifying technological and process innovations to improve manufacturing output has led to an effective corporate growth strategy. It's obviously not a disruptive company, but innovation is key to how this company drives its growth and profitability.

Nvidia

Nvidia began life in 1993 as an American computer graphics card designer and has developed a reputation for high-quality and high-performance graphics cards. Building on their knowledge, Nvidia is now gaining a position as *the* technology company with market leading expertise across a breadth of numerous innovative themes, such as self-driving cars, augmented reality, data centers and artificial intelligence. The leveraging of this expertise is no accident; Nvidia has built a technology infrastructure with a goal of meeting the technology needs across a variety of future market demands. It is this multisector appeal that has led, in part, to the rapid rise of Nvidia. As stated by Nvidia, "Innovation is a core component of NVIDIA's DNA." They promote this not only through research and development but also in how they manage their business and supply chain.

Examples of Innovation

In a highly competitive technology sector innovation is a must. With a product life span of as little as four years, failure to innovate can be a death sentence. Industry leaders one day can be irrelevant the next. Nokia and Blackberry are good examples of technology companies that were not able to keep pace with the quick turnover of such an innovative industry. The product cycle is similar within chip designers, and the competition is just as unforgiving.

The first step that led to Nvidia's successful history was the in-house invention of the graphical processing unit (GPU) in 1999. This cemented a growth path for the company into some of the most innovative corners of a wide range of sectors, far beyond IT. Recently the adoption of the GPU into the automotive industry and data centers has led to further revenue streams as a direct result of product innovation. The products Nvidia designs often outperform existing products by a significant amount, resulting in market leading margins and profitable growth.

Even though Nvidia invented the GPU in the late 1990s, they have continued to innovate with products such as their CUDA computing platform. This platform allows programmers to take advantage of their parallel processing power hardware. As a result, Nvidia's GPUs are more useful beyond processing video game graphics and are hard to replicate, protecting Nvidia's competitive edge.

Importantly, Nvidia has not forgotten to innovate within its core market. The computer gaming busi-

19 http://uk.businessinsider.com/boeing-787-dreamliner-777x-cabin-pressure-jetlag-2016-9
20 http://www.people.hbs.edu/cmalloy/pdffiles/dimalco.pdf

ness continued to grow by 44% year over year to January 2017 along with its new business streams gaining pace. Within the computer gaming market, they have continued to win support for their new Pascal architecture chips.

Systematic Innovation

Nvidia not only allows innovation to flourish within its workforce, but the company also has a proven track record of acquiring interesting technologies that benefit the company's own products. This combination of cultivating internal talent and a good allocation of cash to acquisitions has helped Nvidia maintain a competitive edge over its opponents, arguably because of the "company culture of innovation."[21]

As innovation occurs, Nvidia has designed a business network that is adaptable. Nvidia can manage, in real time, its disaggregated supply chain. By managing the work-in-process and finished goods, they aim to effectively meet user preferences by limiting wasted resource and product, thereby driving sales and profitability. Nvidia is transparent with partners, publishing demand data so others can optimize their own processes.[22] The wider community has started to recognize Nvidia's continuous innovation. This year Nvidia was first place on the MIT Tech Review's 50 Smartest Companies 2017 and has been on the list for the last three years. As another indicator of their continual investment in innovation, they have regularly spent more than 20% on R&D to sales. Over the last 12 months they invested around $1.5bn in R&D.

Market Leader

Within the technology sector, competition is extremely high. Nvidia has undeniably had excellent growth spanning many years, but what makes Nvidia a sustainable market leader?

The extremely short life cycles in the semiconductor industry require nimble and responsive supply chains. Also, the manufacturing process requires ever increasing investment to produce ever shrinking nanoscopic chips and there is pressure to maximize asset utilization. This leads to specialization of firms such as Nvidia. Nvidia has managed to forge a wide-spanning business network to manufacture its designs and bring its products to market. This allows Nvidia to invest exclusively in improving its GPU design and maintain a market leading position. In turn, Nvidia can stay innovative, produce the best GPUs, keep costs at an acceptable level, and retain its high margins.

The market has rewarded Nvidia for its persistent innovation at all levels, delivering "double digit growth every quarter in 2016"[23] with further growth seen in 2017. What began from a single invention of the GPU, has led to a culture of continual innovation and led to a disruptive company, with strong growth and good profitability.

21 http://markets.businessinsider.com/news/stocks/nvidias-stock-price-secret-weapon-just-led-to-an-upgrade-from-wall-street-2017-7-1002167712

22 Word, Jeffrey. Business Network Transformation: Strategies to Reconfigure Your Business Relationships for Competitive Advantage. Jossey-Bass, 2009.

23 https://www.fastcompany.com/3067479/why-nvidia-is-one-of-the-most-innovative-companies-of-2017

Important Information

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Mutual fund investing involves risk and loss of principal is possible. Investments in foreign securities involve greater volatility, political, economic and currency risks and differences in accounting methods. These risks are greater for emerging markets countries. The Fund also invests in smaller companies, which will involve additional risks such as limited liquidity and greater volatility. The Fund may invest in derivatives which involves risks different from, and in certain cases, greater than the risks presented by traditional investments.

Investors should consider the investment objectives, risks, charges and expenses carefully before investing. For a prospectus with this and other information about the Fund, please call 800-916-6566 or visit https://www.gafunds.com/resource-insight-center?#tab_fundinfo. Read the prospectus carefully before investing.

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One cannot invest directly in an index.

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Top 10 Holdings for the Global Innovators Fund as of September 30, 2018:

1. Cisco Systems Inc	3.60%
2. SAP SE	3.59%
3. NVIDIA Corp	3.59%
4. NIKE Inc	3.47%
5. Samsung Electronics Co Ltd	3.46%
6. Catcher Technology Co Ltd	3.43%
7. Facebook Inc	3.43%
8. PayPal Holdings Inc	3.42%
9. Roper Industries Inc	3.38%
10. Intercontinental Exchange Inc	3.37%

Foreside Fund Services, LLC, Distributor.

Global Innovators Fund

Global Innovators Fund

Investment Process and Fund Performance

Jim Atkinson

October 2018

One word about the performance of our Global Innovators Fund: Excellent.

