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# The Final Step: A Heat Map Of The Most Investable Stocks

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by: The FALCON Method

## Summary

- This article is the third part of a series that describes an evidence-based stock selection process.
- We already have a list of wide-moat companies that are available at a fair or better valuation. (Step One).
- After addressing accounting distortions, we know which of these targets are attractively valued in historical comparison. (Step Two).
- Let's see which companies on our shortlist look the most interesting and so warrant thorough analysis. (Step Three).

As a short recap, in the first step of our stock selection process, we looked for wide-moat companies that were trading at an acceptable valuation. (See the article that explains the reasoning and showcases the quantitative proof behind this approach.)

Next, we went on to examine which of these reasonably valued wide-moat firms were attractively priced in historical comparison. We introduced the Future Growth Reliance metric of the EVA framework that not only functions as a sentiment indicator but also addresses accounting distortions. (You can learn more about our second step in this article.)

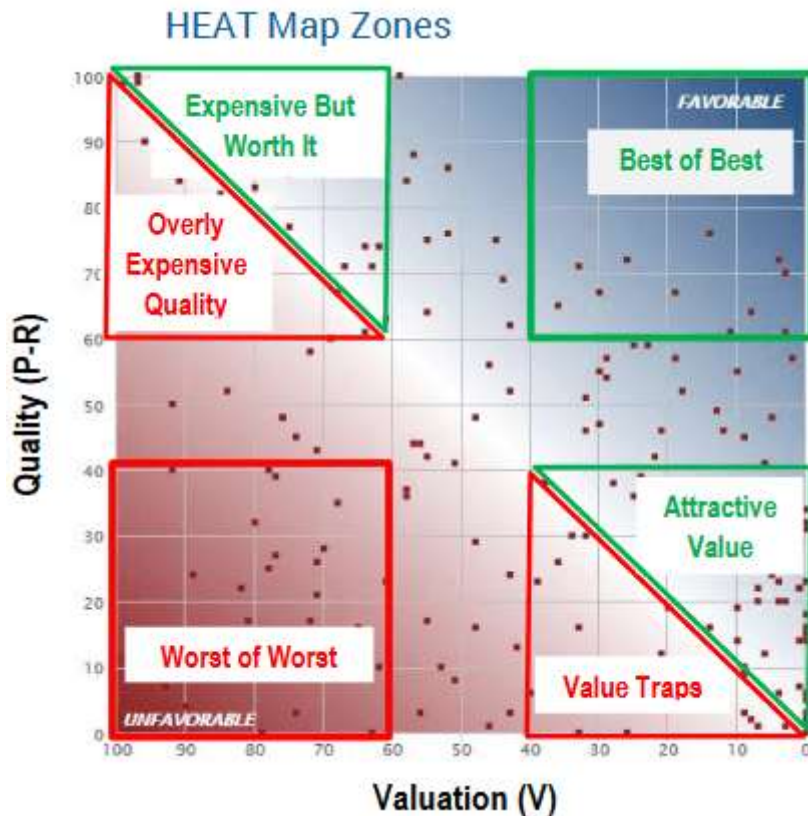
Now that we have a shortlist of wide-moat stocks that are both filtered by Morningstar's DCF-based valuation and the EVA-based Future Growth Reliance metric, there's only one more question to answer: **Which companies on this shortlist look the most interesting for further analysis?** (Our time is limited, so we prefer to focus on the most promising investment candidates in the most time-consuming part of our process that is the qualitative assessment of companies.)

