

# **The STAR Guide to Equity Investment**

## **Section 7 – How to Develop Your Own Share Selection System**

## 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 9<sup>th</sup> 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.

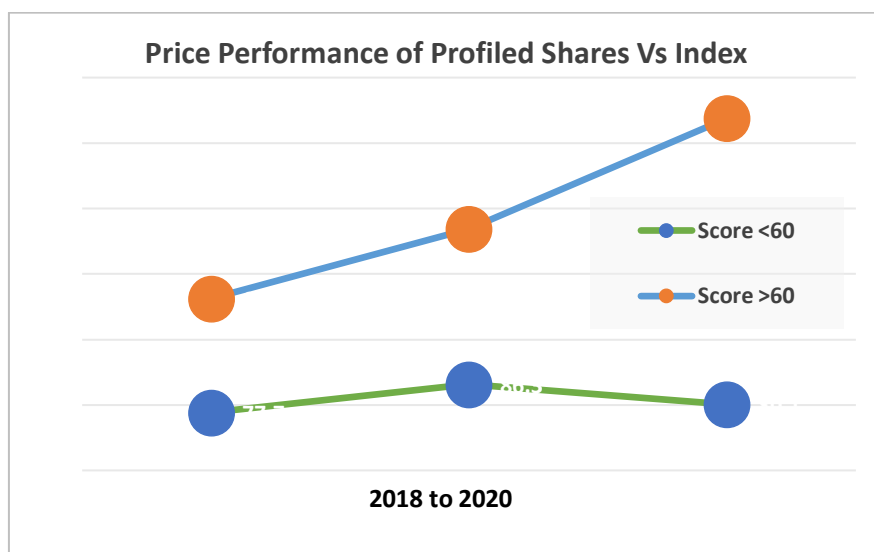
This sub-section outlines the secondary scoring procedures that we have been using for several years in order to try and seek out better businesses than are highlighted by the stage one screens. The way this works is that from the ranking list generated by the first stage screening process, outlined 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.