You don't have to take our word for it; we provide all the details on page 4. That said, we know that performance by itself is somewhat meaningless. Serious investors are more concerned with the how than the what. As happy as we are with our performance we gain more satisfaction in the how. We believe that our systematic investment methodology provides a strong foundation for the Fund. Sustainability of performance is important to us. So what has gotten us to excellent?

The Process

Stock Selection: Identifying Innovative Companies

There is considerable academic research indicating that **innovative companies can generate higher profits and higher rates of return on capital**. This explains our interest in innovative firms. Importantly, innovation isn't just the latest technology; we find innovation in the intelligent application of technology, in innovative business plans and innovation in the execution of even the most low tech industries.

To create our universe of innovative companies we go through an internal process that looks at 15 core innovative themes across all industry sectors. This process, which we undergo annually, produces a list of approximately 1,200 innovative companies; about 10% of all listed companies globally.

"I said it was a new idea -
I never said it was a great idea"

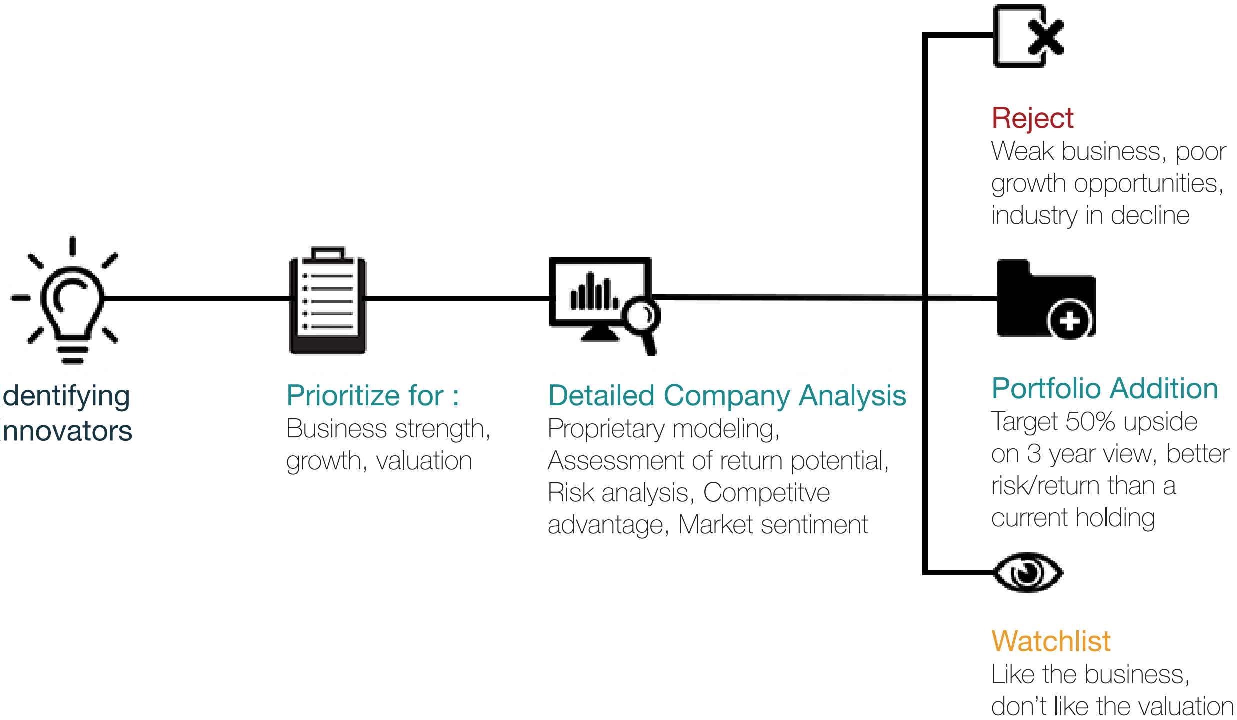

Figure 1. Our systematic investment methodology.

We prioritize this universe based on business strength, growth rate and valuation. From here we engage in fundamental analysis which includes our detailed company level proprietary modelling, assessment of return potential, risk analysis, competitive analysis and market sentiment. At the end of this process many companies are rejected, a limited number are placed on a watch list and a select 30 make it into the portfolio.

The specific characteristics we like in the companies that comprise our 30-stock portfolio are Quality, Growth and Valuation. These terms have a specific meaning to us as follows:

- Quality: Some combination of a five-year average Cash Flow Return on Investment (CFROI) that is greater than the cost of capital; Year-over-year improvements in CFROI over the last three years; expectation of continued strong CFROI in future and a strong balance sheet.
- Growth: Above average earnings growth; wide profit margins and growth potential that is light on capital requirements.
- Valuation: One or more of the following: Market implied value less than intrinsic value; price earnings discount less than peers; or a discount to the historic 10-year average price earnings multiple and discount versus the broad market.

The valuation criterion is important and may seem counter to the concept of innovation. We invest in growth companies but explicitly not at any price. We recognize that sentiment and hype often drive up the valuations of innovative companies and that paying up for high levels of expected future growth entails a level of risk we do not want to take. Instead we seek to identify companies with profitable growth opportunities and tend not to invest in immature businesses.

Portfolio Construction

Stock selection is only part of our challenge. We believe portfolio construction is an important component to the success of this Fund. The Fund is invested in 30 equally weighted holdings. This concentrated portfolio with equal weights puts a premium on the stock selection process as opposed to attempting to select a small number of winners. The average position of any of these holdings is 3.33% which not only limits the damage caused by a potential disaster in a stock but also means that the upside contribution of a single stock is limited. We don't rebalance on a strict schedule or formula but rather rebalance generally on flows. However, if a position grows to greater than 5% or less than 2% we will review the position with an eye to bringing the position back into line.

Sell Discipline

Four elements are monitored which may trigger a decision to exit a position:

- Deterioration of business quality: This can mean a weakening of the return on capital profile or the stretching of the balance sheet.

- Valuation: The company no longer offers a compelling upside or the valuation becomes too rich.

- Deterioration in cash flow: Change in capital budgeting approach.

- Investment thesis changes or superior alternative: Original reason for purchase no longer valid or a more compelling idea surfaces.

Turnover

The Fund seeks a low turnover rate. For 2017 the turnover rate was 13.3%.