## What if we could draw a heat map of the most investable stocks?

I'm a visual type, so seeing the stocks of our shortlist on a heat map with a quality and valuation axis is something that would greatly appeal to me. I'm not willing to sacrifice the evidence-based investment approach for pure aesthetic pleasure, though, so I was utterly impressed when I bumped into the PRVit (Performance-Risk-Valuation investment

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technology) model of the EVA Dimensions team. Their approach has both the evidence-based substance and the visual output that I need in this final filtering phase of the stock selection process. Before we go into details, here is how their heat map looks:



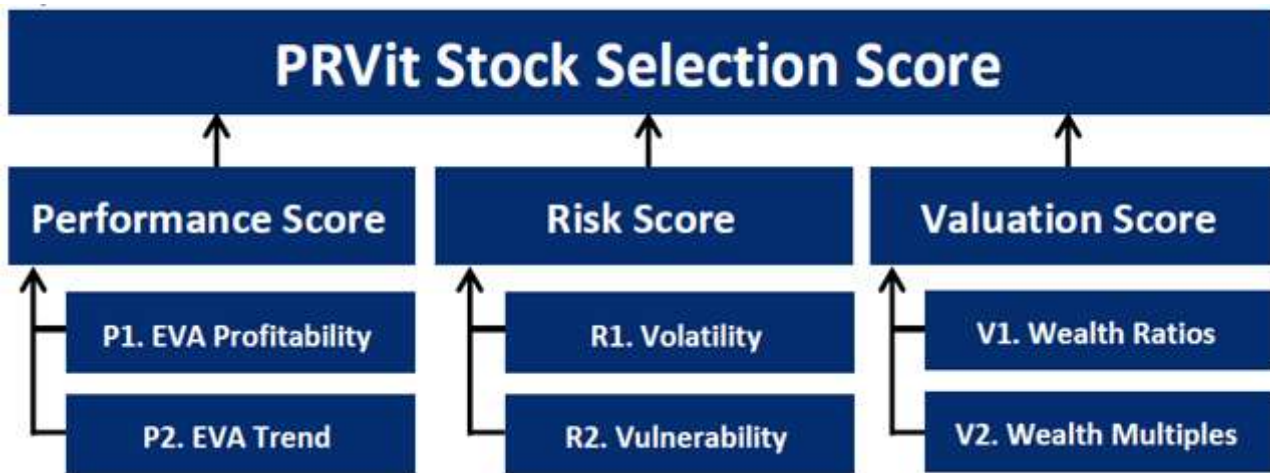
Source: [evaexpress.com](http://evaexpress.com)

All in all, PRVit is a multifactor quantitative stock selection model based on EVA-centric measures of Performance, Risk, and Valuation. It first estimates the fundamental value of a company based on its risk-adjusted EVA performance (shown on the vertical axis) and then compares it to its actual valuation (shown on the horizontal axis). All factors in this model were chosen heuristically based on common sense, and not by data mining, yet strong and statistically significant backtests prove the soundness of the PRVit approach both in the U.S. and globally. (See later.)

Before we move on: EVA (Economic Value Added) measures a firm's profit after all costs, including the cost of giving shareholders a decent return. (See the second article of this series for more explanation.)

## Understanding the components of this model

I am strongly against using any tool without deeply understanding it, so let's dissect the PRVit model into its components. The factors are grouped into three categories: Performance, Risk, and Valuation. Each company has a composite 0-100 score in each category, where higher is better for Performance and lower is better for Risk and Valuation. Each of these scores is derived from two sub-scores, as shown below.



Source: [evaexpress.com](http://evaexpress.com)

The PRVIt model mostly uses EVA-based factors (with a few exceptions like stock price volatility the inclusion of which surprised me), so I recommend reading the Best-Practice EVA book by Bennett Stewart, even if it's not an easy read. In the end, no matter what the business, all companies are competing for creating real value (outearning their true cost of capital), so EVA does deserve your attention.

## P1. EVA Profitability

EVA Margin (EVA/Sales) and EVA Spread (EVA/Capital) are the two factors that make up the P1 score.

EVA Margin is the profit margin that results after all operating expenses, taxes, and capital charges have been paid. This metric also corrects for several accounting distortions baked into the classic net income margin, and it consolidates pricing power, operational efficiency and the quality of asset management into one overall score. EVA Margin comes in really handy when you need to compare companies like Intel (NASDAQ:INTC) and Walmart (NYSE:WMT), the one incredibly capital intensive with risky fabrication plants, the other incredibly lean with a rapid-turn, low-markup business model. The two cannot by any means be compared on their operating margins. But they can be compared on their EVA Margins, because, **the capital charge in the EVA framework acts as the great neutralizer**. All in all, EVA Margin neutralizes differences in the business models, and accounting conventions, and provides a universally applicable scale to weigh performance.

