The STAR Guide to Equity Investment

Contents

I Introductory Notes

Okay, there are lots of investment guides around. So, why are we producing yet another one? We believe this one is different because it's a collaborative effort between the well-established United Kingdom Shareholders' Association (UKSA) and John Mulligan, an economist and former professional investment manager, who has developed and published his Share Tracking and Ranking (STAR) methods every month for nearly 30 years. Not only have the STAR screens been live for a long time, but the templates have been regularly modified to take account of the ever-changing world of equity investment. We plan to continue these online guides in the same dynamic tradition of continual innovation and dialogue with all members of the STAR Investor hub.

UKSA

The United Kingdom Shareholders' Association was founded nearly 30 years ago to promote the interests of individual shareholders and investors in the United Kingdom. UKSA helps shareholders and other investors to exercise their rights and responsibilities and gives general advice on how best to safeguard the interests of investors. UKSA also presents the views of private investors to companies, the Government, the London Stock Exchange and other bodies. Another objective of UKSA is to encourage and provide investor education, hence its support for this initiative.

About STAR and Share Screening

The term STAR was originally coined to describe the "**Share Tracking and Ranking"** algorithms that John researched and developed in the late 1980s and 1990s to manage his own share portfolio. They were subsequently produced in monthly bulletins that were published by the leading stockbrokers at that time, Sharelink and City Deal. As the whole share screening process evolved, this acronym now more accurately relates to "**Successful, Targeted, Active and Responsible**" investment in all its guises.

The STAR methods essentially involve the regular screening and ranking of more than 2,000 listed equities traded on leading global share markets. This ongoing work has resulted in the incorporation of additional metrics and secondary screens to the basic filtering process. This is explained fully in Section 7.

About the Various Share Screening and Evaluation Methods and Systems

In order to be useful to serious investors this Guide describes the widest possible range of investment selection methods and includes a summary of each one's strengths and weaknesses. It will also track the successes and failures of share and portfolio templates using different approaches in order to provide regularly updated comparative assessments. The objective is to use these dynamic evaluations to generate a valuable source of online help for all investors. It is also intended that the information will be updated online as frequently as necessary to make it as relevant and useful as possible for those new to the unnecessarily complicated investment universe.

Main Topics Covered in the Guide

The basic objective of this Guide is to provide simple explanations of some of the main decisions required for anyone wishing to achieve investment success in a continually changing environment.

The Guide is divided into the following topics:

***Why Choose Equities*:**
We look at the reasons for investing in shares; the advantages and disadvantages of being a part owner of an active business and the substantial profits that can be made, while also drawing attention to the need to minimise risk and avoid losses

***The Investosphere*:**
We coin the term Investosphere to encapsulate some of the major forces influencing equity markets

The Equity options for Private Investors:
The options available to private investors have expanded hugely during the last thirty years, from fully outsourced to total personal control

***Lessons from the Maestros*:**
This section outlines a range of share selection methods used by well-known professional investors that have proved successful in the past

***Sources of data and information*:**
We list useful data sources and ways of dealing with data problems and errors

How to Develop Your Own Share Selection System:
How to use spreadsheets and screens to select shares and build portfolios

ESG Investment Screening:
How to incorporate ESG criteria into the screening process

***Monitoring and Evaluation*:**
This section demonstrates how to monitor and update your screens and share selection performance on a regular basis.

Content and Format

Each section explains the key points as well as relevant practical examples. We also include references and links to sources of information and data for more detailed research and access to additional information for better investment decision-making.

Interaction

Users of this Guide are encouraged to submit comments, questions and add suggestions on any section. These will be moderated by the editors before they are published in digital or printed format. We are also establishing a database of actual and forecast data covering the past five years that will enable any subscriber to back-test a large number of key investment rating metrics to gauge how successful their own strategies would have been in the past.

This procedure will follow the templates, but not the algorithms, that were used to develop the basic STAR ranking methods. In order to encourage people with little previous experience or knowledge of equity investment to become their own wealth managers, it is planned to hold a competition that is open to anyone not professionally involved in equity investment. At the end of the first year there will be a prize for the top three results as well as an opportunity to contribute a section to the website and The Private Investor magazine.

Warning – The Limitations of This Guide

We should warn you that building a successful share portfolio is not the same as developing a long-term strategy for your total wealth. Most financial advisers explain that share investments should make up no more than a limited part of an individual's total investment planning process. ***Furthermore, it is not the purpose of this guide to advise on any aspects of investment planning, tax planning and overall wealth management. For those aspects you should always seek advice from qualified professionals***. However, when formulating the share investing portion of your investment strategy it is advisable to take account of the following aspects:

Your Attitude to Risk

It is strongly recommended that you assess how comfortable you are with risk. How would you feel should your carefully chosen investments fall in value? We have known many people who are unable to sleep at night, or wake in a cold sweat, when their shares suddenly start collapsing and their total wealth reduces significantly. If this is you, it is probably better not to become a direct shareholder.

Time Available

Successful direct share investment, where you own shares directly as opposed to getting a fund manager to do it for you, repays time spent on researching specific companies and the sectors in which they operate. If you don't have much time available or have little interest in the businesses concerned, it is probably better to direct your money to collective investments whose managers have the time and resources to do the investigative work for you.

Diversification

Whatever methods you choose it is advisable to diversify your investments between sectors and businesses in order to reduce the chance of losing your money through the failure or weaknesses of business sectors and individual companies.

2 - Why invest in equities?

Investing is a Positive Action

We all need to decide why we are investing as opposed to saving.

Essentially, **saving** is the act of putting money aside from a regular income stream and diverting it from current expenditure for some future use. In many cases this actually involves lending your money to a bank or building society for them to use and for which, in the past at least, these entities have paid you, the saver, a fee in the form of an interest rate.

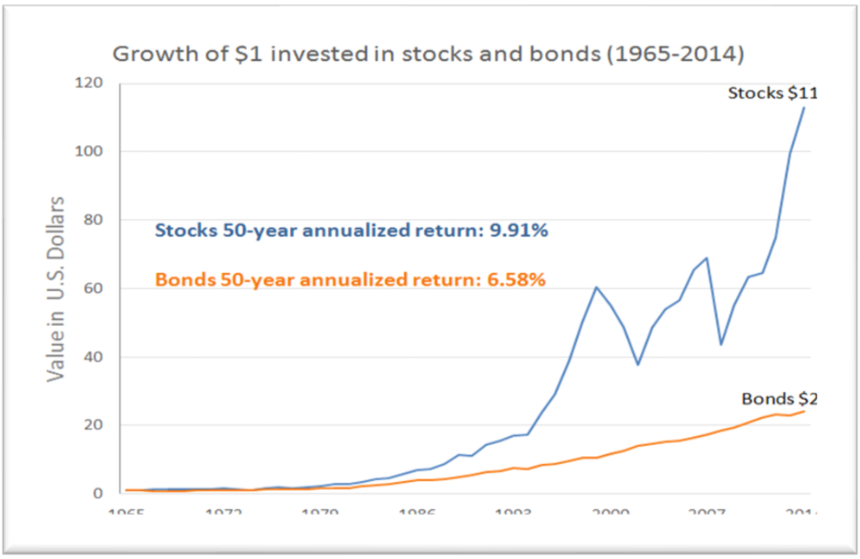
Investing implies a more positive and longer-term direction of cash into loans or the ownership of equity interests. These equity interests may cover the direct ownership of a vast range of asset classes from houses and other real estate to antiques, art and collectibles as well as the part ownership of businesses. This latter class is most easily accessible to private investors in the form of the part ownership of existing trading entities represented by shares listed on recognised stock markets. In this Guide we shall use the terms equities and shares interchangeably.

Why invest in Equities?

This Guide will concentrate on share investing, rather than any other asset class, for the following positive reasons:

- Most studies have shown that an investment in shares has outperformed that of all other accessible asset classes over the past century. Although there have been periods when equities have lost money, in the longer term and decade by decade, most studies demonstrate the massive outperformance of shares as an asset class when compared with the apparently safer medium of bonds and loan stocks. The chart, below, illustrates the comparative performance of an investment in US shares and bonds over 50 years to 2014.

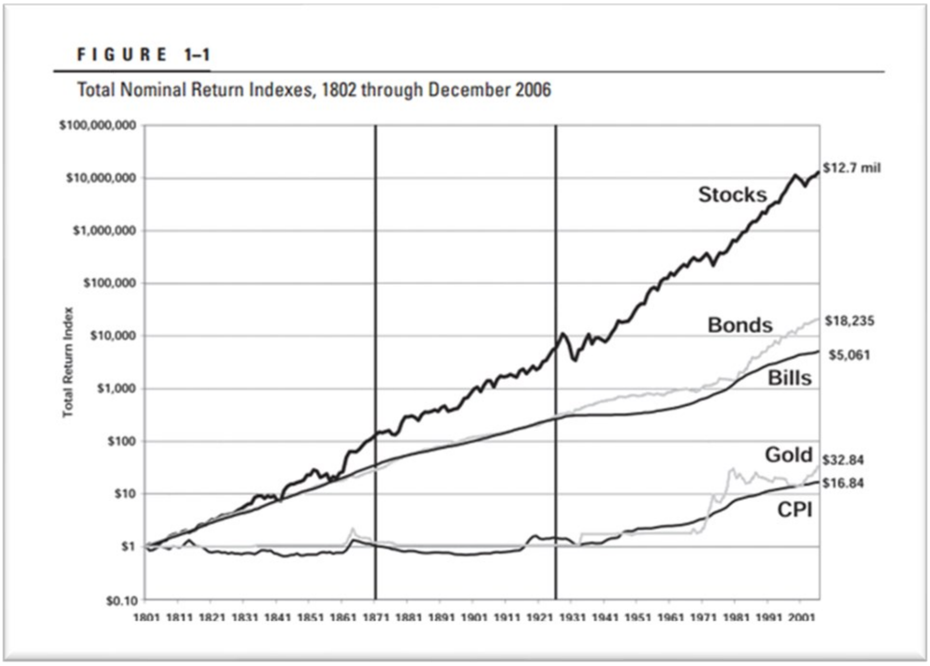
US Bonds and Equities over 50 years



Source: Russell Indices

The next chart demonstrates the same trend over the much longer period of 200 years from 1801.

And the Very Long term – Over 200 Years



Source: Quora

- It is now easy for anyone to invest in listed shares either through collective funds or directly into individual companies through stockbrokers, financial advisors or the cheaper investment platforms such as Hargreaves Lansdown, Interactive Investor or AJ Bell.
- There is also now much greater accessibility for private investors, with a computer connected to the internet, to access and download a vast range of information covering most equities that are listed on the major international stock exchanges
- There are many publications and websites covering, and containing analysis of, the majority of shares that are quoted on the main western stock markets.
- Although the latest analysis of companies undertaken by traditional City researchers may only be available to institutional investors there is a growing body of quality corporate analysis that is paid for by companies that is available free to private investors (for more information on sources such as Edisons and Equity Development see section 6)

The Negative factors relating to equity ownership must also be appreciated. These include:

- The risk of partial or complete loss should the individual underlying business fail
- There are periods, usually when interest rates are falling, when investment in bonds produces greater capital gains than in equities
- External factors, such as major falls in economies and stock markets, may drastically reduce the value of specific shares or whole sectors even if the business is itself quite sound

- Shifts in technology, such as the recent rapid growth in online retailing and the rise of financial technology, may render existing sectors (high street retailers and traditional banks) uneconomic

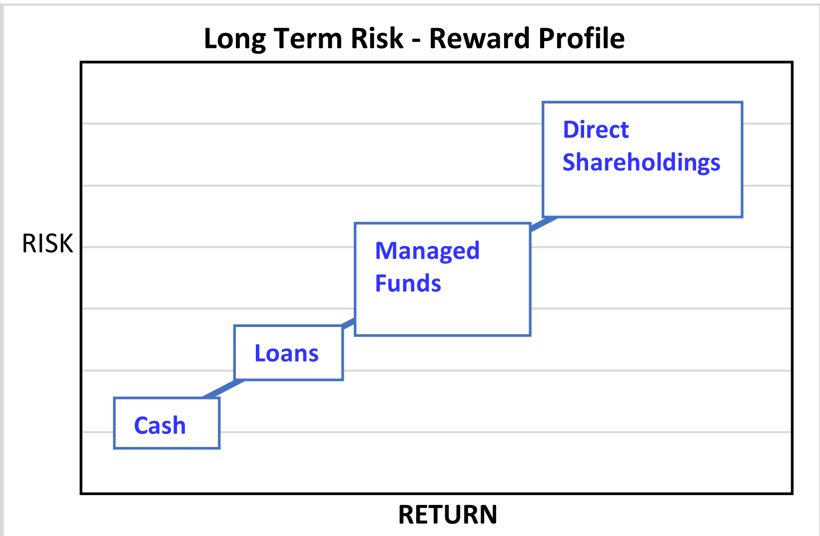
Given that the investment selection process in traded markets is driven by the interplay between fear and greed serious investors should employ an evaluation toolkit that uses methods for diagnosing both positive factors, usually featuring a combination of growth and value, as well as risk reduction ones that help to reduce losses. This Guide will include information and compare methods that deal with both these key features.

Determining investment priorities and assessing your own attitude to risk

The reasons for wanting or needing to invest are many. They include; building up a fund to provide an income in retirement usually referred to loosely as a pension, putting surplus cash aside for “a rainy day” and, not least, a desire to “make money”. In this Guide we are dealing with what is generally termed long-term investing rather than trading. The latter referring to short-term buying and selling shares with the aim of making a quick profit over no more than a few days, weeks or even hours in some cases.

An equally vital decision to make is that of your personal attitude to risk. Any investment in shares is risky in that the amount invested could fall dramatically given adverse news relating to either the specific investment or the wider market. Assessing your own attitude to losing money is extremely important. Sleepless nights and damaging your health and well-being are rarely worth it. So, if the thought of seeing the value of your investment dropping suddenly, or slowly, is likely to fill you with dread it is probable that investing in shares is not for you.

On the other hand there is no such thing as complete safety given that monetary inflation can speedily erode the true value of nominal investment gains on cash deposits although the loss of worth, in what may be termed a “normal” economic environment often proceeds at a relatively slow pace and is therefore easily ignored. This aspect really brings us to the trade-off between risk and reward that may be simply illustrated in the chart below. This shows that risk and reward tend to march in tandem.



Linking businesses with their owners – reducing the accountability gap

Accountability is a vital factor in 21st century life and is particularly relevant to the need for communication between large companies and their private shareholders as ultimate owners of the business. The relationship between business managers and the owners of their businesses is greatly diminished when intermediaries such as professional investment managers and institutional investors are the primary link in the ownership chain. It can be argued that private investors have a more direct interest in their underlying investments than those with a more indirect stake. Thus, private investors have an important role in securing stronger accountability linkages in the investment sector.

