Guinness Atkinson

Global Innovators Fund Update

November 2017

October in Review

October saw the broad equity rally seen throughout this year continue, buoyed by a better-than-expected quarterly results season. Notably robust performance from large US technology stocks such as Amazon, Microsoft, Facebook, Alphabet and Intel.

The U.S. economy grew by 3% (annualized GDP) in Q3, despite the damage and disruption caused by two hurricanes. U.S. consumer sentiment was also reported by the University of Michigan to have been the strongest for 13 years.

Most markets appear expensive versus their own history, naturally causing concern that markets may become overstretched and that a correction could be around the corner. Albeit economic data and earnings growth remain positive. But as a healthy reminder of what market corrections entail, October 19th saw the 30-year anniversary of Black Monday, the 1987 crash when US stocks (S&P 500) fell more than 20 per cent in a single day, the largest ever one-day loss.

US inflation data was muted in October with the consumer price index release showing an annualized rate staying at 1.7% for the fifth consecutive month. This is also lower than economists' expectations.

In Europe, the Spanish government has been battling with Catalonia, the north-eastern autonomous region, after Carles Puigdemont, the President of Catalonia went ahead with a referendum for independence. The Spanish government was accused of heavy handed tactics after it used police to forcibly try and prevent the vote from happening. Of the registered voters, the turnout was around 43% and of those who voted 92% were in favour of independence. Due to the legal status of the referendum, debate has ensued over the validity of the result. Since the referendum, the Catalan government has been sacked, Puigdemont is in Belgium and thousands have marched for and against Catalan secession. The turmoil looks set to continue.

General economic data has been positive on both sides of the Atlantic. Preliminary data showed the Eurozone gross domestic product rose 0.6% in Q3 from the previous quarter. This was ahead of analysts' estimates. The consumer price inflation rose 1.4% in the 12 months to October, missing analyst expectations. The European Central Bank (ECB) announced that from January 2018 its quantitative easing program will be reduced from €60bn-a-month to €30bn-a-month for an initial 9-month period.

On November 2nd, the Bank of England decided to raise the key interest rate to 0.5%, the first rate rise in a decade. However, policy makers showed concern for the UK economy due to Brexit and therefore indicated another rate rise wouldn't happen in the short term.

Asia sentiment in the month was positive, with strong third quarter results following the US. This has similarly helped reinforce the region's equity rally. Asian companies' profits on the whole beat analysts' estimates. Xi Jinping pledged to lead China into a "new era" of international power and influence at the 19th party congress in Beijing. A new body of political thought carrying Xi's name was added to the Communist party's constitution – on the back of this there is speculation that Xi will seek to remain in power beyond the end of his second and supposedly last 5-year term, in 2022.

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Market Movements

In October, Information Technology outperformed all other sectors in October (MSCI World IT +7.2% total return in USD). Generally, cyclical stocks outperformed defensive stocks. The Materials sector also performed well, while Consumer Staples, Health Care and Telecoms were the worst performing sectors in the month. The Global Innovators Fund's current overweight position in Information Technology contributed positively to its performance. In terms of geographic movements, Asia and North America outperformed Europe throughout the month.

Portfolio update

Individual stock performance in the month in part followed these market movements. Key idiosyncratic stock movements are highlighted below. It should be noted that October earnings season had a large effect on individual company performance. Of the companies that we own in the Global Innovators portfolio, 13 have reported and 11 have beat expectation.

Intel (+19.5% total return in USD), had strong Q3 sales growth aided by memory pricing increases. Intel has also benefitted from a continuing rise in higher-priced PC chip product mix, offsetting some PC unit decline. Also, their data-center business saw 7% sales growth in Q3, powered by demand for cloud computing.

Nvidia (+15.7% total return in USD), the designer of 3D graphics processors, had another strong month. Generally, the semiconductor sector has performed well this year, resulting from increased demand and strong prices. NVidia has been well positioned to take advantage of these tailwinds with innovative high-quality product offerings that capitalize on some of the biggest trends this year, such as datacenters and AI. Quarterly earnings will be reported on November 9th.