With that said, firms with high EVA Margins are vulnerable as their ability to earn excess returns attracts competitors, imitators, and disruptors. Sorry, this is how capitalism works. So **when it comes to the EVA Margin, both the level and the trend are important: we want to see positive and rising EVA Margins**. (We'll get to the point of EVA Margin persistency with the factors of the R1 score. Hint: EVA Margin Volatility is included there, for good reason.)

Long story short, PRVIt scales EVA by both sales and capital ratios to neutralize across different capital intensity business models. A higher EVA Profitability (P1) score is better.

## P2. EVA Trend

The P2 score ranks companies according to EVA Momentum as computed over three time frames:

- The latest quarter's EVA minus EVA for the quarter ended a year ago, all divided by capital a year ago.
- The latest trailing 4-quarter EVA minus trailing 4-quarter EVA a year ago, all divided by trailing 4-quarter capital a year ago.
- The slope of the linear trendline for the last 12 quarters for quarterly EVA Momentum vs. capital.

Per definition, EVA Momentum is the change in EVA over a period, divided by the sales in the prior period. Essentially, it is **the size-adjusted growth rate in economic profit**. (The EVA guys are scaling this metric to capital in their PRVIt model because of that factor's lower volatility. However, this doesn't change the fact that EVA Momentum levels cross-company comparisons by scaling results according to size and by focusing on changes in EVA.) We can think of this as an indicator of "business model momentum", the overall summary measure of performance progress. EVA Momentum turns down or at least slows down at the earliest stages of when a business is maturing or facing competitive pressures, or when its managers are overinvesting in incrementally undesirable growth opportunities. With EVA Momentum, we have a ratio where bigger is always better since this metric only gets bigger when EVA does, which means that management is doing things that make economic sense.

To highlight one of the most important connections of the metrics within the EVA framework, think of EVA as sales times the EVA Margin (EVA/sales). With this formula, you can increase EVA (which is the ultimate goal of every company) by looking for ways to increase the EVA Margin and to drive profitable sales growth at a positive EVA Margin. In contrast, assume that the EVA Margin earned on the existing sales is unchanged, but that the incremental EVA Margin is zero on all new sales. Then the sales growth adds nothing to EVA and Momentum is zero. Note that such a scenario would produce continuing growth in sales, EPS, EBIT, and EBITDA, but without any increase in shareholder wealth. **An absence of sustained EVA Momentum is a sure formula for wealth stagnation!** (As a side note, it may have crossed your mind that based on the formula above, you can also increase EVA by reducing sales where the EVA Margin is negative. Yes, this works both ways... sometimes conflicting with the empire-building aspirations of executives.)

All in all, a higher EVA Trend (P2) score corresponds to a faster EVA-growth company.

**See Microsoft's (MSFT) exceptional EVA profitability metrics below as an illustration.**

99 Profitability (P)		Higher is better				
98 Profitability Level (P1)	Financial strength in generating a return on the full cost of capital					
		MSFT	25th	50th	75th	% Market
	EVA Margin (EVA/Sales)	24.8%	-4.4%	0.6%	5.8%	96
EVA Spread (EVA/Capital)	31.3%	-3.5%	0.6%	5.8%	96	
98 Profitability Trend (P2)	The growth rate in the firm's economic profit (its EVA)					
		MSFT	25th	50th	75th	% Market
	1-Qtr. EVA Mo. (vs Cap)	12.4%	-2.5%	0.5%	3.2%	93
	1-Yr. EVA Mo. (vs Cap)	8.1%	-2.1%	0.1%	1.9%	94
3-Yr. EVA Mo. (vs Cap)	8.3%	-1.0%	0.1%	1.3%	96	

EVA Margin, Momentum vs. Share Price ?



