REVELATION
INVESTMENT RESEARCH, INC.

RIR PRODUCT USAGE BRIEF

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Alternative Measures of DRA's Risk and Return Prediction

Client Question

How well does Downside Risk Alert predict different aspects of stocks' relative riskiness?

RIR Reply

To measure DRA's effectiveness as a risk predictor, one must first define risk. Perhaps the simplest relative risk metric is price volatility, but volatility has its limitations as a risk measure because it doesn't distinguish between positive and negative outcomes. Predicting return *direction* is more valuable – and far more difficult – than predicting return dispersion. RIR typically highlights DRA's ability to predict relative returns using Information Coefficients (i.e., correlation between stock rankings and subsequent returns) and average returns of ranked stock cohorts. These metrics are simple and robust ways to quantify the ability of a model (or factor) to sort stocks by their future returns, but they also are incomplete risk measures as equal weighted performance statistics ignore a stock's size and other risk attributes, and they don't capture the probability of losing money or trailing a benchmark.

In this brief, we examine DRA's risk prediction power using several additional performance metrics (many of which are included in our quarterly Performance Updates). For our tests, we first ranked MSCI IMI U.S. index members (approximately the 2,300 largest U.S. stocks) into deciles each month from 11/2001 to 10/2024 and then compiled prediction performance statistics over subsequent 3 and 12-month holding periods.

The top panel of Table 1 shows DRA's return prediction in familiar terms – equal weighted total and excess returns for ranked stock cohorts, whereas the middle panel summarizes performance using market cap weighted returns. It's important to understand that cap weighted decile cohort "portfolios" tend to be very undiversified when comprised of stocks across a broad market capitalization spectrum. Nonetheless, DRA's predictive power is similar whether measured on a cap-weighted or equal weighted basis. Table 1's lower panel provides new perspective into DRA's predictive power by showing median returns and hit ratios (i.e., % of stocks outperforming the universe). Note the huge spread in median returns across DRA deciles, which indicates that DRA is extremely good in ranking ordering subsequent stock returns[1]. Table 1's bottom row shows DRA's excellent Portfolio Hit Ratios, i.e., the percentage of time periods that a decile cohort portfolio outperforms. Portfolio hit ratios show the power of using DRA to select top-ranked stocks and then combining them into a portfolio that beats benchmarks[2].

Digging deeper, Table 1 shows that while DRA's poorly ranked stocks in deciles 9 and 10 tend to underperform, collectively (on average) and individually (have low hit ratios), cohort portfolios of these stocks have significant positive skewness. While risk-averse investors should avoid these stocks altogether, these statistics reveal that short-sellers should apply additional screens to these poorly ranked stocks to avoid a few rebounding stocks from torpedoing a short portfolio.

Table 2 shows that DRA is a fantastic predictor of future stock risk measured in terms of market sensitivity (i.e., beta) and price volatility. Note how future betas and volatility ramp up exponentially as DRA rankings get worse. Table 3 shows that DRA performance is also extremely strong on a risk-adjusted basis. DRA decile portfolio alphas (i.e., beta-adjusted returns) are large and statistically significant across the board. DRA cohort portfolio Sharpe Ratios (i.e., return over risk-free rate per unit of volatility) also are far higher for better-ranked stocks than for worse-ranked stocks.

In conclusion, this study shows across a variety of performance metrics that DRA is a strong predictor of relative returns, an even stronger predictor of relative risk, and hence an extraordinary predictor of risk-adjusted returns. Clients who favor DRA's better-ranked stocks have a great head start in building equity portfolios that beat benchmarks on both an absolute and risk-adjusted basis.

[1] Table 1 shows that mean cohort returns are higher than median cohort returns (i.e., positively skewed) due to the fact that individual stock returns can exceed 100% but can't fall below -100% in a given time period.

[2] Portfolio hit ratios are more extreme than individual stock hit ratios due to averaging effects, i.e., the law of large numbers.