High Active Share

Our stock selection process and portfolio construction methodology has resulted in high active share. As of June 30, 2018, the active share was 94% as measured against the Fund's benchmark the MSCI World Index.

Performance

We encourage readers to take note of the short and long term performance information which is below. We believe the consistency of the relative performance is a by product of our systematic and methodological approach. We hope you agree.

The Performance

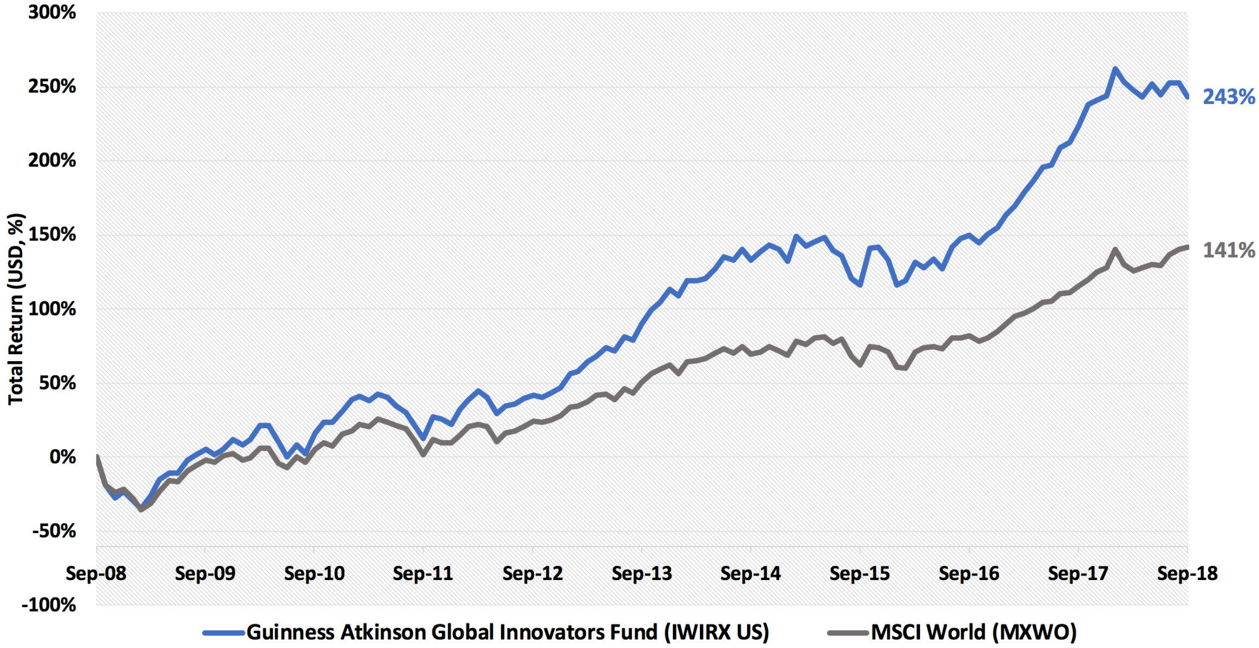

Figure 2. Total return from September 2008 until September 2018, as compared to the MSCI World Index.

	1 Year	3 Year	5 Year	10 Year
Global Innovators Investor Class	6.15%	16.61%	12.55%	13.13%
MSCI World	11.85%	14.20%	9.92%	9.21%
+/- Index	-5.70%	+2.41%	+2.63%	+3.92%
Percentile within Category	98th	31st	47th	3rd
Absolute Rank in Morningstar Category	1,357	326	457	20
Number of Funds in Category	1,383	1,196	1,058	794

Overall Morningstar Rating out of 1,196 Large Blend Funds as of 9/30/2018: ★★★★

Figure 3. Global Innovators Fund Investor Class (IWIRX) total return data and Morningstar peer comparison, US Fund Large Blend, for periods ending September 30, 2018.

Expense ratio 1.24% (net); 1.33% (gross)

The Advisor has contractually agreed to reimburse expenses (exclusing Acquired Fund Fees and Expenses, interest, taxes, dividends on short positions and extraordinary expenses) in order to limit the Total Annual Operating expenses for Institutional Shares and for the Investor Class to 0.99% and 1.24% respectively through June 30, 2019. To the extent that the Advisor absorbs expenses to satisfy this cap, it may recoup a portion or all of such amounts absorbed at any time within three fiscal years after the fiscal year in which such amounts were absorved, subject to the expense cap in place at the time the recoupment is sought, which cannot exceed the expense cap at the time of waiver. The expense limitation agreement may be terminated by the Board of the Fund at any time without penalty upon 60 days' notice.

Performance data quoted represents past performance and does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance of the Funds may be lower or higher than the performance quoted. Total returns reflect a fee waiver in effect and in the absence of this waiver, the total returns which reflect fee waivers would be lower. For most recent month-end and quarter-end performance, visit https://www.gafunds.com/our-funds/global-innovators-fund or call (800) 915-6566.

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The Morningstar Rating™ for funds, or "star rating", is calculated for managed products (including mutual funds, variable annuity and variable life subaccounts, exchange-traded funds, closed-end funds, and separate accounts) with at least a three-year history. Exchange-traded funds and open-ended mutual funds are considered a single population for comparative purposes. It is calculated based on a Morningstar Risk-Adjusted Return measure that accounts for variation in a managed product's monthly excess performance, placing more emphasis on downward variations and rewarding consistent performance. The top 10% of products in each product category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars, and the bottom 10% receive 1 star. The Overall Morningstar Rating for a managed product is derived from a weighted average of the performance figures associated with its three-, five-, and 10-year (if applicable) Morningstar Rating metrics. The weights are: 100% three-year rating for 36-59 months or total returns, 60% five-year rating/40% three-year rating for 60-119 months of total returns, and 50% 10-year rating/30% five-year rating/20% three-year rating for 120 or more months of total returns. While the 10-year overall star rating formula seems to give the most weight to the 10-year period, the most recent three-year period actually has the greatest impact because it is included in all three rating periods. The Global Innovators Fund was rated against the following numbers of Large Blend Funds over the following time periods: 1,196 funds in the last three years, 1,058 funds in the last five years, and 794 in the last ten years. With respect to these Large Blend Funds, the Global Innovators Fund received a Morningstar Rating of 3 stars, 3 stars, and 4 stars for three, five, and ten-year periods respectively.

