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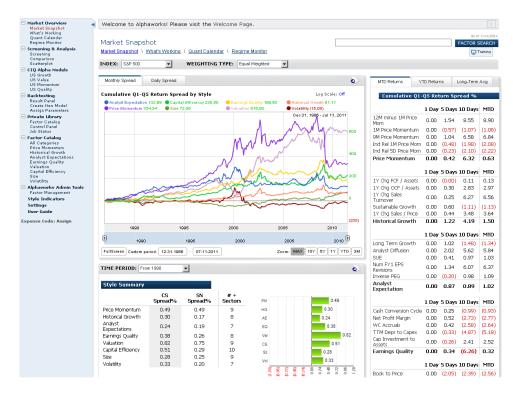
Research Briefs

A Topical Digest of Investment Strategy Insights

Investors must sort through a constant stream of information in order to identify opportunities, structural changes, and market risks. Wading through information quickly and efficiently is critical as investors must understand how their strategy and exposures are impacted. Typical classes of questions include: What strategy should I use in response to a regime shift? How do I invest in a specific industry? Do other markets behave differently than the US market?

In this report we highlight several classes of questions that investors are routinely interested in and share our thoughts on these topics. We grouped these questions as follows:

- Macroeconomic and Regime Strategies: In recent years, investors have shown
 growing interest in incorporating macro information into their investing processes.
 Regime switching models have attracted increasing attention. We provide our
 observations on the performance sensitivity of different investment strategies within
 economic regimes.
- Sector and Industry Level Investing: Investors look beyond generic fundamental data in order to differentiate from traditional "one size fits all" investment processes. We demonstrate the importance of utilizing industry specific sources of information in an investment process.
- **Popular Investment Strategy Round Up:** We delve into a handful of strategies that are widely implemented by practitioners and commonly studied by academics. We offer our findings on the performance of these strategies under varied market conditions.
- Global Investing: Investors look to international markets (developed and emerging) for new sources of excess returns. We analyze the efficacy of various strategies in these markets.
- Building and Analyzing Alpha Strategies: Developing an investment strategy takes time. From signal selection and model construction to backtesting and performance tracking, we illustrate how Alphaworks can serve as a practical and efficient tool in the strategy formulation and refinement process.



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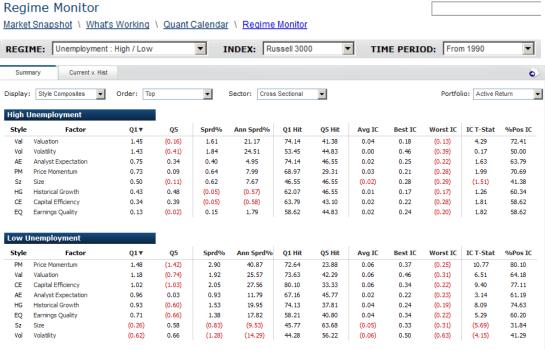
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1 Macroeconomic and Regime Strategies

The US is experiencing high unemployment, and the Federal Reserve expects the unemployment rate to remain elevated through 2011. What strategy tends to perform best in a high unemployment rate environment?

Since June 2008, the unemployment rate in the US has risen above its 20-year moving average (currently 9.2% vs. 5.91%). Various stimulus packages have failed to rein-back joblessness to acceptable pre-crisis levels. In periods of abnormally high unemployment, value strategies work best. Companies that rank in our top valuation quintile deliver 1.45% excess monthly return over the market. A long-short quintile portfolio based on valuation generates 1.61% monthly spread 2. Other strategies, such as growth strategies, may yield decent spreads in low unemployment regimes but do not perform well when the unemployment rate becomes elevated. A high unemployment rate may simply be indicative of a weak economy. In those scenarios, investors tend to be more risk averse and less optimistic about growth stocks. Therefore the return spread between high growth companies and low growth companies diminishes.

Figure 1: Strategy Performance during High and Low Unemployment Periods, Russell 3000, 01/1990 – 06/2011



Source: Capital IQ Alphaworks

I am a value investor. How should I invest during a period of time that growth stocks are favored?

Value investing involves buying stocks that are perceived to be underpriced on certain fundamental measures. Intuitively, "cheap" stocks should converge to their intrinsic value over time, and value strategies should be profitable. However, there are periods where investors become enthusiastic about growth stories, leading to outperformance of growth stocks. Fortunately, it is possible for value investors to succeed in this environment if they focus more intently on specific valuation metrics.