The increasing employment of digital systems and management wrappers through which private investors hold their shares (in the UK these include SIPPs for pensions and ISAs for savings) has further reduced the linkages between corporate management and individual shareholders. This is because the shareholdings are held in nominee accounts rather in the names of each shareholder. However, not all developments have been negative as these same digital channels enable investors to access a wealth of information with the click of a button.

The excitement and interest of discovering more about successful businesses

From the personal viewpoint it can be fascinating to follow the developments taking place in the businesses in which you are an owner, even if your ownership is only of a small proportion of the total. Many senior company managers and directors also like to keep in touch with private investors giving them a more personal relationship than is often possible with the large institutional owners. Against this there are also many senior corporate managers and directors who view private investors as a pain in the neck and a distraction from the main business of running their company.

In terms of increasing the linkage between company management and investors it is fair to say that the two main entities representing UK shareholders, namely UKSA and ShareSoc, are arranging an increasing number of meetings between their members and company directors. These efforts are beginning to redress this information imbalance and lack of accountability but much more needs to be done and the STAR Investor Hub is intended to help in this process through the following initiatives:

- Providing a regularly updated register of reliable information sources on listed equities
- Meetings with company managements
- Competitions to encourage the testing of the most effective methods of share portfolio management adopted by private investors
- Occasional talks/seminars given by leading analysts and commentators

3 The Investosphere

This section deals briefly with some of the major external variables that need to be evaluated, or at least considered, in terms of their relationship to individual businesses and companies. Although this Guide focuses specifically on equity investment, rather than alternative asset classes, it is important to understand the fundamental forces that shape successful investment decisions in the context of the wider financial world or what we might term the **"Investosphere".** This term, that I have recently coined, effectively encompasses the main drivers of both the domestic and international economy as well as the forces influencing the supply and demand for specific investment sectors and the share prices of individual companies. In turn, a full background analysis should take account of the most basic trends that include national and global movements in population; technological innovation and economic growth; as well as the monetary measures such as money supply and interest rates.

It is at this point that many investors and commentators will assert that "the market" deals effectively with the myriad factors at work in the wider financial and economic environment. Given the amount of human, financial and technical resources that are concentrated on the Investosphere this a valid point of view but it is still important for serious investors to understand the basic factors at work here. It is also worth stressing that there are numerous reasons why it is in the interest of key players in this field to manipulate market movements when it suits them. One example of this is the recent expansion in the role played by professional short sellers.

The valuation paradox – the currency variable

The first point that needs mentioning is that there is a major problem with the valuation tools that we use in making our investment decisions in that the measuring device we all use is inevitably money which is itself a flexible entity and is usually expressed in a specific currency, such as the US dollar, the Euro or in the case of UK-based investors the pound sterling. The valuation of currencies is, of course, a complex study in its own right but is nonetheless vital in terms of assessing the worth of investments. The difficulty for investors is that the movement of currency exchange rates not only impacts the profitability of businesses that trade internationally but also exerts a direct impact on the underlying value of shares and portfolios expressed in the investor's domestic currency. For example, a fall in sterling against the dollar will enhance the value of dollar denominated investments and vice versa for currency movements in the opposite direction.

This chart illustrates the movement in the exchange rate between the US dollar and the pound sterling between 1971 and November 2020 and shows that the value of sterling against the dollar has fallen by just under 50% over the past fifty years or, conversely, the dollar has appreciated by over 80% against the pound. Currency movements are thus an extremely important force in assessing the relative value of alternative investment options when both buying and selling internationally traded shares.

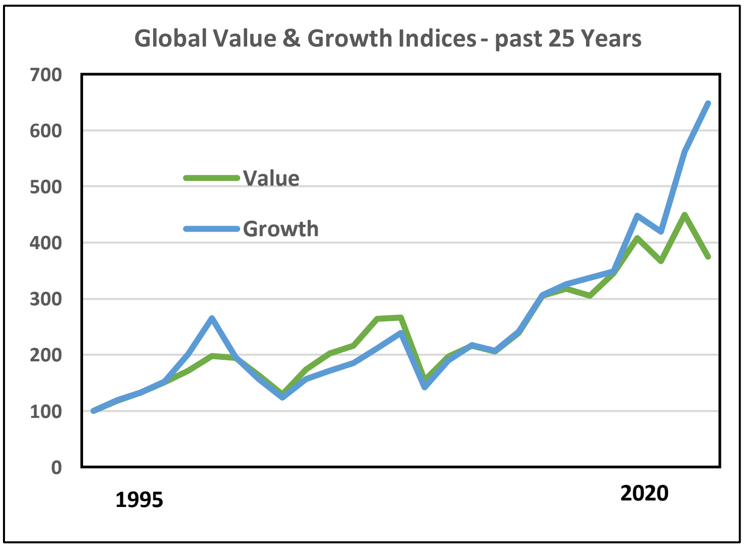
Cryptocurrencies – a digression

More recently, and by that I mean within the past 10 years, the emergence of cryptocurrencies has added yet another twist to the volatility of our monetary measurement tools. The best-known cloud currency is Bitcoin. This started life after the 2008/9 financial crisis and by early 2010 was still valued at less than one US cent per unit but in that year began to attract speculative interest rising to more than 8 cents and by April 2011 was worth $1. Then, by June it had jumped to no less than $32 but this was followed by a collapse to $2 in November.

This extremely volatile pattern has been repeated in the following ten years with massive price gains followed by huge percentage falls but with each subsequent rise reaching new peaks so that by late February 2021 one bitcoin was trading at the equivalent of more than $58,000. It is worth noting that the valuation of this so-called currency unit is still quoted in terms of its value to the dollar and other widely accepted currencies. However, one of the defining features of any currency is surely its ability to fulfil the role of facilitating transactions. This requires not only a degree of relative stability in valuation terms but also the ease with which the currency can be used for millions of small daily transactions. Successful currencies enable daily transactions because the defining units, be it the Dollar, Euro, Pound, Yuan, Peso or any other national monetary unit is sufficiently small to facilitate a myriad of regular low-value financial transactions. The fact that Bitcoin is now so massive makes it a persuasive speculative investment but does not qualify it as a currency in the generally accepted meaning of this term.

Valuation relativity

The value of any entity is expressed in relation to something else. In the case of investments this usually relates to a comparison with the price or return likely from alternative assets in the same class. For example, the value of a share in a bank will initially be compared to that of another bank that operates in a similar marketplace. The same procedure applies when comparing the prices of other asset classes such as real estate with the valuation of a row houses in a city street readily comparable



to another house in the same street and in similar condition while the value of an isolated castle may have no realistic comparator. The valuation difficulty for equities really emerges when a new business in an emerging sector without a profitable trading record comes to the stock market via an offer for sale. In such cases investor enthusiasm may lead to dangerously euphoric valuations.

Drivers of Global and Domestic Economic Growth

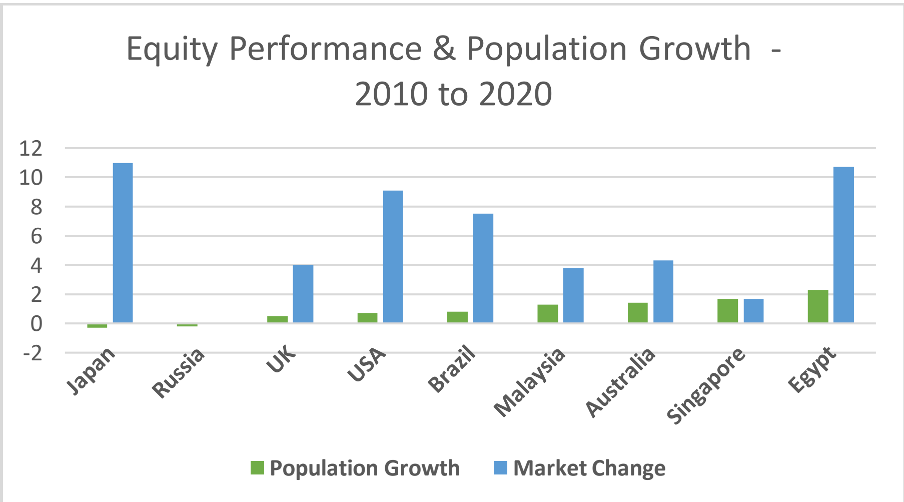
The backdrop to all corporate activity is, inevitably, the perceived outlook for the world economy and more specifically that of the domestic economies in which companies and their subsidiaries operate. As investors generally use forward-looking economic estimates, we find a major flaw in this part of the Investosphere: forecasts of future trends in economic growth are often wrong. Furthermore, few economists and investment commentators have proven their ability to predict major directional changes, either up or down, in the investment environment.

Population Growth

The key determinants of basic economic growth have usually been assumed to be changes to national and international populations combined with the levels and uptake of innovation. In past analyses of economic growth it has often been the combination of population growth and energy consumption that have proved reasonably accurate indicators of the future direction of investment markets. However, these particular drivers tend to operate over longer periods of time, not the shorter time horizons usually of interest to private investors.

In order to test whether there seems to be a meaningful correlation between the population growth rates of leading economies and their national stock markets, I unearthed the indicative population growth rates for leading economies. I then compared those rates with the movement in leading national stock market indices over the past ten years. The results are tabulated in the chart below that compares the average annual market gains, or losses, for each market against the average annual change in population for each country. The markets are arranged in ascending order of population growth (the green bars) from left to right with Japan recording an annual fall in population of 0.3% to Egypt with a yearly population gain of 0.3%.

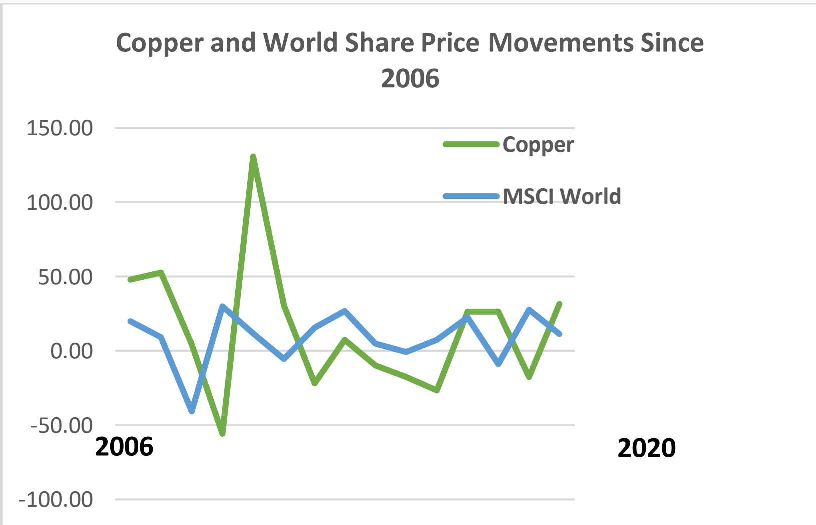
The performance of the Japanese share market is somewhat surprising as the high average annual advance in the stock market of over 10% for the past ten years has occurred despite the steady fall in the total national population. However, Russia, another large country with a negative population growth rate does conform to the notion of a linkage between these two metrics as does Egypt with average annual population growth of over 2% and market gains of more than 10% each year since 2010.



Movements in Key Commodity Markets

For those who wish to understand the likely movements in share markets it is generally thought useful to study prices of leading commodities such as copper, iron ore and crude oil. Gold is also a barometer of political and economic uncertainty with the gold price often moving up in parallel with rising levels of anxiety.

As copper is an important constituent of the electrical and electronics industries as well as being essential in the construction sector the demand for this metal is an effective guide to changing levels of confidence and activity in the real economy. The linkage between the global price of copper and world stock markets is traced in the graph on the next page that records the percentage movement in copper prices over the previous year against the following year's change in the MSCI World Index that covers more than 1500 of the largest traded shares. Apart from the spike in the copper price around 2010 the recent correlation has been quite strong with the latest movement in the price of copper (2020/2019) possibly indicating a strengthening of share markets in 2021.



Supply and Demand for Shares

The actual price of shares listed on regulated markets is ultimately shaped by supply and demand. Supply of shares, often represented by professional dealers and brokers, interplays with the demand from potential investors. The factors influencing the supply and demand equation are inevitably complex and numerous and may be simply divided into ***Fundamental*** and ***Technical***. The former encompass all data relating to the past, current and future trading activities of the underlying business. These are the factors on which this Guide primarily focuses. The latter, so-called technical drivers, concentrate principally on the movement in the value that the market places on the business through the analysis of charts representing the share price history of shares and other indices.

Initial Public Offers

One of the main arguments in support of stock markets is their role in raising money to finance business expansion and development either through the issue of loans or shares. The way in which equity cash is raised is either by means of an offer of its shares for sale publicly for the first time through an Initial Public Offer (IPO) or, for a business that is already listed, through a rights issue of additional shares to existing shareholders. Although public offers of shares may well offer investors an excellent opportunity to buy into a new company it is always worth remembering that such offers still reflect the underlying forces of supply and demand.

While the demand portion of the equation may well be a unique opportunity for private investors to “get in on the ground floor” of a company’s trading life, it may also be a moment when, on the supply side, the existing owners are offloading shares at a price to suit sellers rather than buyers. It is therefore essential that interested investors peruse the offer documents that are made available through the stock exchange before making an application to buy shares.

One of the advantages for investors is that offer documents often provide more detailed information on a company’s trading history than at any other point in the company’s life as more control and oversight is, or should be, exercised over the information in the IPO documents than may be the case with subsequent interim and annual reports.

Short Selling

During the past fifty years there has been a huge change in the way that international bourses operate and in the composition of the leading actors in this field. Short selling is the practice whereby influential investor groups, such as hedge funds and private equity interests, sell blocks of shares that they don’t actually own but they “borrow” for a fee from existing owners with the objective of buying them back later at a lower price.

Environmental, Social and Governance (ESG) Issues

The fact that the inhabitants of this planet are facing increasingly negative pressures on future living standards stemming from rapidly rising demographic growth combined with ever more energy demanding lifestyles is focusing attention on the relevance of the traditionally accepted growth drivers of investment. Apart from doubts about the relevance of Gross Domestic Product (GDP) as the key measure in evaluating the progress, or otherwise, in human welfare the whole field of economic externalities, otherwise termed the costs of economic growth, is quickly taking centre stage in the Investosphere.