Table 1: Measures of DRA's Prediction of Relative Returns																						
	12 Month Holding Periods											3 Month Holding Periods										
Predictive Power Metric	1	2	3	4	5	6	7	8	9	10	Univ	1	2	3	4	5	6	7	8	9	10	Univ
Avg EqWtd Total Return%	14.7	13.8	13.6	13.0	12.4	11.9	11.8	11.4	10.3	5.1	11.8	3.8	3.6	3.6	3.5	3.1	3.0	2.9	2.6	2.0	0.2	2.8
Avg EqWtd Excess Return%	2.9	2.0	1.8	1.2	0.6	0.1	0.0	-0.4	-1.5	-6.7		0.9	0.8	0.7	0.6	0.3	0.2	0.1	-0.2	-0.8	-2.6	
Avg CapWtd Total Return%	12.8	10.8	12.5	10.7	11.5	11.4	9.3	10.5	8.8	4.4	11.3	2.9	2.8	3.0	2.7	2.7	2.8	2.3	2.4	1.1	-0.2	2.7
Avg CapWtd Excess Return%	1.5	-0.5	1.2	-0.6	0.2	0.1	-2.1	-0.8	-2.5	-6.9		0.3	0.1	0.3	0.0	0.0	0.2	-0.4	-0.2	-1.6	-2.9	
Median Total Return%	12.9	11.3	10.4	9.6	8.7	7.5	6.4	5.1	1.3	-7.6	7.8	3.4	3.0	2.9	2.7	2.3	2.1	1.8	1.2	0.0	-2.6	2.1
Median Excess Return%	5.1	3.4	2.5	1.7	0.8	-0.3	-1.5	-2.8	-6.5	-15.5		1.3	0.9	0.8	0.6	0.2	0.0	-0.3	-0.9	-2.1	-4.7	
Avg Stock Hit Ratio%	54.1	50.8	49.1	48.0	46.4	45.1	44.0	42.7	39.9	34.5	45.5	52.9	51.4	50.5	49.7	48.5	48.1	47.5	46.5	44.4	41.1	48.1
Avg Portfolio Hit Ratio%	73.3	75.9	75.9	73.8	67.4	57.2	45.5	24.6	21.4	25.1	54.0	63.8	67.3	61.2	62.2	59.7	58.2	50.5	32.7	36.2	40.3	53.2

Table 2: Measures of DRA's Prediction of Relative Risk																					
	12 Month Holding Periods										3 Month Holding Periods										
Risk Metric	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	
Beta	0.69	0.77	0.83	0.86	0.89	0.97	1.06	1.18	1.32	1.44	0.73	0.80	0.84	0.88	0.90	0.98	1.03	1.13	1.26	1.46	
Stdev Total Return%	23.8	27.3	30.5	33.0	35.3	38.5	44.2	49.3	59.9	70.4	11.1	12.7	14.1	15.2	16.4	17.8	19.4	21.9	26.4	31.3	

Table 3: Measures of DRA's Prediction of Risk-Adjusted Relative Returns																					
Risk-Adjusted Power Metric	12 Month Holding Periods										3 Month Holding Periods										
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	
Alpha%	6.5	4.8	3.8	2.8	2.0	0.4	-0.7	-2.6	-5.3	-11.9	1.7	1.4	1.2	1.0	0.6	0.3	0.0	-0.6	-1.6	-3.9	
T-Stat Alpha	21.8	17.7	14.8	11.2	8.0	1.9	-3.4	-8.5	-11.5	-14.7	11.7	10.9	10.1	8.0	5.4	2.6	-0.1	-5.2	-6.5	-10.7	
Sharpe Ratio	0.80	0.68	0.61	0.55	0.50	0.42	0.37	0.30	0.20	-0.01	0.44	0.39	0.36	0.33	0.28	0.25	0.22	0.16	0.08	-0.07	