Fanuc (+14.6% total return in USD), the manufacturer of factory automation systems and robots, has industry-leading efficiency and profitability per employee – approximately 10x its peer average. The rise in automation around the world has helped grow sales, especially with exports of robots to China. In recent years, Chinese manufacturing has become increasingly technologically advanced and reliant on automation. Quarterly results released on 25th October achieved a 6.4% positive surprise on EPS versus analyst estimates.

PayPal (+13.3% total return in USD) reported Q3 results on 19th October, beating analysts' estimates on an EPS basis by 5.8%. The market took this news favorably and the share price rose 6.5% on the day. PayPal has been performing very well this year and gaining online-payment market share as other digital wallets struggle to gain traction. New accounts are being added and usage is being improved by adding services and improving user experience with one-touch buying and choice-of-funding method.

Comcast (-6.0% total return in USD), the media and television broadcasting services company, suffered by association as other media stocks reported disappointing Q3 results from Discovery Communications and AMC Networks, which also highlighted subscriber losses. Quarterly earnings released mid-month beat analysts' expectations, but this did not help support the share price as worries surrounding industry growth circulated.

Changes to portfolio

We made one change to the portfolio in October: we sold Schlumberger and bought Anta Sports.

Schlumberger, the global oil and gas services company, was our only energy sector holding. In recent times we have grown increasingly worried at the company's falling cash flow return on investment and this has been accompanied by stagnant capital growth. In our opinion, the company's inability to sustain healthy margins and grow their earnings have put us out of favor with the stock, especially at a time where industry-wide factors are hampering the performance of energy stocks. We believe there remains significant headwinds for a company whose customers are drastically cutting their capital expenditures plans.

We bought ANTA Sports to replace Schlumberger, sticking to our one-in, one-out policy. ANTA Sports is based in China and has a stellar cash flow return on investment over 10%, over the last 15 years. The company generates revenue through the manufacture and trading of sporting goods, including footwear, apparel and accessories. Its brand portfolio includes ANTA, ANTA KIDS, FILA, FILA KIDS and NBA, and the company is looking to new brands too, such as South Korea's Kolon. Looking at the financials, ANTA Sports has very solid margin growth alongside a surge in sales in recent years. The company is well positioned to benefit from the growing wealth in China, and recovering economy, and has maintained low debt. We have conviction that the stock has potential to maintain its earnings growth.

The effect of this switch on the portfolio has been to improve the average balance sheet quality and increase the average cash flow return on investment. Anta Sports has a debt-to-equity ratio of just 10%, whereas Schlumberger had much higher levels of debt. Anta Sports has exposure to some exciting innovation themes and are spending their cash to exploit them through investment in research and development. Anta Sports are expected to grow their earnings this year by 18%, whereas Schlumberger has seen its growth opportunities decline significantly since the start of the oil price slump.

How do we assess innovation?

When investors think of innovation, they often think about innovative companies as being small-cap 'tech' companies. We believe innovation can best be considered within the framework of our innovation matrix. We believe there are two factors to consider when looking at innovation – the level of innovation and the drivers of innovation as shown in the figure below. As a company grows and matures it can move from being a disruptive company, through an acceleration stage into the continuous stage, where innovation is no longer disruptive but is the driving force behind a company maintaining its competitive edge. Science and technology is an important driver of many innovative companies, but we also come across innovative companies where they take existing technology but create a new product or service that did not previously exist or create a completely new business model. Ultimately whichever type of innovation a company succeeds in they are aiming to do something better and different to their peers and the best way to see if they are succeeding is to look at their return on capital.