Cash Flow Return on Investment (CFROI) is a valuation model that assumes the stock market sets prices on cash flow, not on corporate earnings. It is determined by dividing a company's gross cash flow by its gross investment.

Active Share is a measure of the percentage of stock holdings in a manager's portfolio that differ from the benchmark index.

One cannot invest directly in an index.

Foreside Fund Services, LLC, Distributor.

The Pursuit of Average

The Cost of Passive Investing

Jim Atkinson

October 2018

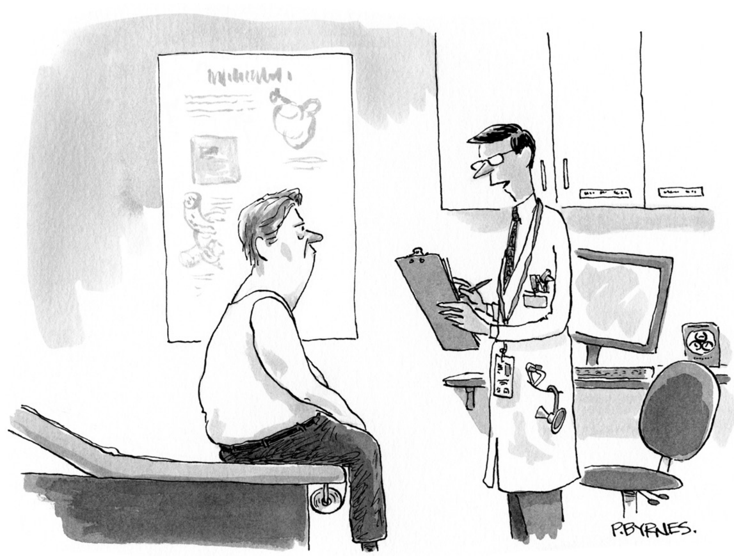
Much of the investment management industry makes a point of being average. Does any other industry or human endeavor seek average? No one seeks to provide or procure average medical care; no airline advertises an average safety record; no professional sports team seeks to be average. Yet average is fully embraced by many investment firms. We believe this seeking of average is not just misguided but comes at a cost to investors.

The argument in favor of seeking average, or passive investing, comes down to three points:

1. Active managers are not capable of producing an above average return.
2. Active managers that do produce above average returns do so randomly and such outperformance cannot be predicted or relied upon.
3. Given that outperformance isn't possible to achieve or predict, investors are better served by seeking the lowest cost option that seeks to be average.

We will present evidence, both empirical and academic, to rebut all three of these points.

Our empirical evidence comes from an examination of readily available data from Morningstar. Our examination involves the review of 12,116 equity mutual funds over the 15 year period ending December 31, 2017. We provide details on our methodology at the end of this report. This update includes data on merged and liquidated funds addressing concerns about survivor bias.

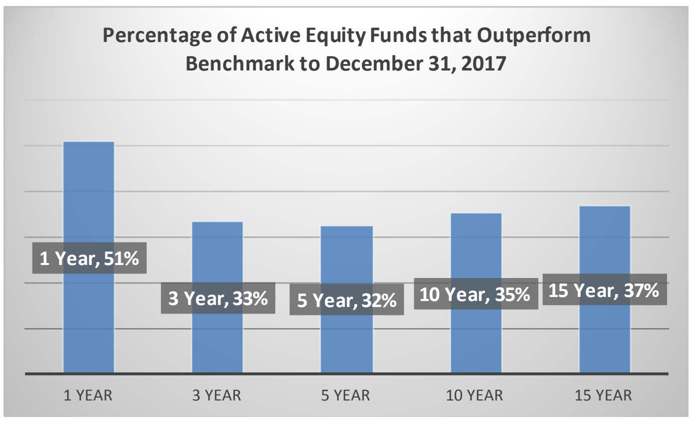


"I can recommend you to an extremely average specialist."

<u>*Can* Active Managers Outperform Their Benchmark?</u>

The Financial Times had a 2016 article headlined: "99% of Active US Equity Funds Underperform."[1] And we've seen a multitude of news articles that suggest that active managers are incapable of exceeding their benchmark. We're not sure where this "fact" is originating, but empirical evidence suggests that a decent percentage of active equity managers can and do outperform. In fact, for the 15 year period ending December 31, 2017, 37% of actively[2] managed equity funds outperformed their benchmark. For the one year period 51% of active equity funds outperform.

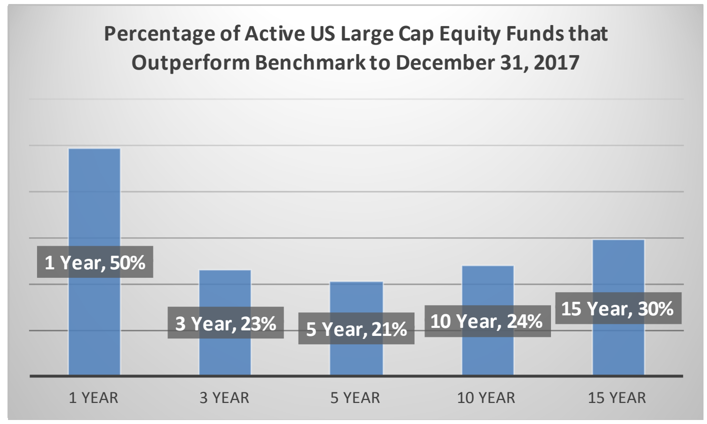
In a perfect world, these percentages would be



higher, but our single point at this moment is that active funds *can* outperform their benchmark; we can see that approximately one third or more *have* outperformed their benchmark depending on the time period.