Source: evaexpress.com

## R1. Volatility

The volatility of the stock price and that of the EVA Margin are included in the R1 score. While I wholeheartedly welcome the factor that measures the EVA Margin's variability (by ranking of the standard deviation of the last 12 quarters' EVA Margin), I don't really understand the presence of the stock price volatility in the model. Stock price volatility does not equal risk in my dictionary, so this is a point where I disagree with the EVA guys. Tons of arguments could be cited on both sides, but I tend to agree with Howard Marks on the following.

There are many kinds of risk. But **volatility may be the least relevant** of them all. Theory says investors demand more return from investments that are more volatile. But for the market to set the prices for investments such that more volatile investments will appear likely to produce higher returns, there have to be people demanding that relationship, and I haven't met them yet. I've never heard anyone at Oaktree - or anywhere else, for that matter - say, 'I won't buy it, because its price might show big fluctuations,' or 'I won't buy it, because it might have a down quarter.' Thus, it's hard for me to believe volatility is the risk investors factor in when setting prices and prospective returns.

Rather than volatility, I think people decline to make investments primarily because they're worried about a loss of capital or an unacceptably low return. To me, 'I need more upside potential because I'm afraid I could lose money' makes an awful lot more sense than 'I need more upside potential because I'm afraid the price may fluctuate.' No, I'm sure **'risk' is - first and foremost - the likelihood of losing money.**"

In the PRVit model, a volatile stock price and variable EVA Margin decrease confidence levels and hence increase the Volatility (R1) risk score: stable stocks and business models are lower risk. All in all, a lower Volatility (R1) risk score corresponds to a safer company.

**See how Microsoft exhibited much lower volatility of EVA Margin (the red line) than Micron Technology (MU), the blue line on the chart below.**



Source: [evaexpress.com](http://evaexpress.com)

While I'm not that sure about stock price volatility, I tend to agree that **lower EVA Margin variability translates to lower business risk.**

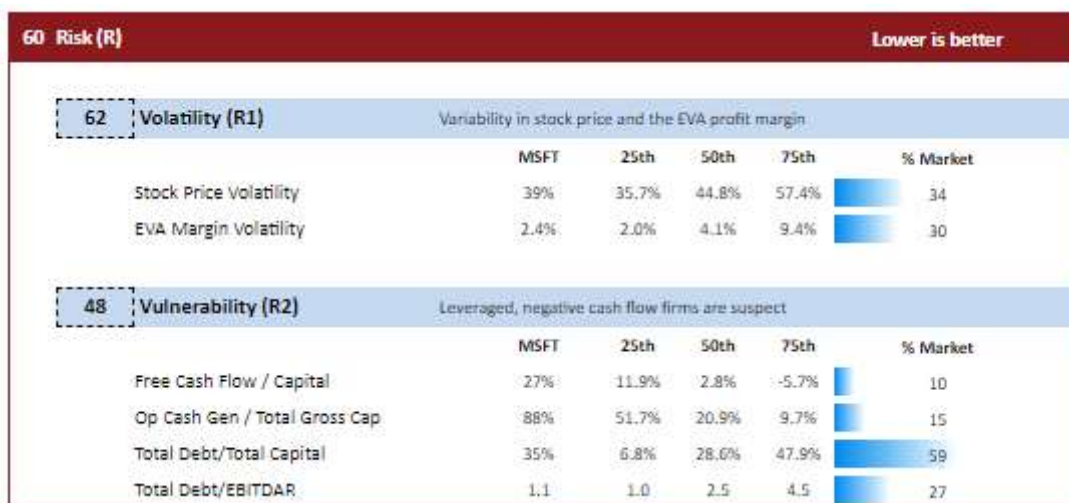
## R2. Vulnerability

The PRVit model also assesses a firm's financial strength and staying power in the Vulnerability (R2) score. The following metrics are considered:

- Free Cash Flow / Capital: Positive FCF generation indicates the company is self-financing after all capital investment, and thus lower in risk. This is a measure of the stock's funding need, not a measure of performance.
- Operating Cash Generation / Total Gross Capital: where OCG is FCF before Capex spending, but net of working capital build-up. Gross Long-Term Capital includes the permanent capital invested in fixed plant, property and equipment, and in intangibles, including goodwill, and other long-term assets. The OCG Return thus indicates the operating cash flow yield on permanent capital. Strong returns indicate lower risk and result in a better percentile score.
- Total Debt / Total Capital
- Total Debt / EBITDAR gauges repayment horizon. The longer it is, the more cash flow is consumed in debt service and is unavailable for growth. A low Total Debt/EBITDAR ratio indicates lower risk and results in a better percentile score. (Debt includes all interest-bearing debt and capital leases, the estimated present value of rents, and the postretirement net balance sheet funding liability. EBITDAR is EBITDA plus EBITDAR add-backs. EBITDAR add-backs include i) rent expense, ii) R&D and advertising spending, iii) reported retirement expense less the service cost, and iv) the changes in bookkeeping reserves for bad debts, LIFO, warranty expense.)

A lower Vulnerability (R2) score corresponds to a less vulnerable and safer company.

**Here is how Microsoft fares in the Risk dimension:**



Source: [evaexpress.com](http://evaexpress.com)

## V1. Wealth Ratios

This part of the model is based on the MVA (Market Value Added) metric of the EVA framework. Simply put, MVA is the difference between the total market value of a company, given its share price, and the capital employed on its balance sheet (measured the EVA way, meaning tons of adjustments to remedy accounting distortions). For example, a firm that trades for a \$1 billion market value and that has a \$700 million capital base has an MVA of \$300 million.

If you've read the second article of this series, you may have discovered that since MVA is Market Value minus Capital, it essentially equals Current Value Added plus Future Value Added. The market value of a company as a going concern business is equal to the book value of the capital that has been put into the business plus a premium, or less a discount, to reflect the quality of capital management (the present value of EVA). **Companies consistently underearning their cost of capital, thus destroying shareholder value can trade below the value of the capital that has been put in (reflecting the negative present value of EVA), while strong franchises that consistently outearn their cost of capital tend to trade well above the value of their capital (reflecting the positive present value of EVA).** This is not rocket science: corporate market value is commodity capital value plus proprietary franchise value, where franchise value is measured by the present value of the projected economic profit.

Now that we defined MVA, it won't come as a surprise that MVA Margin is the ratio of MVA to sales. It is the ratio of franchise value per dollar of revenue. It measures the efficiency with which the company is translating customer satisfaction into owner wealth. The composite Wealth Ratios (V1) score considers MVA as a percent of sales (MVA Margin) and capital (MVA Spread). You can even think of the MVA Spread as the EVA framework's version of P/BV, and the wealth ratios as deep value measures. All in all, a lower MVA or V1 score corresponds to a cheaper company.

**See how Microsoft exhibited a much higher MVA Spread (the red line) than Micron Technology, the blue line on the chart below.**



**MVA Spread (MVA/Capital)**



Source: evaexpress.com

It's no surprise that one of these companies trades with considerable franchise value, while the other doesn't.

**V2. Wealth Multiples**

As the Future Growth Reliance metric was defined in the second article of this series, let me get straight to the point here. The composite Wealth Multiples (V2) score measures valuation using Future Growth Reliance, as well as multiples of cash flow (EBITDAR as defined with the R2 score), and enterprise earnings (NOPAT). A lower V2 score corresponds to a cheaper company.

**Here is how Microsoft fares in the Valuation dimension:**

97 Valuation (V)		Lower is better				
<b>97</b>	<b>Price/Book (V1)</b>	Valuation multiples to book capital (as adjusted)				
		MSFT	25th	50th	75th	% Market
	MVA Margin (MVA/Sales)	900%	-31.1%	11.1%	115.4%	97
	MVA Spread (MVA/Capital)	1,042%	-27.4%	10.3%	110.1%	96
<b>91</b>	<b>Price/Earnings (V2)</b>	Valuation multiples to cash flow, earnings, EVA				
		MSFT	25th	50th	75th	% Market
	EBITDAR Multiple	16.0	4.7	7.4	11.9	85
	NOPAT Multiple	32.1	10.0	16.6	26.9	82
	Future Growth Reliance	55%	-36%	15%	59%	73

Source: evaexpress.com

Remember, a lower valuation score signals attractiveness, so Microsoft's value of 97 out of the possible 100 points is not too compelling, even if the company is unquestionably of the highest quality. This is what we expect to see on the PRVIt heat map.

