

## Global Equity Team



Dr Ian  
Mortimer, CFA



Matthew  
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## Funds managed

### Guinness Global Equity Income Fund

Invests in profitable companies that have generated persistently high return on capital over the last decade; we believe these companies are well placed to pay a sustainable dividend into the future.

### Guinness Global Innovators Fund

Invests in companies benefiting from innovations in technology, communication, globalisation or innovative management strategies; we believe innovative companies in any industry can improve productivity and grow their profits.

## “Physics envy”

**Economists have long sought to identify a deterministic “natural law” of markets in the same way that physicists have discovered natural laws such as gravity and electromagnetism. This is sometimes referred to as “physics envy”. If economists could identify a deterministic natural law of markets then we would be able to make useful and accurate predictions. Sadly no such law exists. Human actions are not governed by simple predictable laws.**

The great American physicist Richard Feynman once joked, “Imagine how much harder physics would be if electrons had feelings!”

The next best thing to a natural law is a well-tested theory. Theories can be tested by building models based on the assumptions of the theory. No theory will be perfect, as it is a simplification of reality, but insight can often be drawn from it. However, what often happens when a model becomes popular is that practitioners forget the limitations of the assumptions of these models.

Indeed, the theory and models used by investment banks to create baskets of subprime bonds (that rating agencies were happy to rate as AAA) relied on the assumption that house prices would not fall.

The theory that is most prevalent in financial markets is the Efficient Market Hypothesis. It’s a wonderful theory and model, but it is a long way from being a true, deterministic, scientific, physical law like Einstein’s theory of relativity. One of the key assumptions behind efficient markets is that all agents/investors behave rationally. That seems like a poor assumption, as the works of Daniel Kahneman, Amos Tversky, Dan Ariely and Daniel Simons (to name a few) have shown. Humans are far from being rational. Human decisions are more emotional than rational. This causes us all to exhibit biases in our thinking that are very different from what a hypothetical, purely rational human would decide. Psychologists have identified over 150 of these biases, and investors, professional or otherwise, are not immune.

Ultimately the proof is in the pudding. If a theory can predict certain characteristics or outcomes then it can be said to be true.

Again Feynman wrote about theories:

“[The scientific method] is based on the principal that observation is the judge of whether something is so or not. All other aspects and characteristics of science can be understood directly when we understand that observation is the ultimate and final judge of the truth of an idea... If there is an

exception to any rule, and if it [the exception] can be proved by observation, that rule is wrong.”

The Efficient Market Hypothesis fails to predict the frequency of market crashes that have occurred through history, so by Feynman’s standard the EMH is not robust and not true.

Despite the evidence, people continue to hang on to it. How many times did we hear that the financial crisis of 2007/8 was a one in 100 or 200 year event, even though we know we see crashes in markets much more frequently? Most of these nonsensical calculations are based on the assumption of the efficient market hypothesis, which leads to the convenient but lazy assumption that the returns of asset classes over time will fit a normal distribution or bell curve. It’s convenient because normal distributions are defined purely by two measures: the mean and the standard deviation. No other inputs are required.

Normal distributions are also straightforward to manipulate mathematically, as opposed to less elegant distributions that exhibit the “fat tails” that would forecast the relevant frequency of market crashes through history.

Normal distributions form the basis of so much of modern finance theory. It is the basis of calculating Beta, which in turn allows you to calculate the cost of equity of a firm, which in turn can be used with numerous other potentially erroneous forecasts to calculate the “value” of a firm. It is the basis of Modern Portfolio Theory, the Efficient Frontier, Portfolio Optimisation. It is the fundamental basis for Value at Risk and the Black-Scholes option pricing model.

The insatiable human need for certainty, avoidance of ambiguity and prescience of the future has led to a widely held preference for using a model that is easy to manipulate, as opposed to one whose fundamental assumptions bear a resemblance to reality.