One the most obvious, and well flagged, problems is of course climate change but the ferocity of the recent Covid-19 pandemic is an additional wake-up call for the need to re-evaluate the whole attitude to ESG factors when considering investment strategies. This awareness is giving rise to approaches to investment that feature screens incorporating measures targeting the environment, sustainability and the quality of corporate governance. These ESG measures are increasingly being used by fund managers and other institutions in their selection of shares for their portfolios.

More specific information on ESG criteria and investment opportunities is set out in a separate detailed note.

Accountability - between companies and shareholders

A number of factors have been at work to alter the vital level of accountability between listed businesses and their ultimate owners. It is worth noting the breakdown in ownership of listed companies as the proportion of shares owned directly by private investors has declined significantly over the past fifty years.

These may conveniently be divided into positive and negative forces and include the following:

Positive trends strengthening accountability

Rising availability of corporate information services that are easily available to private investors via the internet *(see section 4 on sources of data*)

Growth of independent firms making paid-for corporate research available to all free of charge

Who are the ultimate owners? Direct private shareholders, holders of unit trusts, investment vehicles, also pension investors

Negative trends weakening accountability:

Increasing use of agencies between companies and ultimate owners due to increasing use of nominee accounts for wrapper accounts such as ISAs and SIPPs

Growth of private equity and hedge funds whose primary goals are often short-term gain rather than long term vibrancy of the business.

Putting these factors together

The prime objective of this Guide is to pull together the most relevant of the above-mentioned key Investosphere drivers, in order to develop an investment screening methodology that is practical, up-to-date and ultimately profitable.

4 Alternative equity options for private investors in the UK

Management alternatives for smaller investment pots

Not everyone wants, or is able, to invest enough money to build up their own portfolio of individual shares – at least initially. Buying shares, even in the low-cost medium of the trading platforms such as Hargreaves Lansdowne and Interactive Investor, incurs fees, arbitrage costs (the difference between buying and selling price) and duties. For smaller sums it may therefore be advisable to invest initially in some form of collective investment fund.

The business of financial advice, wealth management and specialist investment management has grown massively over the past decades in line with the increasing globalisation of business and investment not to mention the ever-increasing complexity of personal taxation. The downside of these trends is the growth in management and advisory charges that are levied by most of the professional services involved in this lucrative sector of the modern economy.

The annual management charges for complete management vary from less than 1% of the value of the total assets under management up to 2% although other costs relating to dealing and security may increase the total costs levied. If the value of the whole portfolio is rising by 10% or more each year these costs may seem worthwhile but if asset values are static or falling and the annual income from the whole portfolio is, say, no more than 3% then the charges may well be absorbing up to half the total return in any one year.

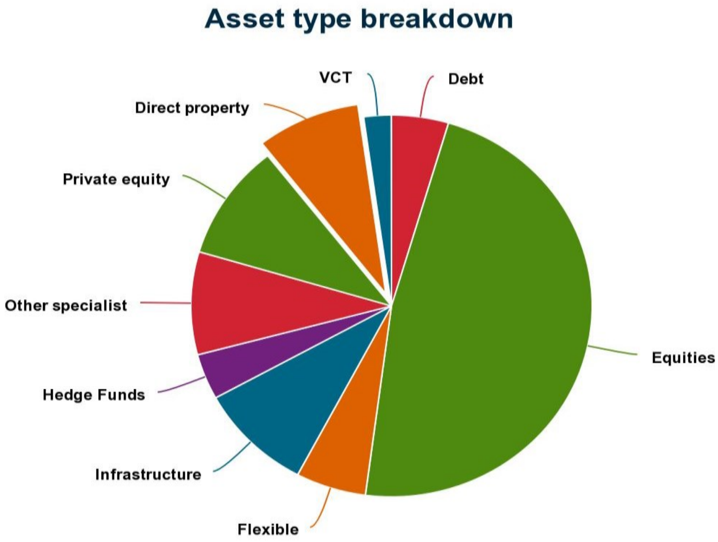
Honing in on the specific types of collective funds that are available in the UK for private investors, there are, in essence, two types; closed ended and open ended.

Closed ended funds – Investment Trusts and Venture Capital Trusts

This term refers to corporate entities whose sole purpose is to invest in a portfolio of listed, or occasionally unlisted, businesses and in which investors purchase shares, in the same way as any other company listed on a regulated stock market. They are closed ended because investors increase or decrease their holding through the purchase or sale of shares that are already traded on the market. The price of the fund is thus determined by the supply and demand for the trust's shares rather than the value of the underlying assets. It is thus possible for the share price of a quoted fund, whether an investment trust or a venture capital trust, to be traded at a premium or discount to value of the underlying shares and businesses in which the trusts are invested.

There are several large UK-listed investment trusts such as Foreign & Colonial (F & C), Alliance Trust and Witan that have been established for more than 100 years. In fact, it is generally considered that the F & C Investment Trust, which started life in March 1868, is one of the oldest such investment companies in the world. In similar vein Alliance Trust was first listed in 1888. These trusts, each with assets of more than £3billion, enable investors to take an indirect interest in businesses throughout the world and receive dividend payments quarterly.

The UK-based investment fund industry is very well established with almost 200 specialist management groups with total assets under management of some £200 billion as at end 2020.



Breakdown of Investment Trust assets by Sector

Sources of information

The body representing investment trusts is the Association of Investment trust companies. Their very helpful Website may be found at: www.theaic.co.uk

Information is also available free of charge on the websites of the investment platforms such as Hargreaves Lansdown, Interactive Investor and the management companies themselves

Open ended funds – Mutual Funds, Unit trusts and Exchange Traded Funds

This is a huge investment sector, estimated to have global assets of more than $50 trillion. Open-ended funds trade under the term of mutual funds in the USA, Unit trusts (UTs) and open-ended investment companies (OEICs) in the UK and also include Exchange Traded Funds (ETFs) that offer similar exposure and tend to mirror market indices. All these funds are managed by professional managers and operate by creating or liquidating new units each time investors buy or sell their holdings.

There are advantages and disadvantages to each type of these types of investment fund but all enable an investor to spread their risk by investing in a wider range of underlying holdings than would be practical or cost effective for someone without large cash resources. The main disadvantage is that all managers charge fees that have to be paid for by the investor and some managers levy substantial charges. Generally, the total charges tend to be higher for open-ended funds as there is often a spread of several percentage points between the buying and selling price of units which are directly related to the value of the underlying assets.

Sources of information

The body representing the unit trust industry in the UK is the Investment Association whose website is: www.theai.org

Information is also available free of charge on the websites of the investment platforms such as Hargreaves Lansdown, Interactive Investor and the management companies themselves. For website addresses of the main investment platforms and brokerages see section 6 on data sources

Advantages of collective funds

1 Spreading risk through many holdings
2 Access to knowledge that is not readily available to private individuals
3 Entry to national stock markets that are difficult or expensive for private investors.

Disadvantages of collective funds

1 Investors in collective funds are distanced from the companies in which their money is invested
2 The charges levied by some management groups are substantial and thus may reduce total returns
3 It may be difficult to sell when markets suddenly turn negative

Direct Share ownership

Although it is possible to acquire and own shares in companies whose shares are not listed on any public market the vast majority of equities owned by private investors are dealt with through established stock exchanges such as the London Stock Exchange and other national stock markets.

Shares in listed companies were traditionally held in the form of paper certificates with the name of the owner and the number of shares printed in their name on the certificate and registered on the company's share register.

Different countries now have different systems of managing share ownership records but since the "Big Bang" in Britain in 1986 the majority of shares are now held electronically by agents on behalf of the beneficial owners.

It is still possible for private shareholders to own shares directly with their names registered with the company in which they are invested but to do this each investor has to have their Crest account which is not an easy option for small investors. Furthermore, investors whose holdings are held in tax efficient wrappers such as Individual Savings Accounts (ISAs) and Self Invested Pension Plans (SIPPs) are required to have the accounts managed by registered stockbrokers and to hold them in digital format.

5 Lessons from the Maestros

The role of equity investment in the wider planning of your finances

We wish to re-emphasise at the start of this section that the first priority is for you to decide on the place of equity investment within your overall financial planning strategy. If you are in any doubt about this, all the available advice stresses that you should discuss this vital planning aspect with a qualified adviser who is able to help with all legal and taxation factors relating to a balanced overall strategy. If you are considering share investments, choose your strategy and components with care. It is vital to take account of a few key variables. These include:

- Personal and family financial priorities
- Attitude to risk
- Personal interest in investment per se
- Ultimate investment objectives
- The amount of time that you are able, and wish, to spend on investment selection and management

Distinction between *Trading* and *Investing*

Before delving into the specific details of company share analysis it is important to distinguish between the factors that relate to decision making for short term trading and those used for longer term portfolio investment.

Trading

Traders tend to focus on the technical market forces that move share prices in the short term. In the days before the globalisation and digitisation of the financial and investment world the short term was defined in days or possibly hours but in the 21st century the large active professional traders often time their deals in seconds or even nanoseconds.

It is not the intention of this Guide to delve in any detail into the vast range of data and signals that are used by market traders. These range from the traditional study of charts that trace the movement in prices of shares, commodities, currencies and other traded items to the use of highly sophisticated algorithms for dealing in a wide range of equity related assets and derivatives. As an increasing number of market participants such as hedge funds and private equity groups have joined the established trading groups the short-term forces operating in international markets are exerting more and more influence on the movement in prices.

In addition to the pricing signals already mentioned, these market operators also follow the strength of short selling positions (the number of shares that have been sold by traders who have "borrowed" them from existing owners in the expectation that the price will fall so that they can buy back later at a lower price) and all other factors that are likely to influence the short-term movements in share prices including corporate and sector news releases. As both the UKSA and the STAR screening processes focus on longer term investing this Guide does not feature the separate signals used by traders.

Investing

This Guide concentrates on the chief methods that have been developed and employed by successful investors to generate longer term results that outperform the basic indices. The analytical methods that we describe primarily relate to the two fundamental approaches used to filter out the most promising candidates for investment namely, Value investing and Growth investing. The Guide will also touch on alternative aspects of the "Investosphere" such as Momentum Investing, short selling and the expanding field of ESG (Environmental, Social and Governance) criteria as all these forces impinge on the wider valuation metrics.

Learning from highly successful professional investors in the USA and the UK

In the USA the essential elements of the value methods of assessing investments grew out of academic and practical investment research carried out by the American economist and investor **Benjamin Graham**. His work, in the first half of the 20th century, highlighted the importance of seeking out businesses that could be bought below their intrinsic value. One of Graham's best-known pupils is the highly successful investor **Warren Buffett** who, together with his partner **Charlie Munger**, has achieved consistently high returns for investors in Berkshire Hathaway, his listed investment business. However, Buffett admits that he has had to adapt Graham's key tenets as conditions alter.

The list of useful guides to successful investing also includes other Americans such as **Mike Lynch, John Templeton** and **T Rowe Price** who have made large amounts of money for themselves and their clients by following the same basic tenets that were pioneered by Graham. More recently names from across the pond include **Joel Greenblatt** who popularised the Growth at a Reasonable Price (GARP) approach through his book entitled "The Little Book that Beats the Market". His selection screens filtered out companies for investment that combined a high return on invested capital with a low valuation. More details on the Greenblatt GARP screens in section 7.

In the UK, which is of course a much smaller market than the USA, success has been chalked up by Anthony Bolton, who like Mike Lynch was also a Fidelity manager, and made his stock-picking name running the Fidelity Special Situations fund. However, a much earlier successful investor was **John Maynard Keynes**, the early twentieth century academic and public sector economist whose eponymous economic theories helped national economic recovery but who was also a high achieving investor for his university college and his personal wealth.

Another name from few decades ago is that of **Jim Slater**, an accountant and keen investor and writer, who made his mark as a successful professional stock picker, for a limited period in the second half of the twentieth century, with his book "The Zulu Principle" and his listed company Slater Walker Holdings. His main contributions to investment analysis were the concept of the PEG Ratio which measures a company's Price Earnings Ratio divided by its annual earnings growth rate and the publication of data for private investors cleverly entitled "Really useful Financial Statistics" otherwise known as REFS.

Turning to the twenty-first century, **Terry Smith**, who initially made his name with his book "Accounting for Growth" that was published in 1992 and criticised the growing practice of creative accounting, has created wealth for investors with his Smithson funds. Even more recently investment manager James Anderson who adopts much more growth-oriented policies at investment managers Scottish Mortgage has proven to be a highly efficient wealth creator with his global growth-focused strategies.

Benjamin Graham

Often referred to as the father of value investment Graham was both a highly respected British-born American academic economics professor and a successful practical investor. It was Graham who, in his widely read books "The Intelligent Investor" and an earlier book "Security Analysis", set out the objective of seeking out intrinsic value when selecting stocks for investment.

Graham peppered his writings and lectures with pithy aphorisms about investment. These focused on the need for undertaking sound research and analysis highlighting one-liners such as "**buy not on optimism but on arithmetic"** and "**never delude yourself that you're investing when you are speculating"** and **"individuals who cannot master their emotions are ill-suited to profit from the investment process".** He also opined that **"Businesses, organisations, financial institutions and regulations may change but human nature remains the same".**

Continuing in the same vein he commented that **"people who invest make money for themselves while those who speculate make money for the brokers".** It was Graham who advised investors to **"buy when both the experts and the crowd are pessimistic and sell when they are optimistic"**. This latter point has been repeated by both warren Buffet and John Templeton.

One may well question how successful Graham was as an active investor. According to various press reports his funds achieved average annual gains of approximately 20% in the twenty years from 1936 to 1956 against index gains over the same period of 12%.

Peter Lynch

The reason that Peter Lynch is included in many lists of successful investors is that under his management the Fidelity Magellan Fund grew the value of an investor's $1000 in 1977 to $28,000 by 1990. He explained the reasons for this success in his book entitled "Beating the Street" that was published in 1993 and his basic investment philosophy that powered his success in his first book "One up on Wall Street". Over this period of 13 years he managed to achieve average annual fund gains for investors in his Magellan Fund of just under 30% against the US market benchmark gains of little more than 3%. This is a phenomenal achievement as he has beaten "The Street" as he calls the wider market by more than 25 percentage points over a 13 year period. However, the timeline for his record is a lot shorter than that of his peers that are summarised in the chart below.

Peter Lynch

Although Peter Lynch is not as well known in the UK as US-based investment stars like Buffet, Soros and Templeton he represents a successful professional investor who was able to retire from Fidelity at the very young age of 43. However, it should be noted that the main reason for this early retirement was that he realised his life was totally taken up with investment to the detriment of his family. Even in the 1970s and 80s he had been putting in long office hours, usually starting soon after 6am and often working at weekends.