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¹ Excess return is the absolute equal (cap) weighted return of a certain quintile over the equal (cap) weighted return of the specified universe.

² Spread is top quintile return minus bottom quintile return.

Figure 2: Value Strategies in Growth Regime, Russell 3000, 01/1990 - 06/2011

Regime Monitor

Market Snapshot \ What's Working \ Quant Calendar \ Regime Monitor

REGI	ME: Value Mkt / Grov	vth Mkt : Br	oad Cap	▼ II	NDEX: Ru	issell 300	0	TIN	1E PERI	OD: From	n 1990	▼
Growt	h Outperforms											
Style	Factor	Q1	Q5	Sprd%▼	Ann Sprd%	Q1 Hit	Q5 Hit	Avg IC	Best IC	Worst IC	IC T-Stat	%Pos IC
AE	Long Term Growth	2.73	(0.99)	3.72	55.09	79.37	31.75	0.07	0.37	(0.21)	7.57	76.98
PM	Share Turnover	2.42	(0.89)	3.31	47.74	76.19	33.33	0.07	0.34	(0.20)	6.95	74.60
EQ	R&D Intensity	3.07	(0.22)	3.29	47.52	69.84	44.44	0.06	0.45	(0.26)	5.39	68.25
Vol	Volatility	2.42	(0.87)	3.29	47.49	63.49	36.51	0.04	0.48	(0.39)	2.66	61.11
PM	Price Momentum	2.22	(1.03)	3.25	46.75	79.37	25.40	0.07	0.28	(0.20)	9.56	83.33
Vol	60M CAPM Beta	2.12	(0.83)	2.94	41.61	76.98	30.95	0.06	0.36	(0.35)	5.14	73.02
Val	Net Current Assets/Price	1.83	(1.06)	2.88	40.63	71.43	26.98	0.06	0.34	(0.20)	7.03	73.02
AE	Analyst Expectation	2.07	(0.78)	2.85	40.05	88.10	25.40	0.06	0.25	(0.13)	10.92	84.13
EQ	CashRatio	2.31	(0.39)	2.70	37.60	77.78	38.10	0.04	0.35	(0.19)	5.66	70.63
EQ	QuickRatio	2.20	(0.41)	2.62	36.34	74.60	38.89	0.04	0.35	(0.16)	5.49	70.63
Vol	90DCV	1.94	(0.67)	2.61	36.25	66.67	37.30	0.03	0.45	(0.32)	2.32	64.29
EQ	Working Capital to Assets	2.25	(0.36)	2.61	36.22	71.43	41.27	0.04	0.35	(0.18)	5.43	70.63
Vol	12M Realized Volatility	1.86	(0.71)	2.57	35.64	60.32	42.06	0.02	0.44	(0.37)	1.52	55.56
EQ	Current Ratio	2.00	(0.29)	2.28	31.10	76.98	46.83	0.04	0.31	(0.16)	4.88	69.84

Source: Capital IQ Alphaworks

As Figure 2 shows, a long-short quintile portfolio formed using the Net Current Assets to Price ratio generates a monthly spread of 2.88% in growth regimes over the past 20 years. Similarly, a strategy that ranks stocks by Cash to Enterprise Value yields 1.62% monthly spread. Both strategies involve some form of current assets, suggesting that companies that are "cheap" based on current assets or those that hold large amount of cash, tend to outperform in growth regimes. This may be the result of companies with abundant internal capital facing lower costs when growth opportunities are present, and investors are rewarded for holding these companies during growth regimes.

2 Sector and Industry Level Investing

Amid the European sovereign debt crisis, how should I invest in the financial sector of the European market?

In late 2009, the Greek government was found to have deliberately hidden the country's actual level of borrowing. This led to a wide spread crisis of confidence in the solvency of the Euro zone periphery. The European market has experienced substantial turmoil amidst the fears of default from within the Euro zone. The financial sector has been particularly impacted by this turmoil. Taking note of various investment strategies' performance in Europe during the debt crisis may provide useful insight as to what strategies would be most appropriate to follow both now and in the future.