Under stable market conditions (temporary equilibria), these metrics and theories work fairly well. But as metrics like Value at Risk are used to manage risk, it is unfortunate that in the periods of highest risk, such as just before a market crash, they

help you least. A risk tool that fails to protect you in a period of high risk is like an ejector seat that works well under normal conditions but fails to eject when you need it most.

The idea that “risk” behaves in a bell-shaped fashion and can be quantified, contained and managed just doesn’t seem quite right. Ultimately we think it is more appropriate to think in terms of “uncertainty” than “risk”, and get comfortable with the fact that risk cannot be fully captured in probability and statistics, or reduced to one number.

We think the market, rather than comprising purely rational investors, is made up of smart investors who are subject to behavioural biases and who have differing and evolving goals (different perspectives on what is rational) and different time horizons. This is sufficient to mean cycles can occur, crashes can occur and, most importantly, profitable opportunities will arise if you can avoid herd-like thinking. We think the appropriate framework to consider a financial market is that of a Complex System. Definitions of Complex Systems vary but it is generally accepted that a Complex System should include most or all of the following elements:

#### **1. The system has feedback loops.**

There are clearly strong feedback loops in financial markets. Momentum-oriented “investors” focus on companies whose share prices are following a trend. If a sufficient number of investors focus on momentum then the actions of momentum investors can lead to further momentum and positive feedback loops can arise. The same can happen with any theme or story if sufficient people become interested in it. Indeed government control of interest rates is meant to take advantage of feedback loops. Quantitative easing is an extreme example of this. Governments drive down real interest rates by buying huge quantities of bonds, which forces investors into riskier assets, which drives up the value of these assets, that improves levels of wealth and confidence, which in turn leads to further purchase of riskier assets. There are hundreds of feedback loops that evolve over time. Much of the time they compete and cancel each other out. Some are strong and some are weak, some are positive and some are negative. However,

when enough of these feedback loops combine, asset bubbles and crashes can occur.

## 2. The system is non-stationary.

This means statistical or dynamic properties that might hold true over one time frame will not necessarily hold true over another time frame. We know this is true. Take volatility as a good example: it tends to spike when there is fear in the market and fall when there is confidence.

## 3. Agents interact.

For “agents” you can read investors but technically it means anyone who participates in the markets – traders, market makers, mutual funds, hedge funds, ETFs etc. Essentially this means investors talk to each other, they share ideas, they debate, persuade, argue, agree, disagree. They watch the news, they read newspapers, magazines and journals, which are powerful funnels through which an initial point of view can cascade. This in itself can be another source of feedback loops. Believers in efficient markets would presumably argue that this would be pointless, as all investors are rational so by extension they will all agree on the price of an asset.

## 4. Agents can adapt their behaviour.

In reality investors try to adapt what they are doing to what is going on around them. They change their behaviour as their circumstances evolve and adapt to market circumstances, be it the level of fear in the market or their investment time horizon.

## 5. The population of agents evolves.

Market participants have changed significantly over the last 100 years. ETFs have taken significant market share from traditional mutual funds in recent years, while hedge funds grew rapidly through the 1990s. Product and market innovation will continue to have a dynamic impact on how markets function.

## 6. The system is a single realisation.

This is similar to point 2. The market is a constantly evolving system, so how the market behaved over a period in the past may not tell us much about the future.

## 7. The system is open.

This means that the market (the system) is strongly coupled to its environment and so can be affected by outside influence such as economic policy, changes in interest rates, quantitative easing, changes in legislation, changes in tax etc. Money can also flow in and out of the system through new companies listing and the repurchase of shares.

One of the key characteristics of a generalised Complex System is that unexpected phenomena emerge spontaneously at the macro level, through the micro-level interactions of many agents over time. In other words market crashes (an unforeseen phenomena) and their observed frequency are well within the expected outcomes of a complex system (unfortunately the spontaneous nature doesn't provide us with any clues as to when they may occur).