Lynch's success can be nailed squarely on his commitment to hard work and continual study of all aspects relating to the companies in which his fund was buying, holding and selling and summarised by his injunction "to invest in what you know".

Warren Buffett

It is probably fair to say that Buffett has become a legend among a large number of private investors and even non-investors, for his ability to grow the value of his quoted investment fund Berkshire Hathaway over longer periods than other fund managers. Like his mentor Graham, Buffett is regularly quoted in the press and online for his pithy home-spun comments about investment.

Warren Buffett

His basic methodology is fundamentally not too dissimilar to that of Graham, his early mentor, as he targets the key corporate financial metrics starting with the **return on equity (the company's net income divided by total issued equity)** and this is evaluated over at least the past 5 years in order to get a valid picture of the strength of the underlying business. An important component of the income measure is, in turn, the **operating efficiency as determined by dividing net income by net sales**. In terms of fundamental strength, the **pricing power of the business or what Buffett terms competitive advantage** is also important for generating increasing profits in the future so he steers away from commodity producers who are usually what are termed price takers, unable to influence the final price of their product in a competitive environment.

A further vital measure is the amount of borrowing with a **low debt to equity ratio (total liabilities divided by total equity capital)** preferred. Having done the basic analysis Buffett's ability lay in his, and that of his partner Charlie Munger, to determine the cheapness of the business, rather than the share price, by **calculating its intrinsic value** (shades of Graham) and comparing this to the market capitalisation (the number of shares in issue multiplied by the current share price).

So, having outlined Buffett's basic investment philosophy and methods it is valid to ask how successful he has been. I have researched the price of his Berkshire Hathaway fund since 1980 and compared that to the index value of the S & P Index over the same period and discovered that the index gained on average just under 9% annually over this forty-year period while the share price of Berkshire Hathaway climbed by just under 20% each year over the extremely long period of 40 years. To beat the market over such a long period is amazing as it covers varying economic and financial cycles thus requiring a degree of stability and perseverance in the investment decision making process that has been un-matched by other professional managers.

Joseph Piotroski

Chicago University's Professor of Accounting Joseph Piotroski is included briefly in this section because he developed a system for evaluating stocks that was based on nine accounting criteria covering three corporate accounting categories dealing with **Profitability**, **Monetary measures** such as cash resources and borrowing levels and **Operating Efficiency**. This system became known as the Piotroski Score with shares rated 8 or 9 being the most attractive while those rated with 2 points or less considered poor value.

The reason I include Piotroski in this section is that in a paper he published in 2000 Piotroski demonstrated that when he back tested his evaluation system between 1976 and 1996 this scoring system would have returned no less than 26% annual growth in this 20-year period. In order to achieve this high return the investor would have had to purchase stocks scoring 8 and 9 while shorting those with scores of 2 or less. Furthermore, back testing is no guarantee that the performance in a particular period will be repeated in the future. The much longer period, of over 30 years, that the STAR screening methods have been operating proves that the efficacy of specific methods varies with changes in the broader economic and financial universe.

Anthony Bolton

One of the most successful UK-based professional investors in the latter decades of the twentieth century must surely be Anthony Bolton who enriched the fortunes of investors in his Fidelity Special Situations Fund by turning an investment of £10,000 in 1979 into almost £1.5m when he retired more than 20 years later.

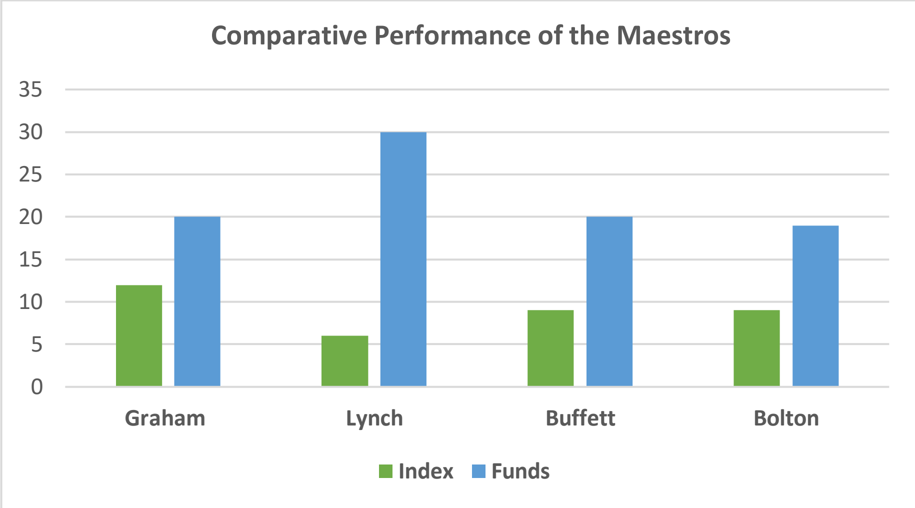
Anthony Bolton

Although Bolton never sought publicity regarding his investment selection methods he has mentioned a few key fundamental aspects of his investment methodology. As with many professional investors he always placed high value on personal meetings with the directors and management of companies that were potential or actual investment targets. He was also a believer in moving against the herd. In this respect he followed some of the methods employed by people like John Templeton who always professed to accommodate buyers in shares that he thought were over-valued and help out sellers in stocks that he thought were cheap. Unlike most successful long term investors Bolton found the use of charts and technical analysis useful as a support to fundamental analysis.

Bolton's success is clearly measured through the performance of his quoted fund and this shows that he managed to achieve a compound annual return over more than 20 years of 19% against the UK All Share Index return of 9% over the same period.

Summary of the Maestros' Performance

The chart below highlights the comparative performance of these successful investors and draws the conclusion that such consistent returns must contain lessons in investment selection that are useful for us all.



Applying the key lessons from these investment maestros

First of all, it is clear that none of the investors mentioned above has chalked up these long-run successes without a lot of hard work. The diligence that they have each applied to the task of selecting and subsequently managing portfolios of equities implies that it pays us all to think carefully about our basic objectives. We need to employ the most appropriate modus operandi to meet these aims while also being most suitable for our personal preferences. For those who do not wish to get closely involved in managing their investments directly it may well be preferable to select superior expertise to do this, always remembering that it is difficult to spot the Lynchs, Buffetts and Boltons in advance. For those who wish to be more hands on it is worth spending time in using most of the following specific analytical criteria.

Determining this intrinsic value requires careful research into the key financial and economic determinants of business success. These focus on:

- The strength and direction of both national and international economies
- The past record and likely future trends of industrial and commercial sectors within economies and increasingly at a global level
- The place of individual businesses within this wider global and sectoral context
- The total capital employed in the business
- The level of borrowing related to equity capital (gearing ratio)
- The overall efficiency of the business as measured by the return on capital employed
- The record of growth in sales as an indicator of business growth
- Business efficiency at the operating level as represented by operating margins (measured by sales less variable costs)
- Ownership measures that assess the proportion of annual earnings after deducting all fixed and operating costs that is available to; a) maintain the business (depreciation & amortisation) b) to expand it (R & D and capital expenditure) and c) pay the owners a dividend

In Section 7 we demonstrate how it is possible to develop an equity screening process that incorporates most of these key metrics in dynamic spreadsheets.

6 – Sources of Data and Information

6.1 The Need for Accurate Data

Getting hold of accurate and reliable information is vital for any serious analysis of individual shares and the wider financial sector. Although private investors are unable to access the wide range of consensus estimates that are often available to professional managers, there has been a massive increase in data flows that can be accessed by the public over the past couple of decades and most of this is quickly found on the internet.

This section lists some of the major sources of investment-related information that may be used to aid in your analysis and search for profitable shares. Needless to say, given the size of the US population, US-based investors have a greater range of choice in terms of reference material than UK-based investors but any investor who has access to the internet really does have a wealth of information at the touch of a computer button.

Whilst references given in the sections below are far from complete, they will enable anyone interested to begin serious and useful research into the main topics relevant to an educated search. These cover the following key areas:

- **Basic economic and financial information**
- **Fundamental sector and company data and analysis**
- **Technical market data and charts**

In the past, specific company information was provided in printed form. Those who were involved with investments professionally in the middle of the last century will remember the Extel and Moody's cards that contained financial data on all listed companies. These cards were reprinted frequently and stored in box files but were only available on a subscription basis and therefore generally only used by professional investors or those with substantial wealth.

Currently the main sources of information that are likely to be employed by private investors include the following:

- **Books, Printed articles and studies** from newspapers, periodicals and one-off studies
- **Online sourced material** that may be viewed or downloaded without charge or through subscription services.
- **Word of mouth recommendations and tips** are one of the most notoriously unreliable sources that should hardly ever be used as they are usually inaccurate and if not are probably illegal. My personal experience from my early years in the City was that brokers' tips generally resulted in commissions for them and losses for myself.

Given the comments relating to the last source mentioned above, this Guide concentrates on the first two only. In order to keep the list of sources down to a manageable length comments will be brief but we supply links to online sources wherever relevant.

6.2 Economic, Financial and Investment Information Sources

A basic knowledge and understanding of the key metrics driving movements in equity markets and constituent shares is helpful, even if not essential, in making successful investment decisions.

Background information on the global, national and sectoral financial and economic scene is readily available from the following sources:

Official Sources

Most official sources are useful because much of their data sets are free and may be assumed, in most cases, to be accurate which is valuable in a period of fake news.

The International Monetary Fund (IMF): Global and country data – www.imf.org
The World Bank: Useful source of country data - www.data.worldbank.org
United Nations Data: wealth of information on economic trends – www.data.un.org
UK Government information: Main source is office of national statistics – www.ons.gov.uk

Financial and Investment News & Data Aggregators

The largest suppliers of general economic and financial information as well as detailed information on individual business sectors, commodities and stocks and shares are US-based and are:

Bloomberg: Major source of US and international data – www.bloomberg.com
Reuters: International & financial news owned by Thomson Reuters - www.reuters.com

Other websites covering general investment information include:

Investopedia: US-based general information website – www.investopedia.com
Investing.com: Useful general purpose investment website – www.investing.com

Banks and Financial Institutions

Leading banks and Financial Institutions make a huge amount of information available without charge. The examples below, mainly relating to the UK and the USA, represent just a few of the many banking websites that provide background information.

Goldman Sachs: Reports on US economy & much more – www.goldmansachs.com
JP Morganchase: Similar size and outlook to Goldman Sachs – www.jpmorganchase.com
Industrial & Commercial Bank of China: For a different perspective – www.icbc.com.cn
HSBC: UK-based international banking group – www.hsbc.com
Lloyds Bank: UK focused banking group – www.lloydsbank.com

Newspapers and Online Sources

The depth and quality of investment information varies considerably between the different newspapers in the UK and abroad. The newspapers and other publications with strong economic and investment content include:

The Financial Times: Probably one of the best newspapers for investment news globally – www.ft.com
The Telegraph: Right wing UK daily with good investment content – www.telegraph.co.uk
The Times: Well respected UK daily with excellent investment section – www.thetimes.co.uk
New York Times: US perspective on business - www.nytimes.com/section/business
Wall Street Journal: Key information source on US business sector – www.wsj.com
The Washingtonpost: Centrist perspective on US business – www.washingtonpost.com
The Economist: Quality weekly with an international perspective – www.economist.com

6.3 Company and Share information

Official Sources

The prime source for information and stock market information on all UK-registered companies is clearly the website of the London Stock Exchange. The LSE is also useful in checking out data on companies planning to list their shares on the market for the first time. This is because the information that has to be provided as part of the listing process is helpful in the investment analysis of that company.

The London Stock Exchange: Information on UK listed companies – www.londonstockexchange.com

Company Websites

The best source for accurate and up-to-date information on specific shares is the company's own website. Key information that may be easily accessed on all corporate websites includes the most recent Annual Reports, Interim and Preliminary reports and trading updates and other announcements that companies are required to upload in order to meet listing obligations. Newly listed companies also make available the prospectus information published at time of their Initial Public Offer

Private Investor Platforms

The three largest UK-based execution-only stockbrokers in the UK are Hargreaves Lansdown, Interactive Investor and AJ Bell. Each of these platforms provides detailed information on all the companies whose shares are traded on the LSE main market and also on the Alternative Investment Market (AIM). However, much of the information available on these online platforms is only available to registered clients which means that few investors will be able to access the full information from all these websites.

Hargreaves Lansdown – Largest UK platform (1.3m clients £96bn AUA) – www.hl.co.uk
Interactive Investor – Many articles and data on investment (0.35m clients £30bn AUA) – www.ii.co.uk
AJ Bell – Recently listed on LSE main market (0.29m clients, £56bn AUA) – www.ajbell.co.uk

Share Information Services in the UK

Sharescope: Detailed daily share data on UK and international shares – www.sharescope.co.uk
Stockopedia: Share ranking and screening online – www.stockopedia.com
Investors Chronicle: Weekly publication in printed & online formats with detailed comments on UK-listed companies – published regularly since 1860 & owned by FT Group – www.investorschronicle.co.uk

Share Analysis of Specific Companies

As the provision of detailed analysis of individual companies by the largest stockbroking sellside teams of analysts has gradually reduced so some of the analytical void has been taken up by paid-for research by independent corporate research companies.

The list below details some of the services available that provide more detailed information on individual shares.

Company	Link	Focus
Arete research	www.arete.net	For institutions
Autonomous research	www.autonomous.com	Global finance sector
BCA research	www.bcaresearch.com	Part of Euromoney Institutional research
Edisongroup.com	www.edisongroup.com	Company research - free
Equity Development.co.uk	www.equitydevelopment.co.uk	Company research - free
Hardman & co	www.hardmanandco.com	Company research - free
Morningstar.co.uk	www.morningstar.co.uk	Subscription service
Progressive-research.com	www.progressive-research.com	Company research - free
Redburn	www.redburn.com	Analysis for institutions
The analyst	www.theanalyst.co.uk	For institutional clients
Trusted sources research partners	www.tslombard.com	General analysis institutional subscribers
Trustintelligence.co.uk	www.trustintelligence.co.uk	Fund analysis free
Whiteboxquant	www.axioquant.com	Quant management services

General Investment

It seems that most successful investors like to write about their achievements with the result that those keen to study other people's methods could easily end up with bookshelves groaning under the weight of often repetitive themes and spend too much time on reading and not enough on research and action.

Despite this reservation, this section ends with a list of some of the more interesting and useful books on investment.