Since November 2009, trend following or price momentum strategies have generated a 2.11% monthly return spread in the European financial sector. Explicitly, a strategy that is long winners and short losers has been profitable throughout the most recent crisis. By comparison, this strategy returned only 1.01% monthly in the 10 years preceding the crisis. On the other hand, a long-short quintile portfolio based on analyst earnings forecasts yielded only 0.33% per month during the crisis, as compared to 0.64% before the crisis. One explanation may be that analysts' ability to accurately predict companies' earnings is impaired by gloomy market conditions, leading to the underperformance of a strategy that relies on such forecasts.

Regime Monitor Market Snapshot \ What's Working \ Quant Calendar \ Regime Monitor REGIME: Europe Crisis Europe ┰ From 2000 ▼| TIME PERIOD: INDEX: Summary Current v. Hist 0 Display: Style Composites Order: Top Sector: Financials ▼ Portfolio: Active Return • crisis Sprd%▼ 05 Hit Style Factor 01 05 Ann Sprd% 01 Hit Ava IC Best IC Worst IC IC T-Stat %Pos IC 0.60 (1.51) 2.11 28.52 65.00 25.00 0.08 0.31 (0.10)3.03 60.00 CE Capital Efficiency 0.51 (0.93)18.68 60.00 25.00 0.06 0.28 3.29 70.00 Historical Growth (0.65)0.91 11.48 70.00 40.00 0.02 0.12 (0.06)1.56 50.00 EQ Earnings Quality 0.38 0.86 10.84 65.00 45.00 0.04 0.19 2.72 65.00 0.76 50.00 35.00 0.00 0.07 40.00 Analyst Expectation 0.08 0.33 4.03 40.00 30.00 0.00 0.20 0.18 45.00 (0.09) (0.39) (4.57) 35.00 0.03 0.30 (0.19) Volatility (1.59)0.56 (2.15)(22.96)(0.13)(0.43)Style Factor Q1 Q5 Sprd%▼ Ann Sprd% Q1 Hit Q5 Hit Avg IC Best IC Worst IC IC T-Stat %Pos IC 61.34 0.05 71.43 Price Momentum 0.19 (0.82)12.81 26.89 1.01 0.36 (0.41)5.09 0.21 Valuation 0.31 (0.34)0.65 52.94 42.86 0.04 (0.17)5.26 66.39 8.04 Analyst Expectation ΑE 0.36 (0.29)0.64 8.02 54.62 40.34 0.02 0.21 (0.21)2.67 57.14 Capital Efficiency 0.21 (0.36) 0.57 7.04 57.14 38.66 0.02 0.23 (0.27) 3.08 57.98 CF Historical Growth HG 0.08 (0.23)0.31 3.75 52,94 47.90 0.01 0.26 1.79 57.98 (0.20)2.55 0.12 (0.09)0.21 46.22 48.74 (0.01)0.39 (0.41)(0.39)42.02 Sz Size (0.04) EQ Earnings Quality 0.02 0.06 0.71 54.62 45.38 0.01 0.18 (0.21)1.20 54.62 Volatility 0.04 39.50 50.42 40.34 Vol (0.57)(0.60)(7.01)(0.03)0.61 (0.58)(1.79)

Figure 3: Strategies during the European Debt Crisis, Europe, 01/2000-06/2011

How do I improve my stock selection process within individual industries?

Since different factors drive performance across industries, one plausible approach to improve stock picking is to incorporate industry specific data to an existing investment process. Our June publication "Our Retail Industry Strategy – Does Industry Specific Data Tell a Different Story?" shows how this can be accomplished. Our conclusion was that retail specific data can be used to create a stand-alone strategy to pick retail stocks that are expected to outperform the broader retail industry, or the data can be blended with generic financial data to improve the return profile of an existing retail strategy. For instance, a long-short quintile portfolio ranked by Year on Year Growth in Same Store Sales, which is a retail specific signal, generates a positive monthly spread over the period of April 2002 to April 2011 and has a statistically significant information coefficient (IC)³. The IC is the correlation between the growth in sales and subsequent stock returns. On the contrary, a similar strategy using Year on Year Growth in Total Revenues, a generic signal, has a negative monthly spread of 0.47% over the same period.

Figure 4: Benefits of Industry-Specific Data, Retail Companies of Russell 3000, 04/2002-04/2011

	Long-Short Portfolio			
	1 Month Spread	Spread T-stat	1 Month IC	IC T-stat
Year on Year Growth in				
Same Stores Sales	0.12%	0.16	0.030	1.90
Year on Year Growth in				
Revenues	-0.47%	-0.65	0.017	1.17

In future Alphaworks releases, investors will be able to define their own universes. This will facilitate the development and performance assessment of various trading strategies using industry-specific and cross-sectional data sources.

