The STAR Guide to Equity Investment

Section 8 – Two Stage Screening in Detail

November 2021

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	STAR GLOBAL 2019		Cost
Sector	CODE	Company	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.