Investment Generally

Blood in the Streets – 1988 Lessons from history by James Dale Davidson & William Rees-Mogg
The Great Reckoning – 1991 by James Dale Davidson & William Rees-Mogg

Guides to Share Analysis

Accounting for Growth – Written in 1992 by highly successful investment manager Terry Smith to demonstrate the dangers of corporate accounting camouflage attempts by large companies.
Accounting Demystified – Explanation of accounting in practice by Anthony Rice, 7th Edition published by Pearson in 2015
The Economist Guide to Analysing Companies – 6th Edition published by Economist Newspapers in 2014
How to Pick Quality Shares – Phil Oakley – How to find good and avoid bad companies – Published by Harriman House in 2017
Smarter Stock Picking – by FT contributor David Stevenson – describes investment selection strategies in detail – published by FT Prentice Hall in 2011 (Chapter 9 outlines the STAR Screening methods)
Unlocking Company Reports & Accounts – Detailed guide to analysing company accounts by Wendy McKenzie – FT Pitman Publishing – 1998
Security Analysis – Classic guide by Benjamin Graham, foreword by Warren Buffett
The Intelligent Investor – Basic guide to investment analysis by Benjamin Graham

6.4 How to Select What You Need

The first point to stress is that the list of sources above is intended as no more than an indicative guide to the vast amount of material that is now easily accessible in printed and digital formats by private investors wherever they happen to live.

The second point to note is that it is vital to be selective in what you decide to read and use in order to develop a methodology that suits your personal preferences and also your financial requirements. Not least is the suggestion that you only spend enough time on gathering background information to develop your comfort investment zone. Reading too many anecdotes and alternative strategies is confusing and may well result in muddled and conflicting decisions.

In managing my share investments using the STAR screens, I now use no more than the following basic information sources:

- Regular updates on the key accounting metrics (See section 7) covering more than 1,200 global stocks downloaded to my spreadsheets.
- Data sheets on specific companies available from Morningstar and other services such as Reuters
- Press cuttings from newspapers such as The Times and the Financial Times
- Annual and Interim Reports and news items from company websites

7 How to Develop your Own Share Selection System

The aim of this section is to show you how to develop your own system for selecting shares that are likely to possess the potential for above average growth. Although this Guide focuses mainly on screening methods that use basic spreadsheet technology and source data from readily available suppliers, it is important to stress that there is a vast range of proven ways in which investors have successfully picked winning investments and built-up profitable share portfolios. ***The key objective of this section, and indeed the Guide as a whole, is to illustrate the advantage of having a structured approach to selecting investments and building an equity portfolio rather than extol the virtues of specific methods.*** The examples in this Guide are exactly that: examples. We examine just a few of them in the following sections.

Bearing in mind the above points **the first part of this section outlines a few of the many methods and strategies that successful investors have used** as their chosen route to success. It should be noted, however, that most investment "systems" require modification from time to time in order to reflect changing conditions in the Investosphere and lessons that have been learnt from past successes and failures. What we learn from the latter are probably the most useful of all.

In the second part we focus on the multi-stage STAR screens and profile ratings as these basic methods have now been tested and published for almost 30 years so provide an unusually long timeline for evaluation. The objective of this section is to demonstrate the advantage to investors, in terms of decision making, of working through a structured process of evaluation rather than to claim that any particular combination of metrics, such as the value and growth measures developed by STAR, are the only, or even the best, way of finding profitable shares and building successful share portfolios. While there is no single route to good share selection there is a significant advantage in working with a share selection structure in which you have confidence.

In the final part of this section we introduce a live testing option that enables you to try your hand at testing and developing your own screening system and setting up your own portfolios designed to meet your personal requirements. To make this challenging and fun we are introducing a competition to reward the most successful amateur investor selecting live or virtual shares over a specified twelve-month period.

7.1 Some Successful Share Selection Methods

The "Big Names" screens

We saw in section 5 how some of the best-known successful investors from Benjamin Graham and Warren Buffett to more recent names such as Joel Greenblatt have used various forms of share screens to evolve successful strategies.

Joel Greenblatt

Greenblatt's screening process employs two stages of share screening to produce a list of shares rated according to their reported return (reported earnings before interest and tax) on invested capital (net working capital together with net fixed assets). This list, which excludes banks and financial shares, scores shares in descending order with the lowest number awarded to those companies with the highest return. The second stage also ranks shares in descending order with those possessing the highest earnings yield (Lowest PER) achieving the lowest scores. Greenblatt's chosen shares are selected from lowest totals from the combined values of these two lists.

Warren Buffet

A wide range of screening approaches have, of course, been employed by most well-known investors. Warren Buffet's key metrics have been published regularly by US-based Business Week and these focus on the following metrics for each company in their list:

a) Free cash flow (post tax income plus depreciation and amortisation to be above $250m)
b) Net profit margin (with a minimum of 15%)
c) Return on Equity (with a minimum of 15% over the past 3 years)
d) Retained earnings over the past 5 years to have created at least the same amount of shareholder worth
e) Adequate liquidity (only shares with a value of say $500m included)

There are, needless to say, a very large number of variations on the above-mentioned themes for screening out potentially poor investments and spotting likely winners. However, these two plus the following should be enough to indicate both the advantages and limitations of using screening methods for investment selection.

The Piotroski Score

The Piotroski Score is a method of ranking shares according to financial criteria that was developed by Joseph Piotroski who was a professor of accounting at Chicago University. It is essentially a backward-looking value system that measures nine corporate accounting criteria based on past profitability, financial strength and operating efficiency.

In a paper published in 2000 entitled "Value Investing: The use of Historical Financial Statement Information to Separate Winners from Losers" Piotroski claimed that in the twenty-year period ending in 1996 his scoring system would have produced an annual return of no less than 23% for anyone who had followed his financial scoring system to the letter.

The way the Piotroski Score Works

Piotroski's scoring methods applied values of zero or one to each of the following nine criteria thus producing total scores ranging from zero to nine:

Profitability Measures (1 point for each of the following measures giving a of maximum 4 points)

Positive net income
Positive return on assets in most recent year
Positive operating cash flow in most recent year
Operating cash flow greater than net income

Financial Strength Measures (1 point for each of the following measures giving a maximum of 3 points)

Lower gearing ratio in latest period compared to previous period
Higher current ratio (current assets/current liabilities) compared to previous period
No new shares issued in most recent period – no equity dilution

Operating Efficiency (1 point for each of the following measures giving a maximum of 2 points)

Higher gross margin than previous year
Higher asset turnover ratio compared to previous year

Piotroski used his scoring system to rate equities over a number of years. Those scoring 8 or 9 on the above measures he considered as being good value while those scoring 2 or less were poor value.

Richard Beddard and his Investment Decision Engine

Richard Beddard is a regular contributor to the Interactive Investor website and also writes articles on share analysis for data providers Sharescope. He has developed a successful system for selecting growth companies listed on the London Stock Exchange. Richard tells me that his Decision Engine is based on specific analytical criteria rather than the mechanically based screens inherent in both the Piotroski scores (as above) and the STAR methods (described in the next section).

He has carefully honed his research metrics to develop his Share Sleuth portfolio that holds some 30 equities. He assigns a score of between 1 and 2 to the five key measures (listed below) of a company's business, but unlike Piotroski some of his measures are more forward looking and also involve an element of subjectivity. Richard targets what he considers are the following five fundamental questions relating to corporate success and calculates the points for each of these five by adding or subtracting for a range of components for each heading. Essentially the Beddard Decision Engine considers how the underlying business is positioned in relation to risk, strategy and fairness They are as follows:

Does the business make good money? scores from 0 to 2 points for the following:
Level of return on capital
Cash conversion efficiency
Level of profit margins

What are the risks that could stop it growing profitably? Scores from 0 to 2 for:
Strength and resilience of business in difficult conditions
Cost control of acquisitions and business expansion
Competitive pressures
Overall level of debt and debt service costs

How does its strategy address the risks? Scores from 0 to 2 for:
How does the business differentiate itself
Investment in R & D and service strength
Degree of diversification to counter economic cycle weaknesses

Will we all benefit? Scores from 0 to 2 for:
Management's stake in the business
Communication with shareholders
Customer and employee retention rates and general satisfaction
Remuneration split between employees and owners

Is the share price low relative to profit? Scores from 0 to 2 for:
The valuation of the business in terms of an earnings multiple related to return to enterprise value

Richard then uses these scores to rank all the companies he has analysed and buys those with the highest scores. Once the full portfolio of 30 shares has been created, through gradual additions over time, the procedure is to reduce the stake in those whose scores fall and re-invest the proceeds in new ones with the highest scores. This is a more nuanced approach to portfolio management than the original method of re-balancing at the start of each year that was developed by STAR.

The performance of the Share Sleuth Portfolio, as reported regularly on the Interactive website, demonstrates that the detailed company analysis, outlined above, has proved highly successful over the period of eleven years since the start date of 9th September 2009. Having started with £30k in 2009 the total value had reached £161k by early February 2021. This represents an annual average compound return of just under 17% and an outperformance of almost 200% over the FTSE All Share Tracker fund over the same period.

7.2 Using the STAR Screening Methods as a Template

The Objective of this Section

We present the STAR screens not as the sole method of evaluating equities in different markets but rather as an example of a well-established process that may be used as a template for screening a wide range of share databases and employing different metrics. It may be used in its existing format or modified in any way to suit individual preferences by selecting preferred criteria such as return on capital employed, past sales growth, forward earnings growth estimates or indeed any other set of criteria for which data are readily available. You are welcome to use the STAR structures to test and develop your own screens as a way to build your personal share evaluation system.

The STAR background

The background to the development of the STAR templates is explained in detail in chapter 9 of David Stevenson's book on Smarter Stock Picking previously mentioned in the Data sources section. This explains in some detail why I set about developing an equity selection methodology that was based on a particular set of metrics that prioritised both growth and value.

Since that chapter was written, some ten years ago, the STAR database has been expanded so that it covers approximately 1,500 shares listed on US, European and UK markets. While still being used to generate lists of ten and twenty shares targeting capital growth and income it has become apparent that the basic formula that worked well before the financial crisis of 2007/2009 has been less profitable during the past few years as growth criteria have taken over from value in the minds of investors.

Using STAR as your screening framework

In essence, we present the STAR screens as a basic framework which interested private investors can use either as it is or may adapt to test or implement their preferred key metrics. These may, for instance, seek out businesses with a record of steady annual growth in revenue, a high return on capital employed (reflecting efficiency), high operating margins (strong business franchise or pricing power), low borrowing (financial safety), good record of growth in earnings per share (growth investment) or any other measure for which data is easily available.

One of the main advantages of using the STAR screens as the analytical framework for setting up a screening system is that it has an operating history covering more than 28 years of published results and has gradually been adapted to deal with the major changes to the Investosphere during this period.

Putting the STAR Screens to Work

As the detailed procedure for operating the STAR screens is set out in Section 8 this section does no more than explain briefly how each stage operates.

Stage 1: Decide on the key information to obtain for each company. Currently the first stage screens use: ***Share Price (latest), Dividends (actual and forecast), Earnings (actual for latest year, previous year and forecast for current and following years), Gearing, Return on capital employed, Capital Expenditure, Shares in issue, Market Value, Sales growth record (Annual average over past 5 years) and*** **Operating margins (Operating profits as % of sales).**

Stage 2: Download the data for each share to the spreadsheet that has already been pre-populated (see Annex 2) with the necessary headings and algorithms needed to enable the final ranking values that are used to highlight the shares that will be selected for investment.

Stage 3: Cross-check data for anomalies. The existing STAR spreadsheets contain vital data for each company for the previous three-monthly periods. This allows us to check for major changes to share prices and to estimated earnings in the future. One of the reasons for excluding shares for selection is if the consensus estimates have been reduced by more 20% over the past two months (see stage 6)

Stage 4: Calculate final ranking values to produce a complete column of total scores for all the shares held in each database. It is then easy to sort the complete database into the order of ranking in terms of the decreasing value of total scores.

Stage 5: The final list of ten and twenty shares in descending order is obtained by deleting shares that may be considered too expensive as per the pre-chosen maximum estimated PER value two years' ahead. The cut-off point for excluding shares from the chosen list effectively represents the value component of the screening process. For many years the maximum PER, or minimum earnings yield, for inclusion in the monthly STAR selection lists was set at the median value for the complete dataset. This was usually a PER of 15. This value limit worked well, in terms of STAR performance results related to the benchmark All Share Index, for many years but more recently it has been necessary to raise the ceiling in order to find businesses that are fundamentally attractive.

Stage 6: As the STAR screens evolved it soon became apparent that it was essential to take account of changes in the underlying trend in the consensus earnings estimates for each company as well as the market's perception of the outlook for the share price. Therefore, any share that is subject to major reductions in forward earnings estimate over the past two months of more than 20% is excluded from the purchase list.

Stage 7 The final element in the mechanical generation of share selection lists is the need to limit the number of holdings in a single market sector. This sector weighting control avoid extreme portfolio losses should major problems emerge in a single sector. The currently the STAR screens limit holdings to no more than two in a single sector for portfolios of ten shares and to no more than 4 shares in portfolios of twenty shares.

Subsequent Management

In the early days of managing the monthly STAR portfolios there were two ways in which the constituents would alter. The first was, and still is, to sell any share whose estimated rate of growth in earnings over the next two years had been reduced by more than 20% during the previous two months. Further re-balancing was put into effect at the start of each calendar year with all existing shares being replaced with those comprising the most recent list of top ten and twenty shares except where existing shares also appear in the latest list in which case they are retained.

Following the turbulence caused by the financial crisis and the beginning of the long bull market that has been fuelled by rapid monetary expansion, otherwise known as quantitative easing, and falling interest rates, investors have pursued the mantra of growth rather than value with vigour. The evolution of a much more challenging Investosphere has acted as a spur to improve the first stage mechanical screens through the creation of additional metrics and also to add secondary screens as described below.

The Secondary Screening Process

I mentioned earlier in this Guide that the whole process of investment analysis is dynamic and that fundamental movements in global and national economies as well as in the wider Investosphere mean that investors have to adapt to be successful. This has been the case with STAR. We have had to consistently adapt and modify the methods of analysis as conditions have changed and, no doubt, will have to continue to do so in order to remain effective.