<u>Results by Category</u>

We often hear the statement that more efficient markets/sectors are more likely to favor passive over active, *e.g.*, US large cap stocks. On a relative basis this supposition tends to be true; over the 15 year period 30% of active US large cap funds

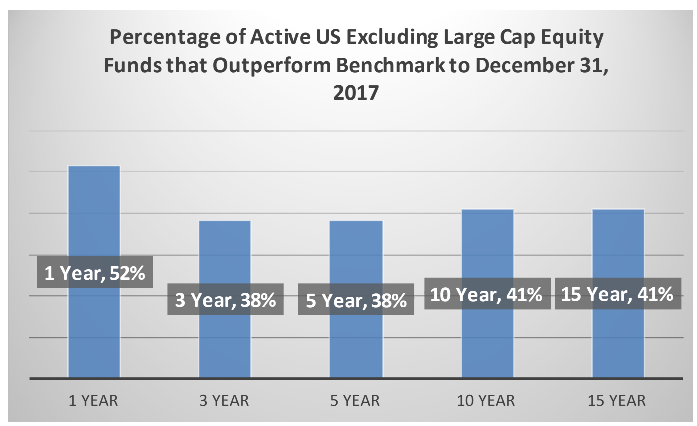


outperformed their benchmark as compared to 37% of the entire active universe.

Clearly this means that the universe of actively managed equity funds excluding these US large cap equity funds will succeed at a higher rate. In fact, 41% of this subset outperform their benchmark over the last 15 years.

Some sectors are clearly more favorable for active management. In the Asia region, for example, active managers have quite handily outperformed passive. Examining four combined Morningstar's Asia equity sectors,[3] we see that 68% of active funds outperformed their benchmark over the 15 year period ending December 31, 2017.

One clear lesson from this data is that the



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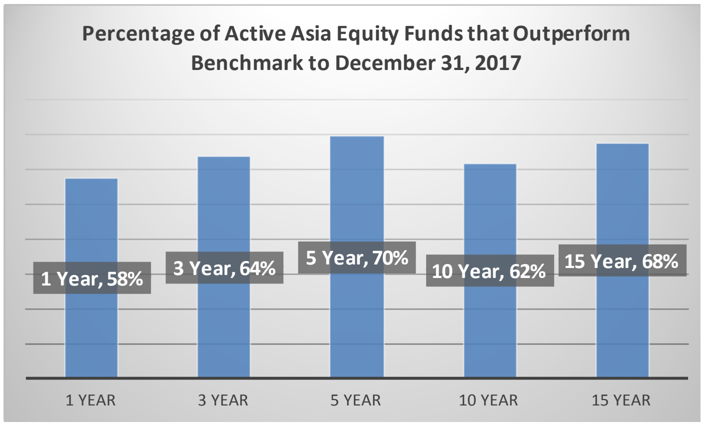
1 Financial Times, October 24, 2016

2 We are making the distinction between actively managed and passive funds here because passive funds fail to out perform their benchmark 91% of the time (over 15 years). Yes, we know that they're not supposed to outperform but most claims that mutual funds fail to outperform their benchmark include the data for both passive and active and the passive funds lower the overall average.

3 China Region, Diversified Pacific Asia, Japan Stock, Pacific/Asia ex-Japan Stock.

proposition that passive is always superior is false. Many investors will see the headlines about active and passive and presume case closed in



favor of passive across all segments. Investors should be mindful that not all indices are created equally and not all markets/sectors/regions lend themselves to passive investing.

So much for the notion that active managers *cannot* outperform. We accept that it might be argued that active managers *should* outperform with greater frequency. We'll have more to say on that below.

Predictability of Outperformance

We're quite bothered by the notion that it might be impossible to select mutual funds that might outperform their benchmark. There is an entire industry segment devoted to researching, ranking and rating mutual funds. There is another industry segment that provides specific advice regarding fund selection. Have these firms capitulated on a major component of their value proposition? We don't believe so. But in any event, we're here to provide some guidance.

We should first discuss why so many mutual funds fail to match their benchmark. As it turns out, a good percentage of active managers fail to outperform their benchmark because *they don't even try.*

A Yale University Study found that "nearly one-third of actively managed US mutual funds are "closet indexers."[4] This study introduces the concept of "active share," which is a measure of how much a fund deviates from its benchmark. A fund with active share of zero is completely matching its index. An active share of 100 means it has no overlap with the index.

What is the point of closet indexing? We will offer two reasons why some active managers engage

4 For the paper itself, dated March 31, 2009, see this link: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=891719 For a short description from Yale University see this link: http://som.yale.edu/news/news/nearly-one-third-actively-managed-us-mutual-funds-are-closet-indexers-finds-new-study-yale

Global Innovators Fund Standardized Performance Results

For periods ending September 30, 2018	**1 Year**	**3 Year**	**5 Year**	**10 Year**	**Inception Dec 15, 1998**
Global Innovators Fund (investor class)	6.15%	16.61%	12.55%	13.13%	7.91%
Global Innovators Fund (institutional class)	6.41%	16.88%	12.70%	13.21%	7.95%
MSCI World Index	11.85%	14.20%	9.92%	9.21%	6.08%

Performance data shown for Global Innovators, Institutional Class (GINNX), prior to its launch date on 12/31/15, uses performance data from the Global Innovators, Investor Class (IWIRX).

Performance data quoted represents past performance and does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance of the Funds may be lower or higher than the performance quoted. For most recent month-end and quarter-end performance, visit https://www.gafunds.com/our-funds/#fund_performance or call 800 915-6565.

Expense ratio investor class (IWIRX): 1.24% net, 1.35% gross; Institutional class: 0.99% net, 1.38% gross. The adviser has contractually agreed to waive fees through June 30, 2019.

in closet indexing. First, some managers closet index because it is what they think their investors want. Many investors want to construct their portfolios using building blocks comprised of various asset classes and styles[5] and they do not want the underlying portfolio to deviate meaningfully from the stated asset class or style. Their objective is to remain true to the "style box" and seek to provide incremental outperformance. Given that mutual funds have fees and expenses while indices do not this incremental approach faces a headwind that is difficult to overcome. We don't mean to be critical of this approach; "style drift" is a problematic negative to many industry professionals and this pressures some fund managers.

Secondly, some asset managers closet index in the interest of job security. According to the Financial Times, "...most fund managers perceive the biggest threat to their job is not whether they lose investors' money but whether they differ from their peers."[6]

Randomness and Inability to Predict

Is it really impossible to select mutual funds that might be expected to outperform their index? If not, how is an investor to sort through the thousands of mutual funds? Here we'll return to the previously cited Yale Study where K.J. Martijn Cremers and Antti Petajisto found that funds with high active share had a strong tendency to outperform their benchmark. Cremers and Petajisto found that, after fees and costs, high active share funds outperformed their benchmark by an average of 1.13% to 1.15% per year. "Economically, these results suggest that the most active stock pickers have enough skill to outperform their benchmarks even after fees and transaction costs."[7]

"I got myself the most average lawyer I could find."