Level of innovation

Key drivers of innovation

	Disruptive	Accelerating	Continuous
Science/Technology	Scientific breakthrough leading to new technology with significant potential impact	Rapid improvements in young technology	Small continuous advances in an established technology that will provide incremental benefits to end user
Product/Service	A new product/service that has the potential to quickly take market share and change the dynamics of an industry	Rapid advances in adoption of product/service	Small advances in product/service or end user experience that maintains or grows market share or competitive positioning
Business Model	A new revenue/cost model or the confluence of technologies that has significant impact on incumbents	Rapid adoption of business model leads to rapid growth in market share	Continuous evolution of business model to maintain competitive strength

Chart 1: Assessing the drivers and levels of innovation with the innovation matrix
Source: Guinness Atkinson Asset Management

Nvidia and Boeing are two good examples of different types of innovative companies. Nvidia is a more traditional technology disruptor, with the invention of the graphical processing unit (GPU) in 1999 which has led to a significant impact across the IT sector. Whereas, with Boeing it may not be immediately obvious that a large Industrial can be highly innovative. Boeing, over more than 100 years, has made small continuous advances that have secured its competitive edge and allowed it to captured market share and become the largest aerospace company in the world.

The continuous innovation of Boeing

Boeing formed in the early twentieth-century and has had a long and successful history of aerospace leadership and innovation. On the face of it, one may question: how can a durable goods company such as Boeing be innovative? People often think of innovation as being symbiotically linked with IT software companies, this can lead to innovation being overlooked in the more unexpected sectors. In Boeing's case, they have woven innovation into the fabric of their business practice, and thus it has helped them become the world's largest aerospace company.

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 culture of innovation and Boeing has a proven history of adapting and improving its business through innovation. To help sustain their business in a post-World War One environment, when military orders reduced dramatically, they expanded into fields beyond aircraft manufacturing, using the same skillsets to manufacture boats and furniture. More recently, Boeing's successes in streamlining the manufacturing of its 737 airplanes has led to an assembly time of just 9 days. 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.

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." They publish their "Innovation Quarterly" as a collective reminder of the innovation taking place at Boeing 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, as 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.

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 its strong cash generative abilities and ability to create value.

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

Nvidia: The disruptive technologists

Nvidia, began life in 1993 as an American computer graphics card designer, often regarded for its quality of product and designing the best gaming computer graphics cards. Now, Nvidia has secured itself as a technology company spanning the breadth of numerous innovative themes, such as self-driving cars, augmented reality, data centers and artificial intelligence. The innovative element of what Nvidia has managed to achieve is to develop quality technology infrastructure that a lot of the world's future products and services may require. It is this multisector appeal that has led, in part, to the rapid rise of Nvidia. As stated by Nidia, "Innovation is a core component of NVIDIA's DNA", and they promote this not only through research and development but also in how they manage their business and supply chain.

Unlike Boeing, Nvidia's product upgrade life can be as short as 4 years, resulting from years of numerous innovations happening in a highly competitive industry. It is not difficult to understand the necessity to innovate or else your product will be superseded quickly. A good comparison is the mobile phone industry, let us remember Nokia and Blackberry, missing the rise of the smart phone was their downfall. The product cycle is similar within chip designers, and the competition is 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 the likes of their CUDA computing platform. This platform allows programmers to take advantage of their parallel processing power hardware. This makes Nvidia's GPUs more useful beyond processing video game graphics as well as being hard to replicate, protecting Nvidia's competitive edge.

Importantly, Nvidia has not forgotten to innovate within its core market, the computer gaming business continued to grow by 44% YoY (FY to Jan-17) 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.

Nvidia does not only allow innovation to flourish within its workforce, but the company has a proven track record of acquiring interesting technologies that benefit the companies 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 competitors, arguably because of the "company culture of innovation".

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. NvVidia is transparent with partners, publishing demand data so its partners can optimize their own processes.

The wider community has started to recognize Nvidia's continuous innovation. This year, Nvidia is first place on the MIT Tech Review's 50 Smartest Companies 2017 and it has also been on the list for the last 3 years. As another indicator of their continual investment in innovation, they have regularly spent more than 20% of their revenues on R&D. Over the last 12 months they invested around $1.5bn in R&D.

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 requires nimble and responsive supply chains. Also as the manufacturing process requires ever increasing investment to produce ever shrinking nanoscopic chips, 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. This allows Nvidia to continue to innovate, 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" with further growth seen in 2017. What began from a single invention of the GPU, has led to a culture of continual innovation and a disruptive company, with strong growth and good profitability.