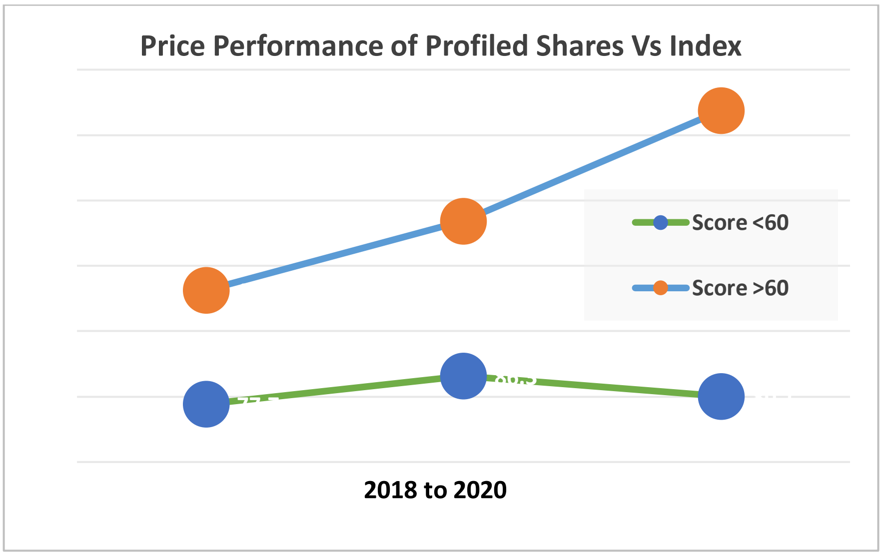
This sub-section outlines the secondary scoring procedures that we have been using for several years in order to try and seek out better businesses than are highlighted by the stage one screens. The way this works is that from the ranking list generated by the first stage screening process, outlined above, we select companies that appear worth further scrutiny. These more detailed STAR Profile screens focus on both growth and value metrics but skew the scores in favour of growth. Each company is analysed in terms of Growth and Value metrics with the former accounting for 65% of total points and the latter for the balancing 35%. awarded to each company with value metrics contributing the balance. The way this works is set out in detail in Section 8.

Portfolio management is based on regular evaluation of the ratings given to each share with shares removed as each share's score falls to the bottom of the list provided there is a higher score replacement available.

Is Secondary Screening Worthwhile?

The short answer is YES. I have analysed the shares scoring 60 points or more in each of the past three years when we have screened between twelve and twenty shares each year. In the three years from 2018 the higher scoring shares outperformed the All-Share Index by 12%, 19% and 28% respectively while the lower scoring shares returned rates of -22%, 11% and -9%. This resulted in a three-year result of minus 20% for the lower scored shares and a cumulative 68% gain over the market for the higher rated ones. This is shown graphically in the chart below. The actual price gains of the higher scoring shares over the three-year period, as opposed to the relative gains, amounted to 87.7% over these three years. More details in Section 8.

The process of subsequent management operates through the selection of ten, twenty or more shares derived from those with STAR profile scores greater than 60 with switches triggered when shares whose rating scores fall are replaced with other higher scoring shares.



7.3 Testing Your Own Criteria

Section 10 of this Guide encourages you to test your own ideas for evaluating shares and picking a winning portfolio. If you are happy to work with spreadsheets such as Microsoft's Excel or Apple's Numbers you are welcome to create your own spreadsheet using the STAR criteria and download data from services such as Sharescope and Stockopedia. To give you an idea of the amount of data that the STAR monthly screens employ, we currently use spreadsheets for each portfolio template that have approximately 80 columns and 500 rows or some 40,000 cells. All modern computers are able to handle this amount of data with speed and ease and once set up it is very easy to download these volumes of data extremely quickly.

In order to make it possible for you to back-test your ideas we have full January database information on the leading UK main and AIM listed shares for the years 2018 through to January 2021. We also have MSCI database data for the same years and European data from January 2019. So, there are plenty of testing opportunities available. Just get in touch with me and we will be happy to put your preferred choices into the past databases and, if you wish, enter your name in a competition to see which combination of criteria result in the most successful portfolio over the following twelve months as related to the stated STAR objectives.

8 Two Stage Screening in Detail

This section demonstrates the STAR screens as they are currently used each month to produce share selection lists derived from equities listed on the UK, continental European and leading global markets.

8.1 Downloading the data

As mentioned in the preceding section the use of spreadsheets is invaluable in actually undertaking the screening process. The matrix format used by spreadsheets such as Microsoft's Excel is ideal for the STAR screening processes. The existing process works by downloading from a database, such as that provided by Sharescope, the latest data for each share relating to:

Share Price (latest)
Dividends (actual and forecast)
Earnings (actual for latest year, previous year and forecast for current and following years)
Gearing
Return on capital employed
Capital Expenditure
Shares in issue
Market Value
Sales growth record (Annual average over past 5 years)
Operating margins (Operating profits as % of sales)

The basic spreadsheet data entries are shown in the extract (below) from a recent STAR download of share data relating to two of the 450 main market listed companies analysed for each month's issue of the STAR twenty share portfolios. Additional data, which is not shown, relates to the relevant sector in which each company is listed and the company's EPIC code.

Company	Price	Div 0	EPS-1	EPS0	EPS1	EPS2	Div 2	Gearing	ROCE	CAPEX	No Shs	Mkt Cap	Sales	OP
	p	*p/sh*	*p/sh*	*p/sh*	*p/sh*	*p/sh*	*p/sh*	*%*	*%*	*per sh*	*m*	*£m*	*Growth*	*Margins*
Avon Rubber	3100	27.1	33.1	5.2	93.48	126.22	41.3	0	2.4	15.6	31.02	961.7	25.1	3.5
BAE	462	23.2	29.02	48.96	43.53	48.33	24.86	40	12.5	470	3206	14872.4	18.6	9.5

8.2 Putting the Information to Work

From the basic data contained in each of the cells illustrated above it is then easy to derive a number of key valuation indicators in subsequent columns. These measures are summarised in the following extract from a working Excel spreadsheet table that is used by the STAR screening process. The metrics shown here are only a few of those that are regularly derived from the basic data columns but these are the key ones used for generating the primary ranking lists from which the basic twenty share portfolios are selected.

COMPANY	PER EPS2	EPS Growth	Growth Score	ROCE Score	Sales Growth	Op Margins	Total Score
Avon Rubber	24.6	559	10	1	3	1	15
BAE Systems	9.6	24	3	5	2	2	12

The forward **PER** (col 1 in above table) for each share is calculated directly from the price and EPS2 columns and is used as a valuation screening tool to exclude shares that have Price Earnings Ratios that are considered by pre-set criteria as being too high and occasionally too low. **The EPS growth** is derived from the difference between the EPS2 values and those in the historic EPS columns (columns EPS0 and EPS-1). Further columns (not shown) are then used to develop the earnings growth "Score". These values, currently ranging from 0 to 10, are calculated in increments of one point according to the rate of growth in earnings that has been taken from the most recent consensus estimates from the leading analysts. An illustration of the formula for each cell that scores EPS growth is shown below. In this example cell AS11 is the cell in the spreadsheet that contains the estimated rate of growth in earnings per share over the next two years. If the consensus estimates indicate no growth the score is 0, if the growth is expected to be 10% or less the score is 1 and so on in increments of 1 point up to 90% for which the score is 10.

=IF(AS11<=0,"0",IF(AS11<=10,"1",IF(AS11<=20,"2",IF(AS11<=30,"3",IF(AS11<=40,"4",IF(AS11<=50,"5",IF(AS11<=60,"6",IF(AS11<=70,"7",IF(AS11<=80,"8",IF(AS11<=90,"9",IF(AS11>90,"10")))))))))))

The basic procedure is similar for the calculations relating to the **Return on Capital Employed (ROCE)** that is used to rate the financial efficiency of the underlying business. The other two measures currently used in building the primary ranking lists relate to the **Annual Growth in Sales** over the past five years and **Operating Margins.** The former gives a quick view of the underlying growth of the business while the latter reflects, at least in part, the relative pricing power of the business. Both of these scores are also calculated in increments of a single point but with a maximum score of 6 per share for each measure. Thus, the maximum total score achievable for any share, on the present ratings method, is 32 (10 each for EPS growth and ROCE and 6 each for Sales Growth and Operating Margins). These scores comprise what I term the primary screening phase.

At this point it is worth noting that the scoring process contains a high degree of subjectivity and needs careful monitoring against results in order to see if the valuations and weightings should be altered.

8.3 Constructing a Portfolio Selection list

Having generated a complete column of total scores for all the shares held in each database it is then easy to sort the complete database into the order of ranking in terms of the decreasing value of total scores. However, the mechanical process for creating usable share portfolios as developed by STAR requires three more simple procedures before completion. These final stages are outlined below.

Final stage 1 - Setting Value Limits

From the resulting list we construct the basic portfolios of ten and twenty shares in descending order by deleting shares that may be considered too expensive as per the chosen maximum value as shown in the PER ESP2 column. The cut-off point for excluding shares from the chosen list effectively represents the value component of the screening process. For many years the maximum PER, or minimum earnings yield, for inclusion in the monthly STAR selection lists was set at the median value for the complete dataset. This was usually a PER of 15. This value limit worked well, in terms of STAR performance results related to the benchmark All Share Index, for many years but more recently has been too strict a limit as it removed many faster growing companies from the selection list.

As the general level of interest rates has declined, in recent years, to near, or even below, zero and a high percentage of corporate growth has been captured by fast growing tech businesses so it has been necessary to raise the upper valuation limit for inclusion in the current STAR lists. This is because investors and speculators are chasing up the price of the smaller number of shares that are demonstrating real growth in profits and earnings.

Final stage 2 - Changes in Earnings Estimates

As the STAR screens evolved I soon realised that it was essential to take account of changes in the underlying trend in the consensus earnings estimates for each company as well as the market's perception of the outlook for the share price. Therefore, one of the key measures that the STAR screens incorporate in the compilation of the latest ranking list is the movement in earnings estimates over the previous two monthly data sets. Any share that is subject to a reduction in its forward earnings estimate over the past two months of more than 20% is excluded from the purchase list even if the final score on all the other metrics would have indicated inclusion.

Final stage 3 – Controlling Sector Weighting

The last stage in the mechanical generation of share selection lists for equity portfolios is the requirement to introduce an element of control on the number of holdings that are held in a single market sector. This is to avoid extreme losses should problems emerge in a single sector. The current control limits that STAR applies involve limiting holdings to no more than two in a single sector for portfolios of ten shares and to no more than 4 shares in portfolios of twenty shares.

8.4 The Basic Portfolio Selection list

We have now generated a list of equities that may become a live portfolio that has been selected according to the criteria that were set out at the start of this section. However, an alternative to going live with these selections is to use this list to test the validity of the original criteria. I did this more than 30 years ago when I had the idea for investing in shares using a structured approach. I back-tested no fewer than nine versions of what I thought might be key determinants of the future movement in the price of each share. The testing procedure is explained in much greater detail in Chapter 9 of David Stevenson's book mentioned in section 5.

We show below a couple of examples of share selection lists relating to equities listed on the London main market in early January 2019 and the largest global markets to illustrate the format that emanates from the screening procedures just described.

The Top Twenty LSE Main Market STAR Share Selections as at Early January 2019

EPIC Sector	EPIC Code	STAR Twenty Growth 2019 Company	Shares	Cost Price (p)	Cost (£)
Financial Services	LIO	Liontrust Asset Management	169	590	1000
Media	GOCO	Gocompare.com Group PLC	1333	75	1000
Travel & Leisure	OTB	On The Beach Group PLC	255	392	1000
Travel & Leisure	888	888 Holdings PLC	599	167	1000
Mining	APF	Anglo Pacific Group PLC	714	140	1000
Travel & Leisure	CINE	Cineworld Group PLC	364	275	1000
Travel & Leisure	DOM	Domino's Pizza Group PLC	402	249	1000
Pharmaceuticals & Biotechnology	GSK	GlaxoSmithKline PLC	66	1514	1000
Media	FOUR	4imprint Group PLC	53	1880	1000
Media	STVG	STV Group PLC	271	369	1000
Health Care Equipment & Services	MGP	Medica Group PLC	806	124	1000
Industrial Metals & Mining	EVR	Evraz PLC	211	475	1000
Software & Computer Services	MCRO	Micro Focus International	71	1404	1000
Leisure Goods	VTC	Vitec Group (The) PLC	86	1160	1000
Industrial Transportation	WIN	Wincanton PLC	429	233	1000
Household Goods & Home Construction	CSP	Countryside Properties PLC	328	305	1000
Media	ITV	ITV PLC	794	126	1000
Support Services	CNCT	Connect Group PLC	2326	43	1000
Construction & Materials	NXR	Norcros PLC	513	195	1000
Electricity	GLO	ContourGlobal PLC	526	190	1000

The Top Twenty Global STAR Share Selections as at Early January 2019

EPIC Sector	STAR GLOBAL 2019 CODE	 Company	Cost Price
Technology Hardware	AMAT	Applied Materials Inc	3728
Software & Computer Services	CTSH	Cognizant Technology Solutions Corp	7123
Technology Hardware	NVDA	NVIDIA Corp	16343
Pharmaceuticals	CELG	Celgene Corp	7222
Chemicals	LYB	LyondellBasell Industries NV Class A	9325
Software & Computer Services	GOOG	Alphabet Inc	109440
Pharmaceuticals	GILD	Gilead Sciences Inc	7194
Technology Hardware	INTC	Intel Corp	4931
Pharmaceuticals	ABBV	AbbVie Inc	9362
Mining	BHP	BHP Group PLC	1590
Oil & Gas Producers	PXD	Pioneer Natural Resources Co	14774
Travel & Leisure	BKNG	Booking Holdings Inc	189190
Software & Computer Services	INTU	Intuit Inc	21453
Industrial Transportation	UPS	United Parcel Service Inc	11527
General Industrials	MMM	3M Co	20755
Leisure Goods	AAPL	Apple Inc	17858
Pharmaceuticals	BIIB	Biogen Idec Inc	33372
Pharmaceuticals	GSK	GlaxoSmithKline PLC	1498
Tobacco	PM	Philip Morris International	8654
Software & Computer Services	ADBE	Adobe Inc	25089

8.5 Subsequent Management

In the early days of managing the monthly STAR portfolios there were two ways in which the constituents would alter. The first was, and still is, to sell any share whose estimated rate of growth in earnings over the next two years had been reduced by more than 20% during the previous two months. Further re-balancing was put into effect at the start of each calendar year with all existing shares being replaced with those comprising the most recent list of top ten and twenty shares except where existing shares also appear in the latest list in which case they are retained.

In practice I have found that has been difficult, largely for psychological reasons, to sell shares at the start of each year that are no longer top of the latest purchase list if they have dropped down simply because the company's rising share price has pushed the valuation higher and thus demoted the shares out of the top ranks. This is particularly the case in bullish markets when growth metrics tend to trump value ones and shares that exhibit a positive profits outlook tend to keep rising. I have recently been developing a more nuanced approach which is less mechanical and more "hands-on" and which relates to the secondary screens explained in the next section.

Following the turbulence caused by the financial crisis and the beginning of the long bull market that has been fuelled by rapid monetary expansion, otherwise known as quantitative easing, and falling interest rates, investors have pursued the mantra of growth rather than value with vigour. The evolution of a much more challenging Investosphere has acted as a spur to improve the first stage mechanical screens through the creation of additional metrics and also to add a secondary screen as described below.