## My quick take on this model

While not all the factors of the PRVIt model invoked the feeling of 'love at first sight' in me, I do admire that this framework has been put together from a fundamental investor's standpoint, thus (nearly) all its factors directly correspond to economically meaningful, fundamental concepts. For me, this is a big deal since most quantitative models are designed by data mining to find any factor with certain historical return patterns.

**I believe that EVA Margin, EVA Momentum, EVA Margin Volatility, MVA Spread, and Future Growth Reliance are the meat and potato of the PRVIt framework.** All the rest may fit in well, and may even make the model more successful, but these handful of aforementioned metrics are those that got me interested in this tool in the first place. Now let's see how well the PRVIt approach performs since historical evidence lists high on my list when I look for tools to base my investment decisions on.

## The quantitative evidence

Here's the data that shows the performance of the PRVIt model since May '98:

U.S. All Cap	1-Month Trailing		3-Month Trailing		12-Month Trailing		3-Year Trailing		5-Year Trailing		10-Year Trailing		May'98 to Present	
Core Universe, Industry Scores	IC	Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread
Profitability (High P)	17.0%	7.73%	8.8%	3.28%	3.8%	1.02%	3.2%	0.64%	2.9%	0.58%	3.2%	0.68%	2.8%	0.49%
Profitability Level (High P1)	18.4%	9.26%	9.3%	4.00%	3.0%	1.15%	3.0%	0.72%	3.2%	0.62%	3.1%	0.58%	2.7%	0.48%
Profitability Trend (High P2)	10.7%	4.53%	6.4%	2.08%	2.5%	0.70%	1.9%	0.38%	1.8%	0.41%	2.5%	0.57%	2.2%	0.45%
Risk (Low R)	17.9%	9.42%	8.1%	3.22%	2.2%	0.97%	2.2%	0.49%	2.2%	0.54%	2.3%	0.54%	2.0%	0.59%
Volatility (Low R1)	21.0%	10.69%	11.2%	3.99%	4.4%	1.47%	3.7%	0.81%	3.5%	0.69%	3.3%	0.62%	2.9%	0.42%
Vulnerability (Low R2)	6.7%	2.38%	1.5%	0.64%	-0.8%	-0.19%	-0.2%	-0.05%	0.1%	0.11%	0.4%	0.19%	1.2%	0.47%
Quality (High P - R)	21.5%	10.01%	10.8%	3.81%	3.7%	1.14%	3.5%	0.75%	3.3%	0.74%	3.5%	0.74%	3.3%	0.65%
Valuation (Low V)	-22.6%	-10.66%	-17.8%	-6.56%	-4.7%	-1.78%	-3.8%	-1.06%	-2.2%	-0.51%	-1.2%	-0.21%	0.4%	0.54%
Valuation Ratios (Low V1)	-23.8%	-11.47%	-17.4%	-6.57%	-4.7%	-1.89%	-4.0%	-1.10%	-2.5%	-0.58%	-1.5%	-0.27%	-0.2%	0.40%
Valuation Multiples (Low V2)	-14.0%	-7.69%	-13.7%	-4.86%	-3.0%	-1.42%	-2.2%	-0.71%	-0.7%	-0.19%	0.5%	0.11%	2.1%	0.81%
PRVIt	3.3%	2.61%	-3.7%	-0.72%	-0.1%	-0.16%	0.3%	-0.10%	1.4%	0.27%	2.5%	0.55%	3.8%	1.04%