These unexpected phenomena are essentially periods of order that arise out of what most of the time looks more like a noisy, but stable, system. In a complex system it makes sense that markets crash, but on the same basis it makes sense that in less extreme circumstances the market may become more excited about a particular theme, story, trend, sector of the market etc. due to the feedback loops and interactions amongst investors. Valuations may well drift far from what might objectively appear justified (both to overvaluation and undervaluation).

The Complex System framework therefore starts by providing a more realistic set of assumptions of how market participants behave and interact, and helps to explain why opportunities for profit arise for patient investors. It also highlights what you can and cannot control, which unfortunately is less than we would all naturally want to believe. However, if we accept that risk cannot be boiled down into a single metric, that markets crash fairly frequently, and opportunities with a high reward and low uncertainty do arise then we can build a portfolio for this reality rather than a portfolio to fit a flawed theory.

## Guinness Global Equity Income Fund

- ▶ Providing investors with global exposure to dividend-paying companies.
- ▶ Managed for income and capital growth, and invests in:
  - 1) **profitable companies...**
  - 2) **that have generated persistently high return on capital over the last decade...**
  - 3) **and that are well placed to pay a sustainable dividend into the future.**

<b>Benchmark</b>	MSCI World Index
<b>Asset class</b>	Equity (long-only)
<b>Geographic focus</b>	Global
<b>IA sector</b>	Global Equity Income
<b>Fund launch</b>	31.12.2010
<b>Dividend payments</b>	July (interim) & January (final)

## Guinness Global Innovators Fund

- ▶ Invests in companies benefiting from innovations in technology, communication, globalisation or innovative management strategies.
- ▶ We believe innovative companies that develop competitive strengths will deliver the key factors behind superior shareholder returns:
  - 1) **Higher than average return on investment**
  - 2) **Persistent growth over a business cycle**
- ▶ Managed for capital growth; holds a concentrated portfolio of large and mid-sized companies in any industry and in any region.

<b>Benchmark</b>	MSCI World Index
<b>Asset class</b>	Equity (long-only)
<b>Geographic focus</b>	Global
<b>IA sector</b>	Global
<b>Fund launch</b>	31.10.2014
<b>Strategy launch</b>	01.05.2003

### Fund managers



**Dr Ian Mortimer, CFA**, joined Guinness Asset Management in 2006. He co-manages Guinness Global Equity Income and Guinness Global Innovators Funds.

Prior to joining Guinness, Ian completed a D.Phil. in experimental physics at Christ Church, University of Oxford, and graduated in 2006. He graduated from University College London with a First-Class Honours Master's degree in Physics in 2003, and is a CFA charterholder.



**Matthew Page, CFA**, joined Guinness Asset Management in 2005. He co-manages the Guinness Global Equity Income and Guinness Global Innovators Funds.

Matthew previously worked for Goldman Sachs as an analyst in Fixed Income Currencies and Commodities (FICC). He graduated from New College, University of Oxford with a Master's Degree in Physics, and is a CFA charterholder.

### Guinness Asset Management

Guinness Asset Management provides a range of long-only actively managed funds to individual and institutional investors. Founded in 2003, Guinness is independent and is wholly owned by its employees.

We believe in in-house research, intelligent screening for prioritisation of research and well-designed investment processes. We manage concentrated, high-conviction portfolios, with low turnover and no benchmark constraints. At heart Guinness is a value investor.

Since our establishment we have developed specialisms in global growth and dividend funds, global sector funds and Asian regional and country funds.

The Guinness funds sit within an Irish-listed OEIC. They are managed alongside a range of mirror SEC-registered funds offered to US investors by our US sister company, Guinness Atkinson Asset Management Inc.

We also offer the Guinness EIS Service, AIM EIS Service, and Sustainable Infrastructure Service.

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- the Manager: Link Fund Manager Solutions (Ireland) Limited, 2 Grand Canal Square, Grand Canal Harbour, Dublin 2, Ireland; or,
- the Promoter and Investment Manager: Guinness Asset Management Ltd, 18 Smith Square, London SW1P 3HZ.

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