8.6 The Secondary Screening Process

I mentioned earlier that the whole process of investment analysis is dynamic and that fundamental movements in global and national economies as well as in the wider Investosphere require that the mechanisms employed by investors need to adapt to be successful. In the case of the STAR value and growth screens it is apparent that the results that were achieved by these methods in the late 1980s and 1990s have gradually become less effective. I believe that there are many reasons for this but these trends have necessitated the introduction of a secondary screening process that involves a more detailed analysis of some of the key drivers behind successful businesses.

This sub-section of the Guide describes the additional scoring procedures that I have been using for several years in order to try and seek out better businesses than are highlighted by the stage one screens. The current secondary screens focus on both growth and value metrics but skew the scores in favour of growth. Growth metrics currently make up 65% of total points awarded to each company with value metrics contributing the balance. The first table, below, demonstrates the recent scoring values that are used to rate shares that merit a second stage screening, usually because they have appeared near the top of the most recent first stage ranking list. Although numerical values are ascribed to each of the growth and value drivers that contribute to the total assessment of a share's perceived worth there is, inevitably, an element of subjectivity to each of these elements.

Second Stage Evaluation Sheet

Item	Scores	0	2	4	6	8	10	Value	Max
Growth Metrics									
Basic Growth	5 Yr Sales growth	< 0	<5	5 to 10	11 to 15	16 to 25	>25		10
Profitability	Operating Margins	Neg	<5	5 to 10	11 to 15	16 to 25	>25		*10*
Est 2 yr EPS growth	Estimated eps growth	< 0	<10	10 to 20	21 to 30	31 to 50	> 50		*10*
Efficiency	ROCE	< 0	<10	10 to 15	16 to 20	21 to 30	> 30		*10*
Management	Ownership Incentives	<0	0.1 to 1	1 to 3	4 to 10	11 to 25	>25		*5*
Business Model	Consistency - 5 years	<5	5 to 10	11 to 15	16 to 20	21 to 25	>25		10
ESG Factors	Sector growth 2 years	Neg	1 to 2	3 to 5	6 to 10	11 to 15	>16		*10*
	Total Growth metrics								***65***
Value Metrics									
Business Valuation	PER	>50	40 t0 49	30 to 39	20 to 29	10 to 19	<10		*10*
Financial strength	Gearing %	>250	151 to 250	101 to 150	51 to 100	1 to 50	0		*5*
Financial strength	Interest cover	<1	1 to 2.9	3 to 4.9	5 to 6.9	7 to 9.9	>10		*5*
Dividend yield	Dividend rate	0	01. to 0.9	1 to 1.9	2 to 2.9	3 to 3.9	>4		*5*
Short term Catalysts	Overall assessment	Neg 3	Neg 2	Neg 1	Pos 1	Pos 2	Pos 3		*10*
	Total Value metrics								***35***
	TOTAL SCORE								*100*

In order to enlarge on the second stage evaluation process I include, below, an illustrative table that relates to the analysis of AIM-listed Ergomed that appeared near the top of the first stage of the STAR screened lists of AIM companies in early July 2020. Ergomed therefore seemed an appropriate candidate for further analysis and screening.

I used a copy of the second stage evaluation shown above and inserted the relevant scores in each cell in the penultimate column. Working through the data for Ergomed the score for historic sales growth was 10 as the company had achieved a growth rate in sales over the previous five years that exceeded 25% compounded annually. Using the same methods operating margins in 2019 had been 12% which resulted in a score of 6 for this metric and the consensus estimates for earnings growth over the next two years was over 80% resulting in a score of 10 for this item. The full scores are shown in the table below.

I have now been carrying out second stage screening for more than five years and have discovered that the cohort of shares that score 60 points and above are usually the ones that achieve the highest share price outperformance over the following twelve months. As with all evaluation systems there is no fixed rule to this as a few shares that have rated highly at one stage may suddenly encounter difficulties or their rating may quickly change making them appear relatively expensive in terms of the Value Metrics.

Ergomed STAR Profile Evaluation Sheet

Ergomed plc - Price 440p – July 2020	Points	Max Points
Growth Metrics:		
Sales Growth - over past 5 Years	10	10
Operating Margins %	6	10
Estimated EPS Growth – next 2 years %	10	10
Efficiency - ROCE %	4	10
Management - incentives & competence	4	5
Business Model	2	10
Sector outlook - "Canary Signals"	8	10
Sub-total growth metrics	44	65
Value Metrics:		
Business Valuation - PER Measure	6	10
Financial Strength - Gearing %	4	5
Financial Strength - Interest cover	5	5
Dividend Yield %	0	5
Overall Value rating	8	10
Sub-total value metrics	23	35
Total Profile Rating	67	100

The secondary screening evaluations obviously require additional time for careful scoring of each of the metrics summarised in the table above. The total scores that are possible for each item are summarised opposite each one in the “Max Points” column in the table above.

8.7 Is Secondary Screening Worthwhile?

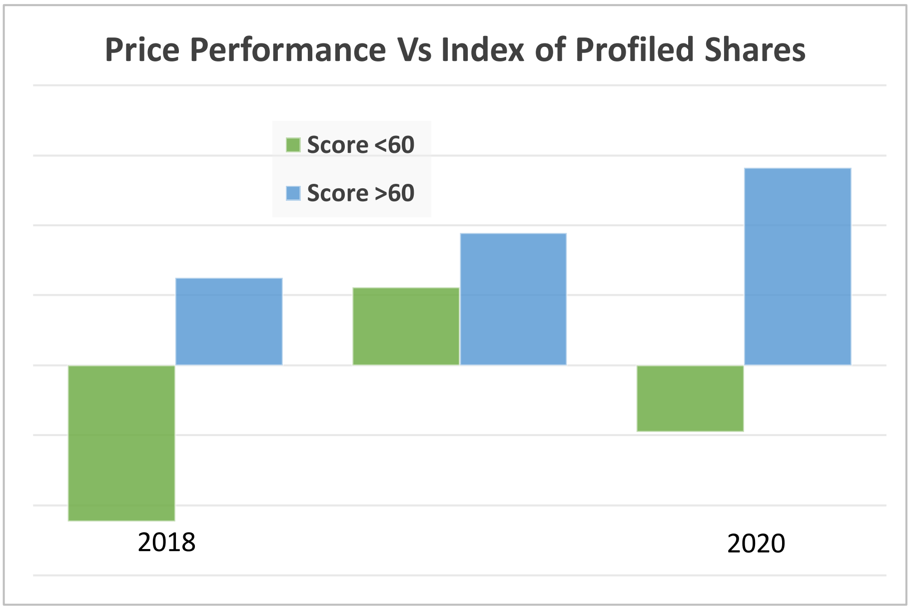
The use of secondary screening demands extra time, much more effort in terms of checking out background data sheets for each company, press comments, analysis of the most recent company annual and interim accounts as well as information gleaned from the company’s website and from the company’s brokers if available. Although, with practice, it is quite a quick exercise to fill in most of the scores required to complete the STAR Profile table above there are some items that clearly take more time than others.

However, I have now kept a record of the actual and comparative movement in the prices of the shares that have been through the secondary screening process for the past few years and those with the highest scores have almost always substantially outperformed those with low scores. Over the years it seems that those scoring 60 points and above have generally done better in both absolute and relative terms than those below this level. The performance of the 2020 profiled shares is summarised below. The conclusion must be that the secondary screening effort is definitely worthwhile as the results over several years tend to prove that the work that is put in to evaluating the underlying business leads to a better understanding and that this tends to be appreciated by other investors through a higher rating for the shares with higher scores.

STAR Secondary Screened Shares in 2020

Date	Company	Rating	Index then	Price then	Price Dec	Gain/Loss	Gain over index
March	Anglo Pacific	73	3706	150	126	-16.0	-14.8
November	Ergomed	72	3184	750	1115	48.7	33.7
August	Avast	71	3349	575	472	-17.9	-27.3
September	Tristel	69	3290	450	591	31.3	20.0
February	Avon Rubber	67	4076	2295	3100	35.1	45.2
July	Ergomed	67	3407	440	1115	153.4	145.9
December	Gamma Communications	67	3749	1650	1605	-2.7	-0.4
June	Instem	65	3412	470	505	7.4	0.1
October	Eckoh	63	3290	67	64	-4.5	-15.8
May	MPAC	61	3189	220	450	104.5	89.7
May	Synthomer	61	3189	250	430	72.0	57.2
July	Instem	60	3407	450	505	12.2	4.7
October	Contour Global	58	3290	190	200	5.3	-6.0
November	Amiad	38	3184	240	245	2.1	-12.9
	Average Scores above 60					35.3	28.2
	Average Scores below 60					3.7	-9.5

I have analysed the results for STAR shares that have been through the secondary screening process over the past three years. The results are summarised in the chart below.



9 ESG Investment Screening

9.1 What is ESG Investing?

The acronym ESG stands for Environment, Social and Governance in relation to the ways in which businesses are run and the factors that responsible investors should take into account when evaluating investments and in particular equity investments.

Needless to say, given the inevitable subjectivity regarding the definition of these three terms there is a considerable lack of clarity on the definition of the terms ESG and the associated SRI acronym that is used to describe Socially Responsible Investment. This section of the Guide outlines ways in which investors may wish to incorporate the elements of environmentalism, social factors and governance (ESG) into their screening processes.

9.2 Is ESG Important for investors?

Given that the Investosphere has always been prone to succumb to the latest widely publicised trends, whether they are bullish and positive or bearish and negative, it is fair to question whether investors should really treat ESG and SRI investment as yet another fad or take it seriously as a really vital component of a rapidly changing landscape.

To the extent that modern investment may be taken to have evolved in tandem with the evolution of stock exchanges, a broad view of the key major positive and negative influences on investment needs to encompass what has evolved over the past four centuries. The ups and downs of investment since the early 17th century have tended to veer between excitement surrounding new ventures such as the Dutch East India company in early 1600, the Tulip Mania bubble and subsequent collapse in the 1630s and also the massive investment in canals in the late 1700s and early 1800s. This latter investment boom was quickly followed in Europe and north America by a slump in canal traffic as funds quickly shifted to the even bigger railway construction bonanza. During this period the key investment drivers were, of course, the massive investment in manufacturing and commerce as industrialisation spread through the western economies.

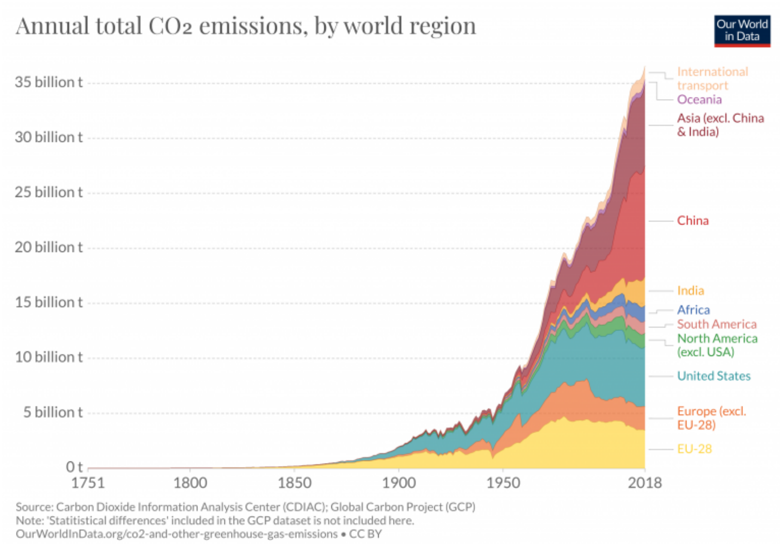
Moving forward, temporally, we witness the investment fortunes made and lost during periods of major conflict, such as the Napoleonic wars and more recently the first and second world wars.

In the period following the end of World War 2 it was technology combined with the rapid growth in global population and increasing levels of per capita productivity that dramatically boosted economic growth and, in turn, equity markets. In developed economies this led to an even faster rise in the service sector which has been amplified in the expansion of the whole financial services sub-sector. Investment in science and technology has been the key to the exponential growth of the IT and digital sector.

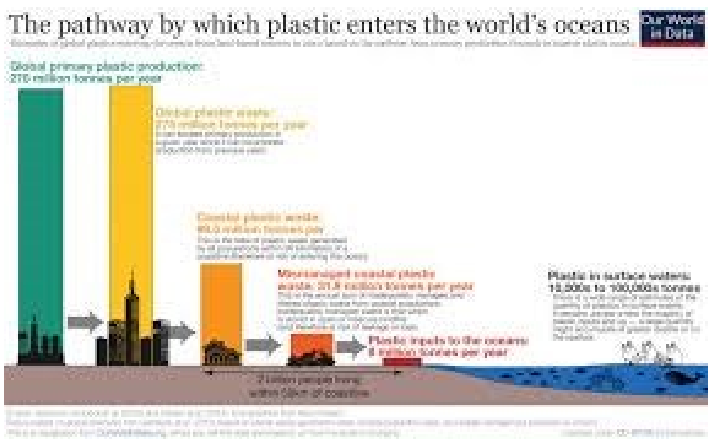
It is fair to say that, until recently, the financial and economic measures that have been used by investors to judge the merits of potential business opportunities in both the private and listed fields have taken little account of the wider costs of economic growth at either the micro level of the business or the macro level of the wider community. Before the rise of the ESG movement and the growing awareness of social responsibility in the business community and the belief that entrepreneurs are responsible to more than one group of stakeholders, investors had assumed that these matters were outside their sphere of decision making and were the province of the government and public sector.

Thus, it is only in recent years that the true costs of global economic growth, the externalities, have begun to enter the decision matrix employed by leading professional investors who wield meaningful amounts of money in the wider Investosphere. In a sense this is a new development in the wider investment process in which investors are accepting that the traditional financial and economic metrics are inadequate to measure the true worth of businesses as they do not take full account of all the various negative impacts that are part of the modern economy. In reality, the full gamut of negative factors created by all types of business from manufacturing to the ever-expanding service sector are virtually infinite so it is necessary to focus on the major ones that concern diligent professional investors.

In terms of the environment the main subjects, as highlighted by the United Nations, cover climate change, pollution and biodiversity loss. Graphs showing the rapid rise in carbon dioxide and methane emissions, accompanied by dire predictions of a planet out of environmental control, are well known to most of us and are one, but far from the only one, of the main drivers behind the ESG movement in the Investosphere.