In addition to active share we offer some observations on portfolio construction. We're believers in equally weighted concentrated portfolios. Typically, our equity portfolios have either 30 or 35 holdings. This set number of equal holdings means two things. First, if we like a stock sufficiently to hold it in our portfolio we need to first figure out which holding must be removed. This puts an interesting sell discipline in place and puts a premium on our best ideas. Second, we believe that a portfolio comprised of 30 or 35 equally weighted positions is well diversified.[8] The fact that no single holding represents more than approximately a three to four percent[9] weight means that our stock specific risk is low. Contrast this to a market capitalization approach and you might have holdings that approximate 11% of a portfolio.[10]

5 *E.g.*, small cap value or large cap growth.

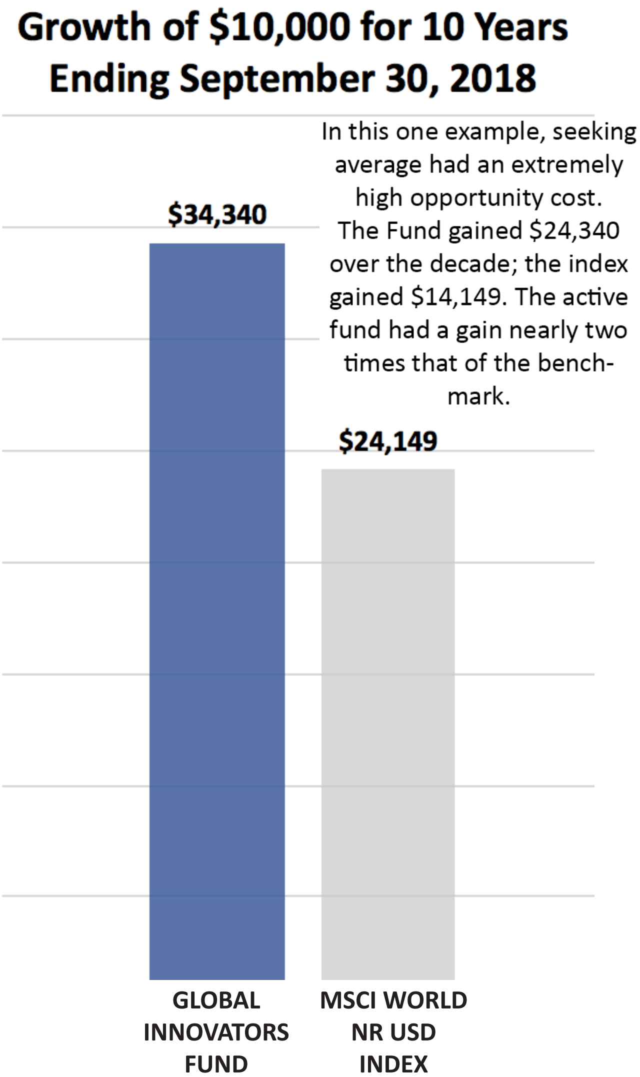
6 Financial Times, April 12, 2013. Article by Terry Smith.

7 Cremers and Petajisto 2009 page 3.

8 There is an abundance of academic research on this point but most studies that favor more stocks are equating risk to deviating from the index. Obviously, that isn't our view. We refer readers to the previously cited article in the Financial Times headlined Too Many Stocks Spoil the Portfolio (Financial Times April 12, 2013).

9 An equal weight 30 stock portfolio would have 30 3.33% positions. But, as prices fluctuate these percentages vary. We rebalance first based on flows but then as necessarily if the weightings move beyond 4%.

10 The largest stock in the NASDAQ 100 index has an approximate weight of 10.9%. (Source: http://slickcharts.com/nasdaq100)



Implications for Investors

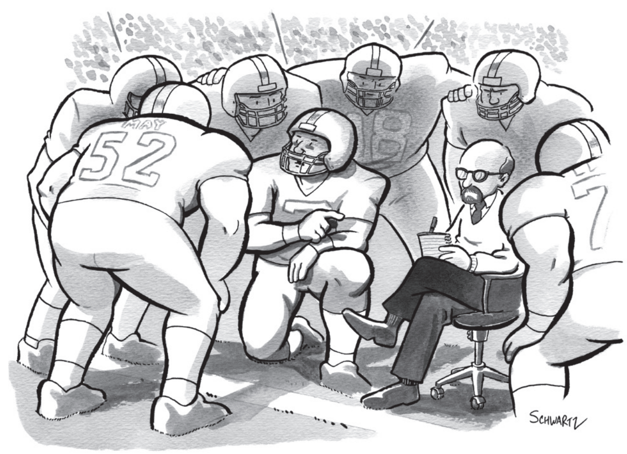
There is a lot at stake here for investors. We accept that fund expenses are important and that the majority of active funds underperform their index. But this isn't a reason to give up on active management; investors should understand there can be a huge opportunity cost to being average. To illustrate this point we calculate and compare the return of $10,000 over the last 10 years for our high active share Global Innovators Fund to its Morningstar identified benchmark, the MSCI World Stock Index. The Global Innovators Fund, which has an active share of 94, has outperformed its benchmark in the 3, 5, and 10-year time periods ending September 30, 2018 -- by a significant amount. Here are the figures for our $10,000, 10 year investment:

$10,000 invested in the index returned $14,149 over the 10 year period ending September 30, 2018.[11] Over that same 10 year period a $10,000 investment in the Global Innovators Fund grew to $34,340. The Global Innovators Fund has a total expense ratio of 1.24% net (1.35% gross). We acknowledge that this active fund has a significantly higher total expense ratio than many index funds (although there is an institutional share class with a net expense ratio of 0.99%). And, note the index returns provided here do not include any expenses. Readers can draw their own conclusions but clearly the Fund provided a hugely superior outcome over this time period despite the expense ratio.

What's an Investor to Do?

- ✓ Seek funds that seek to outperform. If you wish to achieve above benchmark performance then we suggest investing in a fund that constructs its portfolio in a way to achieve that objective. High active share is a key indicator.