Global All Cap	1-Month Trailing		3-Month Trailing		12-Month Trailing		3-Year Trailing		5-Year Trailing		10-Year Trailing		May'98 to Present	
Core Universe, Industry Scores	IC	Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread	Avg IC	Avg Monthly Spread
Profitability (High P)	8.1%	3.81%	7.0%	2.48%	4.7%	1.24%	4.3%	0.90%	3.4%	0.64%	4.0%	0.79%	3.5%	0.63%
Profitability Level (High P1)	7.9%	3.40%	7.6%	2.21%	4.6%	1.07%	4.2%	0.76%	3.3%	0.55%	3.6%	0.62%	3.3%	0.53%
Profitability Trend (High P2)	5.9%	2.59%	4.9%	1.44%	3.2%	0.75%	2.8%	0.61%	2.4%	0.45%	3.3%	0.74%	2.9%	0.64%
Risk (Low R)	14.8%	7.65%	8.7%	3.13%	4.7%	1.33%	4.2%	0.82%	4.5%	0.85%	4.7%	0.80%	3.5%	0.66%
Volatility (Low R1)	21.6%	11.33%	12.3%	4.57%	6.4%	1.81%	5.1%	0.95%	5.0%	0.82%	4.9%	0.79%	3.3%	0.30%
Vulnerability (Low R2)	0.2%	-0.08%	0.3%	0.05%	0.5%	0.15%	1.1%	0.25%	1.8%	0.46%	2.0%	0.50%	2.0%	0.62%
Quality (High P - R)	12.8%	7.07%	9.8%	3.47%	5.7%	1.51%	5.2%	1.08%	4.6%	0.89%	5.1%	1.02%	4.2%	0.79%
Valuation (Low V)	-6.8%	-4.07%	-12.5%	-3.82%	-4.8%	-1.43%	-2.8%	-0.68%	-1.0%	-0.14%	-0.7%	-0.03%	0.8%	0.66%
Valuation Ratios (Low V1)	-7.8%	-4.73%	-12.5%	-4.04%	-5.2%	-1.58%	-3.2%	-0.80%	-1.5%	-0.22%	-1.3%	-0.13%	0.2%	0.53%
Valuation Multiples (Low V2)	-3.3%	-2.23%	-9.0%	-2.81%	-2.0%	-0.75%	-0.3%	-0.22%	1.0%	0.17%	1.5%	0.32%	2.8%	0.93%
PRVIt	6.8%	2.63%	-0.4%	0.18%	1.7%	0.27%	2.8%	0.47%	3.6%	0.67%	4.3%	0.88%	4.6%	1.28%
PRVIt Prime	2.5%	0.48%	-1.4%	-0.60%	0.9%	-0.06%	2.0%	0.24%	2.7%	0.47%	3.5%	0.70%	4.2%	1.11%

Source: [evaexpress.com](http://evaexpress.com)