Associated with the massively rising costs of climate change are the huge problems of mankind's addiction to pollution. It has been estimated by researchers at Imperial College that global plastic production, much of which is highly toxic and extremely polluting, has expanded from a mere 1.5 m tonnes in 1950 to 350m tonnes in 2017 and may well reach 2,000m tonnes by 2050.



9.3 Professional Approaches to ESG Investing

Websites such as **Interactive Investor** (www.ii.co.uk) contain a lot of information and suggestions of ways to select ESG focused investment funds. The ii website divides the ESG methods employed by professional fund managers into those that **Avoid** businesses that fall foul of basic ESG criteria, those that **Consider** ethical issues when making investment decisions and those that focus and target ethics and thus **Embrace** ESG criteria. They term these the three measures their ACE criteria for evaluating fund managers' rankings in terms of this subject.

AJ Bell (www.ajbell.co.uk), another leading investment platform, prefers to use the nomenclature of **Socially Responsible Investing (SRI).** In choosing investments for their Responsible Growth Fund they adopt both positive and negative metrics that lead to them selecting companies that specifically focus on SRI criteria and omitting those whose businesses demonstrate negative ones.

Financial advisory website Nutmeg evaluates investments according to five specific headings for each of the Environmental, Social and Governance metrics. For the first (**environmental**) they award points covering; carbon emissions, water stress, climate change, pollution and waste and renewable energy. Under the **social** banner they itemise; privacy and data, labour and management, health and safety, supply chain management and controversial sourcing. As far as **governance** is concerned they rate companies on: business ethics, board diversity, executive pay, tax transparency and anti-competitive practices.

The lists adopted by the very large number of fund managers and advisers that are adopting socially responsible investment criteria are long and, to be honest, fairly exhausting. However, searching through the internet under the subject headings of both ESG and SRI investing it is clear that there is no single definitive guidance on this emotive subject. Problem is not one of definition so much as one of degree. How far does one go in assessing the harm that a particular business may do the environment? How fair are corporate rules and pay as between the top managers and the lowest ranked staff? To what extent is it possible for companies to track the means by which the components making up their products are produced?

It is probably not an exaggeration to say that virtually all economic activities impose some degree of external cost that is not capable of being incorporated into the final monetary cost charged to the final purchaser.

9.4 The STAR Screening Approach to ESG Investing

As far as the primary STAR screens are concerned the priorities remain those of selecting companies that exhibit the strongest financial metrics and then to use this ranking list to drill down into the secondary screens. At this secondary stage it becomes practical to introduce sectoral and business metrics that include both positive and negative ratings that allow for the incorporation of selected SRI/ESG criteria.

As the prime focus of the STAR process is that of seeking out strongly growing businesses the secondary screens have been modified over the past few years with the objective of assessing the possible incremental benefit to each reviewed company from changes to the Investosphere resulting from ESG forces deriving from both regulatory and market led movements.

Over the past five decades I have tracked, and benefited from, the positive effects of UK regulatory changes such as the introduction of seat belts in cars in the 1960s and more recently the, poorly conceived but profitable, smart metering regulations. The global moves to embrace and enforce changes to the way we live is now providing similar investment opportunities.

These positive aspects of applying ESG criteria through screening are captured mainly by means of the secondary filtering process at which stage both positive and negative ESG ratings covering climate change and environmental issues as well as governance ones are included under the growth and value metrics sections.

A section of the secondary growth ratings deals mainly with positive ESG aspects where, for instance, clean energy businesses will benefit from enhanced demand as carbon intensive ones are more heavily taxed or forced out of the market. Similarly, in the value ratings section the assessment is more related to negative aspects such as higher taxation or the imposition of specific controls on the business.

10 Monitoring and Evaluation

10.1 Why Monitor your Investments?

As the Investosphere and the businesses operating within it are subject to continual change it is necessary for diligent investors to monitor and evaluate their portfolios on a regular basis and change their investments according to their pre-determined objectives. Although there is a strong case to be made that one should avoid continual meddling with long term investments as opposed to short term trades, there is a happy medium route by which the components of equity portfolios should be monitored weekly or at least every month.

10.2 Basic Portfolio Management

The two tier screening methods developed by STAR enable valuation and monitoring to be achieved quite easily. Indeed this was the original basis of the first STAR screens that were published in the early 1990s. The concept was that once the initial shares had been chosen to make up a long term portfolio of ten or twenty shares the costituents should be monitored on a monthly basis. Sales of individual holdings would be made if the outlook for the underlying business deteriorated This was triggered if the estimated consensus earnings over the next two years declined by more than 20% over the previous couple of months.

An additional value protection method that is followed by many successful investors is that of exercising stop-loss signals. Setting a moving stop-loss that automatically triggers a sale if the share price falls by more than 20% or 25% below the current price can indded be an effective preserver of wealth. This is probably more effective if the stop-loss is related to the underlying movement in the wider market such that a fall of 20% in an individual share that occurs in a market that has fallen by 10% might better be activated after a further 10% fall in the share's price.

It was also recommended that share portfolios should be re-balanced at the start of each calendar year by replacing all shares that no longer appeared in the latest top ten or twenty purchase lists with those that had replaced them. The long term performance of the basic, first stage, screened lists has always been monitored on a monthly basis.

In reality I have found it difficult to persuade myself to sell holdings that I feel still have potential for recovery even though the evidence is that businesses that suffer major downturns in trading and issue profit warnings should almost always be ditched in favour of better alternatives.

10.3 Evaluating Performance

The STAR share templates have been recorded month by month since the early 1990s. The example below shows the performance of the STAR UK main market listed twenty growth share selections between January 2021 and September 2021.

The method of valuation that has been used for all the share selection templates that have been developed by the basic STAR screening methods is to compare the nominal investment of £1,000 into each of twenty shares on the date shown (in the table below it was January 5th 2021) without taking into account the buying or arbitrage costs (difference between buying and selling prices) and to value these each month at the mid market price on each subsequent month. The reason for excluding dealing costs is that these valuations were originally intended to do no more than compare the usefulness of the the STAR methodology against the index. A further problem with using dealing costs is that these fall dramatically with deal size when using the low costs services. On the other hand this valuation approach also excludes the benefit of any dividends received and with average dividend yields of approximately 2% on this portfolio the overall result at the end of each year using this simple approach varies little from the fully costed version.

The STAR Twenty Growth Share Selections as at January 2021

EPIC Sector	EPIC Code	STAR Twenty Growth 2021 Company	Shares	Cost Price (p)	Cost (£)	Jan Price Price (p)	Current Value (£)
Leisure Goods	GAW	Games Workshop	9	11460	1000	11460	1031
Financial Services	LIO	Liontrust Asset Manageme	75	1330	1000	1330	998
Mining	POLY	Polymetal International PL	54	1842	1000	1842	995
Travel & Leisure	Dom	Dominos Pizza	307	326	1000	326	1001
Industrial Transport	AVAP	Avation	794	126	1000	126	1000
Financial Services	CLIG	City of London Investment	222	450	1000	450	999
Real Estate Investment	LMP	Londonmetric Property	427	234	1000	234	999
Media	GOCO	GoCo Group	763	131	1000	131	1000
Pharmaceuticals	DPH	Dechra Pharmaceuticals	28	3548	1000	3548	993
Industrial Metals	EVR	Evraz	203	492	1000	492	999
Traverl & leisure	888	888 Holdings	338	296	1000	296	1000
Support Services	SNN	Sanne Group	158	632	1000	632	999
Mining	Kaz	Kaz Minerals	150	666	1000	666	999
Electronic	LUCE	Luceco	385	260	1000	260	1001
Mining	CEY	Centamin	746	134	1000	134	1000
Mining	HOC	Hochschild Mining	446	224	1000	224	999
Software & Computers	AVST	Avast	188	533	1000	533	1000
Support Services	DPLM	Diploma	45	2220	1000	2220	999
Electricity	GLO	ContourGlobal	461	217	1000	217	1000
Software & Computers	TRB	Tribal Group	1124	89	1000	89	1000
		Totals			20012		20012
Start date	5th Jan	Performance in Year			Change %		
		FTA ASI		3749	0.0	3749	
		STAR			0.0		

Alterations to the portfolio at the start of the year are made month by month. In the example we use here there were only two share switches between January and end August 2021 as shown in the tables below.

Movements in the STAR Twenty Growth Share Selections during 2021

Month	Company	Shares	Unit Price	Proceeds	Purchase	Shares	Unit Price	Cost
Feb	GoCo	763	134	1020	Rightmove	170	599	1020
May	KAZ	150	850	1304	CMC Markets	286	456	1304

Observant readers may notice that the proceeds received from the disposal of Kaz Minerals at 850p per share would have amounted to £1275 but this particular disposal included a dividend of that amounted to £29 and as it resulted from a coporate acquisition the dividend was included as proceeds of sale.

The valuation of the 2021 main market portfolio as at end August is shown in the table below.

The STAR Twenty Growth Share Selections as at end August 2021

EPIC Sector	EPIC Code	STAR Twenty Growth 2021 Company	Shares	Cost Price (p)	Cost (£)	September Price (p)	Current Value (£)
Leisure Goods	GAW	Games Workshop	9	**11460**	1000	**11720**	1055
Financial Services	LIO	Liontrust Asset Manageme	75	**1330**	1000	**2338**	1754
Mining	POLY	Polymetal International PL	54	**1842**	1000	**1481**	800
Travel & Leisure	Dom	Dominos Pizza	307	**326**	1000	**413**	1268
Industrial Transport	AVAP	Avation	794	**126**	1000	**95**	754
Financial Services	CLIG	City of London Investment	222	**450**	1000	**511**	1134
Real Estate Investment	LMP	Londonmetric Property	427	**234**	1000	**263**	1123
Software & Computers	RMV	Rightmove	170	**599**	1000	**698**	1187
Pharmaceuticals	DPH	Dechra Pharmaceuticlas	28	**3548**	1000	**5275**	1477
Industrial Transport	EVR	Evraz	203	**492**	1000	**598**	1214
Traverl & leisure	888	888 Holdings	338	**296**	1000	**407**	1376
Support Services	SNN	Sanne Group	158	**632**	1000	**932**	1473
Investment Banking	CMCX	CMC Markets	286	**456**	1000	**423**	1210
Electronic	LUCE	Luceco	385	**260**	1000	**497**	1913
Mining	CEY	Centamin	746	**134**	1000	**100**	746
Mining	HOC	Hochschild Mining	446	**224**	1000	**154**	687
Software & Computers	AVST	Avast	188	**533**	1000	**597**	1122
Support Services	DPLM	Diploma	45	**2220**	1000	**3108**	1399
Electricity	GLO	ContourGlobal	461	**217**	1000	**196**	904
Software & Computers	TRB	Tribal Group	1124	**89**	1000	**106**	1191
		Totals			**20012**		**23785**
Start date	5th Jan	Performance in Year			Change %		
		FTA ASI		**3749**	**9.8**	**4115**	
		STAR			**18.9**		

10.4 Portfolios using the Double Screened Selections

The shares that have been profiled using the STAR secondary screening process may be added to the basic primary screened selection or used to build up individual portfolios from scratch. The general guideline for the latter is to gradually add shares that score 60 or more points out of the maximum of 100. The objective would then be to build up your portfolio, month by month, until you have reached the desired number of shares or until you have no more cash to invest. Thereafter shares are sold when they appear on the monthly danger list or are swapped for higher rated replacements that appear in subsequent newsletters.

So far, that is up to end 2021, we do not have sufficient resources to evaluate shares that are not listed on the London market so the secondary rating process is currently limited to UK-based companies.

11. Jargon Buster – A Few Basic Terms Explained

Unfortunately, the investment industry enjoys using a number of basic terms that often confuse rather than enlighten investors. Some of the more common terms are explained here:

- **Loans:** Investment in a loan confers no ownership rights to the underlying business but priority in access to assets on dissolution.
- **Bond:** A fixed-income investment in which an investor loans money to an entity (corporate or governmental) that borrows the funds for a defined period of time at a fixed or variable interest rate.
- **Shares:** A share in a business is exactly that – a share (probably a very small percentage) of the total equity ownership of the business. Shares are often also referred to as "**Equities**".
- **Collective investment**: A fund to which multiple people contribute. A fund manager invests the fund on their behalf in different types of assets, such as property, stocks or bonds.
- **Gearing:** The amount of borrowing (or **Leverage** in the USA) the business has taken on as a percentage of the assets of the business. The borrowing includes short- and longer-term lines of credit, bank overdrafts and loans as well as dated loans (eg to be repaid at specific dates such as 5, 10 years) and loans that are held by outside investors.
- **EBITDA**: Earnings Before deduction of Interest costs, Taxes, Depreciation charges and Amortisation. This is a basic measure of the ongoing profitability of the underlying business
- **Earnings:** The amount that is available in each relevant accounting period (usually a year) for the owners of the business. For UK listed companies this is usually expressed in pence per share.
- **Interest Cover:** This measures the number of times the annual interest costs are covered by annual earnings before deducting taxes and interest costs. ***Cover below 2 times is often dangerous territory.***
- **Investosphere:** A catch-all term for the various forces that influence the financial markets.
- **Dividends:** The amount that the business pays out to its owners from the earnings available in the relevant accounting period. As with interest cover it is usually prudent for businesses, that need to invest for the future, to pay out no more than 50% of earnings by way of dividends. ***Dividend cover of between 2 and 3 times is a good general guideline.***
- **PER:** The Price Earnings Ratio measures the multiple that the current share price of a quoted company bears to the earnings (after deduction of all operating costs, corporate taxes and deductions that the business has made to allow for depreciation of physical assets and amortisation charges usually made against intangible assets). It may be more useful to think of the PER as an earnings yield (the inverse of the PER) which is the final measure of earnings, usually expressed as pence per share in the UK, as a percentage of the current share price. Thus, a PER of 20 (Share price is twenty times the earnings per share) is equivalent to an earnings yield of 5%.

Key Measures for a Sound Business:

- **Sales:** Ideally the business should have a proven record of steady and regular annual growth in the basic measure of annual sales.

- **Operating Margins**: These measure the difference between sales and direct operating expenses. They show the gross margin between sold outputs and purchased inputs and exclude overhead costs. They are a measure of the pricing power of the business so that ***a strong business may exhibit an element of monopoly power through high operating margins.***
- **Return on Capital Employed (ROCE):** This is another vital measure that looks at the return to the whole business and is derived by showing the business's Earnings before deduction of interest and taxes as a percentage of total assets less current liabilities. ***The ROCE should be significantly higher than the average cost of capital otherwise the business will be on a downward path to financial ruin.***
- **Business Growth Indicator:** A metric developed by STAR that relates capital expenditure per share and return on capital employed to the latest share price