- ✓ Avoid funds that are extremely large. Some very large equity funds have trouble differentiating themselves from their benchmark because as they grow they



"He wants us to do our best to be average."

11 The source for the returns for a $10,000 investment both in the text and the adjacent chart is Bloomberg.

tend to end up with too many holdings and that makes them look too much like the index.

- ✓ Look for funds that use portfolio construction rules that are dissimilar to their benchmark. One example is equal weight, concentrated portfolios.

Conclusion

Returning to the three arguments advanced in favor of seeking average:

1. Active managers are capable of producing above benchmark returns. While the majority of active managers may fail, a significant number of active managers succeed and, importantly, in some sectors the majority of active managers outperform their benchmark. Additionally, one-third of active managers are closet indexing. We aren't defending this behavior but note that it means that active managers that seek to outperform do so with more frequency than the raw data suggests.

2. The Yale study has identified a simple attribute, high active share, that has historically indicated which funds were, on average, likely to outperform. This historical tendency does not, of course, mean high active share funds will continue to outperform. But, as we see it, seeking not to be average is the best way not to be average.

3. Investing on the basis of cost alone can be costly. The Yale study has indicated outperformance after fees and costs for high active share funds and we've provided one admittedly self-serving example of where outperformance produced a substantial return premium.

As we said at the outset, no other industry makes a point of being average. And while seeking average can make sense, investors should realize that a significant number of mutual funds meaningfully outperform their benchmark, and in fact, on average, funds with high active share have outperformed. The opportunity cost for seeking average can be extremely high.

Important Information

Hilarious cartoons used by permission of The New Yorker and Condé Nast.

Opinions expressed are subject to change at any time, are not guaranteed and should not be considered investment advice. Investors should consider the investment objectives, risks, charges and expenses carefully before investing. For a prospectus with this and other information about the Fund, please call 800-915-6565 or visiting https://www.gafunds.com. Read the prospectus carefully before investing.

Investments in foreign securities involve greater volatility, political, economic and currency risks and differences in accounting methods. These risks are greater for emerging markets countries. Non-diversified funds concentrate assets in fewer holdings than diversified funds. Therefore, non-diversified funds are more exposed to individual stock volatility than diversified funds. Investments in debt securities typically decrease in value when interest rates rise, which can be greater for longer-term debt securities. Investments in derivatives involve risks different from, and in certain cases, greater than the risks presented by traditional investments. Investments in smaller companies involve additional risks such as limited liquidity and greater volatility. Funds concentrated in a specific sector or geographic region may be subject to more volatility than a more diversified investment. Investments focused in a single geographic region may be exposed to greater risk than investments diversified among various geographies. Investments focused on the energy sector may be exposed to greater risk than an investments diversified among various sectors.

MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets.

One cannot invest directly in an index.

Appendix A: Methodology

For investment professionals the data collection and analysis we performed isn't difficult. If you're inclined to do so, we encourage you to do your own research. We're happy to answer questions.

The Details

Using Morningstar data we examined all equity funds in the US mutual funds universe. A previous version of this report only focused on A shares, no-load and investor class funds. In this report we've included all share classes in our research. This presents a potential problem in that multiple share class funds will mean some funds are effectively counted multiple times. In Appendix B we show results for all share classes and separately for only the oldest share class. Readers will see that compared to the all share class analysis presented here the oldest share class only analysis improves the outperform percentages for active equity funds.

The Morningstar universe has 13,060 "surviving" equity funds. The universe also has 19,295 "obsolete" funds. These funds have either been liquidated or merged into other funds. This large number of obsolete funds give rise to the issue of survivor bias which we will discuss in Appendix C. For now note that the results presented above only include the surviving funds.

There are a number of funds whose prospectus identified benchmark isn't in the Morningstar Benchmark Universe. And, of course, some funds don't have a one-year track record. In the end 12,116 funds met all of our criteria and had sufficient data available to produce at least a one year benchmark comparison. Here is how the funds made it through each stage.

Total number of surviving equity funds: 13,060
One year fund performance data and index data and identified benchmark: 12,116
Three year fund performance data and index data and identified benchmark: 11,506
Five year fund performance data and index data and identified benchmark: 10,666
Ten year fund performance data and index data and identified benchmark: 8,765
Fifteen year fund performance data and index data and identified benchmark: 6,917

Morningstar also identifies mutual funds as index funds or not. We used this identifier to classify funds as passive or active.

We compared the returns for the identified time periods to the identified benchmark returns counting as outperforming if a fund produced a return greater than the return of its benchmark over the time period. In a small number of instances funds matched the index; these instances were recorded as "Underperform."

From here it is a simple matter of counting and summing the outperformers and underperformers over each period.

Appendix B: Additional Data

All Share Class Results and Oldest Share Class Results

As mentioned, the data presented here is largely for all share classes which, in theory could skew the data by counting some funds multiple times. The two tables below show all share class data and then data only for the oldest share class.

Equity Funds Active Only: All Share Classes					
	1 Year	3 Year	5 Year	10 Year	15 Year
Outperform	5,837	3,650	3,272	2,928	2,430
Underperform	5,626	7,262	6,819	5,394	4,143
Outperform %	51%	33%	32%	35%	37%
Underperform %	49%	67%	68%	65%	63%

Equity Funds Active Only: Oldest Share Class					
	1 Year	3 Year	5 Year	10 Year	15 Year
Outperform	1,669	1,098	956	853	669
Underperform	1,626	1,997	1,849	1,372	1,022
Outperform %	51%	35%	34%	38%	40%
Underperform %	49%	65%	66%	62%	60%

Calendar Year Data

In Appendix C we discuss survivorship bias and discuss calendar year data for the 10 year period ending December 31, 2016. The tables below provide this calendar year data.