Outlook

The fund has always sought to provide exposure to many of the exciting innovation growth themes that exist and this year the market has begun to react to the potential of many of these themes. Recent earnings results from many of the large technology companies suggest that the growth opportunities continue to expand and we are pleased with the way that our holdings have been executing on their growth plans as well as their share price performance.

As a result of the outperformance seen this year, the fund is now trading at a 9.6% premium to the broad market on a PE ratio basis (fund 19.6x 2017 expected earnings vs MSCI World Index 17.9x) after trading at a discount for much of 2016. The longer-term premium of the fund versus the broader market has been in the 10-20% range, and so we still believe the portfolio offers good value relative to the market today, given the growth trajectory of our holdings.

Thank you for your continued support.

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GUINNESS ATKINSON FUNDS

Performance

In October, the Guinness Atkinson Global Innovators Fund produced a total return of 1.09% (investor class) versus the MSCI World Index return of 0.20%. The fund therefore outperformed the index by 0.89%.

as of 10.31.2017 (in USD)	YTD	1 year	3 years annualized	5 years annualized	10 years annualized	Since inception annualized
Global Innovators, Investor Class[1]	32.59	38.09	12.27	19.28	8.55	8.22
Global Innovators, Institutional Class[2]	32.86	38.45	12.45	19.39	8.60	8.25
MSCI World Index	18.77	23.49	8.77	12.23	4.74	5.86

as of 09.30.2017 (in USD)	YTD	1 year	3 years annualized	5 years annualized	10 years annualized	Since inception annualized
Global Innovators, Investor Class[1]	26.82%	29.58%	11.50%	17.88%	8.49%	8.00%
Global Innovators, Institutional Class[2]	27.04%	29.88%	11.67%	17.98%	8.54%	8.03%
MSCI World Index	16.53%	18.85%	8.34%	11.65%	4.86%	5.78%

Investor class (IWIRX) Inception 12.15.1998 — Expense ratio* 1.24% (net); 1.35% (gross)

Institutional class (GINNX) Inception 12.31.2015 — Expense ratio* 0.99% (net); 1.38% (gross)

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 Fund 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/global-innovators-fund or call (800) 915-6566.

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).

*The Advisor has contractually agreed to reduce its fees and/or pay Fund expenses (excluding Acquired Fund Fees and Expenses, interest, taxes, dividends on short positions and extraordinary expenses) in order to limit the Fund's Total Annual Operating Expenses to .99% for the Institutional class and 1.24% for the Investor class through June 30, 2018. To the extent that the Advisor waives its fees and/or absorbs expenses to satisfy this cap, it may seek repayment of a portion or all of such amounts at any time within three fiscal years after the fiscal year in which such amounts were waived or absorbed, subject to the 0.99% for the Institutional class and 1.24% for the Investor class expense cap.

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Total returns reflect a fee waiver in effect and in the absence of this waiver, the total returns would be lower

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 medium and 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.

Securities mentioned are not recommendations to buy or sell any security. Current and future portfolio holdings are subject to risk.

Top 10 holdings for Global Innovators Fund, as of 09/30/2017, are:

1. Samsung Electronics Co	3.92%
2. Cognizant Technology Solutions Corp – A Shares	3.74%
3. New Oriental Education & Technology Group Inc.	3.70%
4. Infineon Technologies AG	3.61%
5. Continental AG	3.49%
6. Applied Materials Inc.	3.43%
7. Check Point Software Technologies Ltd	3.42%
8. Eaton Corp PLC	3.40%
9. The Boeing Co	3.39%
10. NVIDIA Corp	3.37%

For a complete list of holdings for the Global Innovators Fund, please visit https://www.gafunds.com/our-funds/global-innovators-fund

Opinions expressed are subject to change at any time, are not guaranteed and should not be considered investment advice.

The Fund's investment objectives, risks, charges and expenses must be considered carefully before investing. The statutory and summary prospectus contains this and other important information about the investment company, and it may be obtained by calling 800-915-6566 or visiting gafunds.com. Read it carefully before investing.

Earnings growth is not representative of the Fund's future performance.

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.

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