³ $IC_h = Extended Spearman Correlation(Fractional(r_{t,t+h}), Fractional(Raw Value_t))$

3 Popular Investment Strategy Round Up

Can I verify the January Effect? How can I take advantage of it?

The January Effect is a phenomenon that has been observed for decades. It is the observation that stock prices tend to rise during the month of January far more than any other month of the year. This anomaly is especially evident for small-cap stocks. The main theory for why this occurs is that many investors will sell their positions at the end of the year in order to claim capital losses for tax benefits. This particularly affects individual investors, who are more income tax-sensitive, and who tend to hold an especially large number of small stocks. These investors then reenter the market at the start of the year which causes stock prices to rise. This 'selling off' at the end of the year also is thought to create discounts on the market value of stocks, which in turn will cause bargain hunters to enter, thus creating buying pressure in the market.

We can view the January Effect by observing the monthly returns of the Russell 2000 Index, a small-cap universe, over the last 24 years. The average return of the Russell 2000 Index for all January's since 1987 is 1.27% (standard deviation of 6.45%), while the average return for every other month combined is only 0.24% (standard deviation of 5.99%). This clearly shows that there are higher total returns in January than in every other month combined over the last 24 years.

A way for us to take advantage of the January Effect is to take a contrarian approach toward the price momentum of stocks in the Russell 2000 Index. We define Q1 as top quintile companies with low price momentum in the previous month and Q5 as bottom quintile firms with high price momentum in the last month. In Figure 5, we see that Q1 outperformed Q5 significantly more in January than in any other month. The average return spread for all January's since 1987 is 5.64%, while the average return spread for every other month combined is only 2.65%.

PORTFOLIO: Active Return Jan Feb Oct Mar Apr May Jun Jul Aug Sep Nov Dec 3.91 0.59 Q1 0.410.421.10 0.24(0.64)0.37 0.130.970.40 0.37 1.51 0.740.50 0.590.83(0.32)Q2 0.720.490.170.750.040.66QЗ 0.25 0.93 0.59 0.66 0.59 0.47 1.15 0.82 0.49 0.66 0.280.94 Q4 (0.51)0.31 0.68 0.58 0.57 0.77 0.12 0.68 0.51 0.30 0.56 0.63 Q5 (1.73)(0.44)(0.05)0.07 0.22 0.12 1.76 0.50 0.60 (1.02)0.16 (0.21)Avg. Spread 5.64 (0.71)(0.03)0.85 0.58 0.85 0.47 0.60 (0.37)1.61 0.15 (1.35)Annualized 93.17 10.69 5.79 7.44 (4.35)(8.20)21.13 1.81 (0.36)10.69 (15.05)7.19 4 00 2.00 1.10 0.59 0.42 0.37 0.40 0.37 0.24 0.13 (0.64) (2.00)(4.00)

Figure 5: January Effect - Active Return of One Month Price Momentum, Russell 2000, 01/1987-06/2011

Source: Capital IQ Alphaworks

This implies that companies that have seen low price momentum in December experience especially high returns in January. This low price momentum in December may be caused by investors selling off their shares for tax reasons, while the high returns in January correspond to investors repurchasing those shares. Following a strategy of buying small cap stocks with low

one month price momentum at the end of the year and holding them until the end of January has been a profitable strategy.

Interestingly, it should be noted that the January Effect has been much weaker in recent years. In fact, the average return of the Russell 2000 Index for January since 2002 has been negative (while remaining positive for all other months combined). The percent of positive returns for January from 1987-2007 was 66.7% while it was only 57.1% for all the other months. However, in the last 4 years all returns for January have been negative, while the average return for all other months has risen to 65.8%.

How can I test if contrarian investing is a profitable strategy?

Contrarian investing is a market strategy that seeks to exploit market mispricing caused by behavioral biases, such as optimism, pessimism, overconfidence, and shortsightedness, which lead to stock prices becoming overly deflated or inflated. Similar to a value investor, a contrarian would bet against current "hot" stocks, while he/she might seek to buy distressed stocks.

We explore a simple example of a contrarian strategy by comparing the current stock price to the previous one month high price and low price. By looking back one month from the current date, we are able to capture the most recent trends in the stock price. This strategy is vulnerable however to abnormally high or low price spikes that persist through our look-back period for the whole month.