Surviving Equity Funds Data											
	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	Totals
Out	3,073	5,639	3,145	5,411	4,608	3,522	4,434	4,890	4,060	5,062	43,844
Under	8,862	5,820	7,903	5,212	5,616	6,222	5,009	4,299	4,675	3,324	56,942
Out %	26%	49%	28%	51%	45%	36%	47%	53%	46%	60%	44%
Under %	74%	51%	72%	49%	55%	64%	53%	47%	54%	40%	56%

Obsolete Equity Funds Data											
	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	Totals
Out	131	1,346	826	1,630	1,462	1,218	2,035	2,573	2,343	3,455	17,019
Under	725	1,869	2,795	2,165	2,776	3,515	3,144	3,105	4,299	2,550	26,873
Out %	15%	42%	23%	43%	34%	26%	39%	45%	36%	58%	39%
Under %	55%	58%	77%	57%	66%	74%	61%	55%	64%	42%	61%

Appendix B: Additional Data p. 2

Liquidated vs. Merged Data

While not of meaningful importance to our analysis it is interesting to see how liquidated funds compare to merged funds.

Liquidated Equity Funds Data											
	2016	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	**2007**	**Totals**
Out	65	1,034	664	1,127	1,028	841	1,233	1,450	1,297	1,726	10,465
Under	332	1,429	1,949	1,459	1,737	2,109	1,743	1,731	2,221	1,420	16,130
Out %	16%	41%	25%	44%	37%	29%	41%	46%	37%	55%	39%
Under %	84%	59%	75%	56%	63%	71%	59%	54%	63%	45%	61%

Merged Equity Funds Data											
	2016	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	**2007**	**Totals**
Out	66	312	162	503	434	377	802	1,123	1,046	1,729	6,554
Under	393	440	846	706	1,039	1,406	1,401	1,374	2,008	1,130	10,743
Out %	14%	41%	16%	42%	29%	21%	36%	45%	34%	60%	38%
Under %	86%	59%	84%	58%	71%	79%	64%	55%	66%	40%	62%

Appendix C: Obsolete Funds & Survivor Bias

As mentioned, there are a large number of obsolete funds in the Morningstar universe; more in fact than surviving funds. It might be presumed that the funds that did not survive would be biased to under perform their benchmark which would call into question the relevance of the percentage of funds that outperform their benchmark.[1] As we'll see in the data below there is a slight skew to underperform for the obsolete funds and we believe the data suggests that the effect of survivor bias is negligible. This may surprise some readers who may reasonably inquire as to why a fund would be merged or liquidated if it was outperforming its index. There are a number of reasons a fund might be liquidated or merged out of existence. Liquidation is generally a function of lack of commercial success, *i.e.*, small asset size. Obviously performance plays a role in commercial success but it is only one element in the mix. Further, besting the benchmark is only one aspect of the performance component.

The merging (as opposed to liquidating) of funds can be done for a variety of commercial reasons. One of these reasons may be lack of commercial success but one clear message in the data on the merged funds is a large number of share classes merged into other share classes, which indicates that the fund itself may have survived even if a share class did not. Such a merger likely is independent of performance having more to do with the changing distribution landscape.[2] Because a reasonable reader may wonder if liquidated funds and merged funds may have a different outperform/underperform profile we provide this data in Appendix B.

The Details

There is an inherent problem in determining if an obsolete fund outperformed over any standardized period (1, 3, 5, 10 and 15 years) to a consistent end date, namely that there is no data for these funds past their end of life date. Compounding the problem is that these funds have a very large variety of end dates making it impossible to make comparisons over a uniform time period.

To overcome this problem we've analyzed the data for our entire universe of equity funds using annual return figures over calendar years for both the surviving funds and the obsolete funds. Clearly this is a different comparison from the standardized time periods presented in the main body of this report but it answers the same basic question: what percentage of funds, surviving or not, outperformed their benchmark?

Morningstar has calendar year returns from 2007 through 2017. Calendar year returns for 2017 are of no value in this calculation as any funds that became obsolete in 2017 wouldn't have a full calendar year of performance. Which leaves us with 10 consecutive years--2007 to 2016--of calendar year returns to examine. We provide the details in the table below, but here is a summary of the results.

For operating funds, we have a total of 100,786 data points (each operating fund for each year either outperform or under perform). In 43,844 of these instances (44%) the operating funds outperformed their benchmark. In 56,942 (56%) instances they underperformed. For obsolete funds we have a total of 43,892 data points over the 10 calendar years with 17,019 (39%) instances of outperform and 26,873 (61%) instances of underperform. This supports the notion that obsolete funds skew to underperform. For investors the more important question is what is their likelihood of selecting a fund that will outperform?

This is a slightly more difficult question to answer. Simply averaging all of the data points underweights the

1 We're not overly persuaded by this argument; our intent was to see if any reasonable number of active funds have outperformed. But, for investors this is a more important issue as they may rightfully wonder what are the chances of selecting a fund that will outperform its benchmark and accounting for survivor bias is essential to this analysis.

2 A lot may be said on this point but consolidation of share classes is extremely common and the discussion regarding the large number of obsolete funds inherently overstates the survivor issue.

likelihood of investing in an obsolete fund simply because there are fewer data points. To overcome this we weight the results for surviving funds and obsolete funds based on the percentage each represented at the start of the period. On December 31, 2006 there were 13,967 open end equity funds. On December 31, 2016 only 5,177--41%--of these funds were still in operation. As mentioned, many of these funds were merged with other funds, often into a different share class of the same fund. Further, some of the merged funds themselves were either liquidated or subsequently merged. In any event, an investor on December 31, 2006 had only a 41% chance of investing in a fund that would survive without merger or liquidation over the next decade. Going back to our annual return outperform/underperform data, we have 100,786 data points for the operating funds and 43,892 data points for the obsolete funds. If we weigh these data points 41% for surviving funds and 59% for the obsolete funds we see the following outperform/underperform numbers with the unadjusted data presented first:

Calendar Year Data 2007 through 2016	**Instances of Outperform**	**Instances of Underperform**
All Surviving Funds	44%	56%
Surviving Active Funds	45%	55%
Surviving Passive Funds	15%	85%
Adjusted for Survivor Bias		
All Funds	42%	58%
Active Funds	43%	57%
Passive Funds	15%	85%

An investor that invested on December 31, 2006 in an active equity Fund that survived the next 10 years had a 45% chance of outperforming over any single calendar year. This investor's chances of outperforming in any of the next ten calendar years regardless of whether his selection survived were reduced to 43%. This two percent reduction isn't nothing but it doesn't change our conclusion which is that a meaningful number of actively managed mutual funds can and do outperform their benchmark.