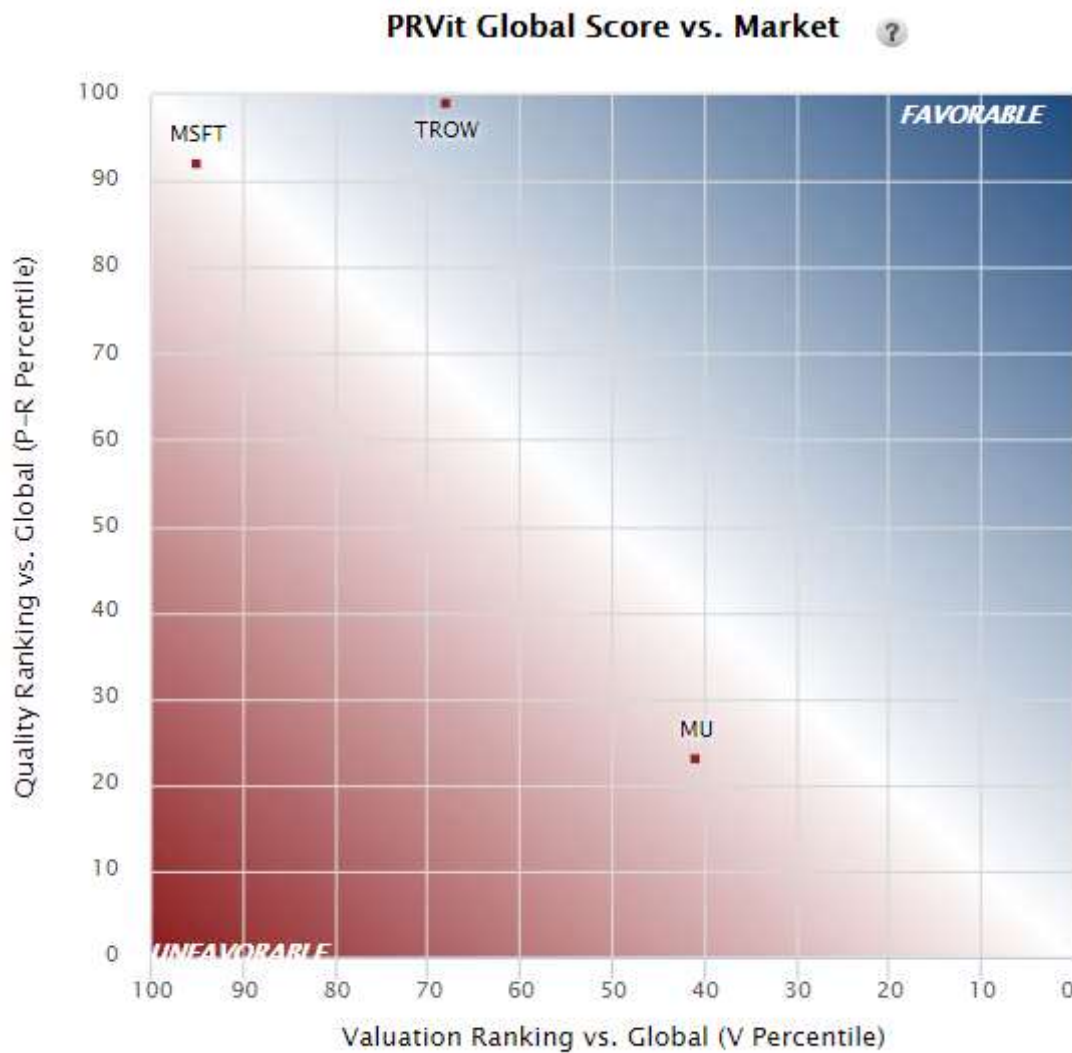
The average monthly spread shows the difference between the top and bottom quintiles while the "Avg IC" column stands for the investment coefficient that essentially measures the strength of the signal. (The higher the IC the more monotonic the return profile of that factor, i.e. quintile 1 > quintile 2 > quintile 3 > quintile 4 > quintile 5.)

While the average monthly (!) spread of 1.04% in the U.S. All Cap universe is quite impressive and shows that the PRVIt model may fit well in our evidence-based stock selection process, attentive readers may notice that the model's value factor has been

underperforming for 10 years. The table tells me, when it comes to performance, quality matters most (as defined by profitability and risk together).

## The result: here's our heat map

Comparing a company's Fundamental Value Score (P-R) to its actual Valuation Score (V) can be visualized on a heat map like the one below, where the gradient diagonal line signals fair value. This visual presentation would also reinforce my belief that **I should wait for a better entry point with Microsoft.**



Source: [evaexpress.com](http://evaexpress.com)

All in all, the PRVit heat map can be a valuable addition to our evidence-based stock selection process. Remember, we already have a list of decently valued wide-moat stocks that even passed the EVA-based historical valuation filter in our second step, so we want to see which of these investment candidates appear to be the most interesting targets for further analysis. This is exactly what this heat map provides us. (With that said, I consider

the PRVIt heat map a valuable snapshot, but I am also interested in how long a certain company has been inhabiting the upper quintile of profitability in this framework, so my work is most certainly not finished here.)

Now that we see which firms deserve our close attention, the real time-consuming work of qualitative assessment may begin. All this evidence-based model can do for us is **direct our attention to worthy candidates so that most of our time spent on reading and analysis doesn't go to waste.**

**I plan to run this three-step process on a monthly basis and publish the shortlist of targets it produces.** Also, I am hopeful that the members of my FALCON Team will publish thorough analyses of the most promising targets. If you don't want to miss any of these pieces in the future, please scroll up and click "Follow" next to my name.

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