In this example, we define Q1 as those 20% of stocks whose prices are closest to their one month low. These are our deflated stocks. Q5 is defined as the 20% of stocks whose prices are nearest to their one month high. These are our inflated stocks. According to this contrarian strategy, stocks in Q1 may have suffered from pessimistic investors and should be undervalued. These would be good stocks to buy. Stocks in Q5, on the other hand, may currently be "hot" stocks. They are potentially overvalued by exuberant investors and should be sold.

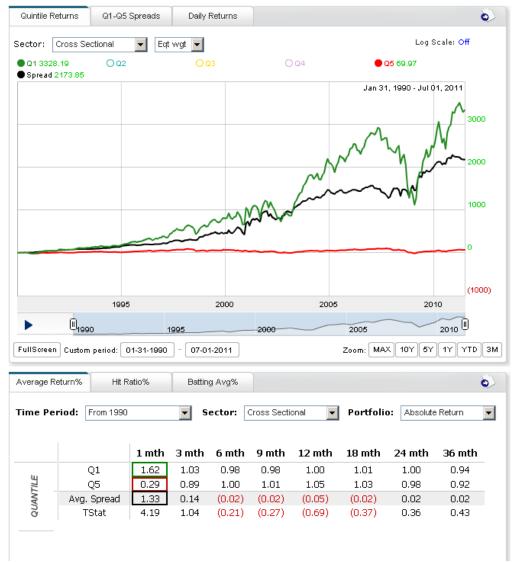


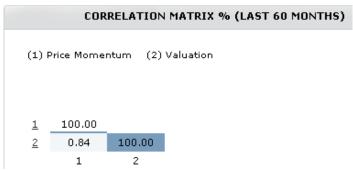
Figure 6: Contrarian Investing Strategy Performance, Russell 3000, 01/1990-06/2011

Figure 6 highlights the performance of this strategy in the Russell 3000 universe from 01/31/1990 through 07/01/2011. Deflated stocks approaching their one month minimum, shown in Q1, consistently outperform highly priced stocks nearing their one month maximum, Q5. Thus, this contrarian strategy appears to be a profitable exploitation of known behavioral biases.

In May 2011, both the Valuation AND Price Momentum strategies underperformed. How often does this happen? What happens next?

Value and Price Momentum are often seen as opposite trading strategies. Value investors see momentum as superficial, as it fails to take into account company fundamentals that are used to determine the value of a business. However, Price Momentum has proven to be an effective strategy over time, and many traders make their decisions based almost exclusively on price charts. A look at the return correlation between the strategies shows that Value and Price Momentum are virtually uncorrelated with each other (0.0084).

Figure 7: Correlation of Value and Price Momentum, Russell 3000, 06/2006-05/2011



In order to answer this question, we look at monthly return data from the Russell 3000. We find that Value and Price Momentum have simultaneously underperformed or outperformed over 53% of the months since 1987. When we examine large contemporaneous performance, defined as return spread greater than 1 standard deviation away from their historical mean in the same direction, we find that this has occurred a total of 13 months. This represents just 4.5% of the months in this time period. 10 of these occurrences took place in 2001 and 2002. During this same period, Value and Price Momentum moved in the same direction a total of 19 out of the 24 total months. This was a time of high volatility in the US market as well as the burst of the dotcom bubble and corresponding market downturn. In other words, value stocks were the momentum names.

Figure 8: Value and Price Momentum Performance, Russell 3000, 01/2001-12/2002

	Price Momentum	Valuation	
1/31/2001	(0.147)	(0.275)	
2/28/2001	0.227	0.261	
3/31/2001	0.044	0.177	
4/30/2001	0.052	(0.002)	
5/31/2001	0.046	(0.004)	
6/30/2001	0.035	0.095	
7/31/2001	0.153	0.175	
8/31/2001	0.039	0.130	= Same direction
9/30/2001	0.094	0.115	greater than +/- 1 std
10/31/2001	0.075	(0.128)	
11/30/2001	(0.108)	(0.090)	= Same direction
12/31/2001	(0.018)	0.008	
1/31/2002	0.095	0.127	
2/28/2002	0.077	0.198	
3/31/2002	(0.013)	0.048	
4/30/2002	0.135	0.179	
5/31/2002	0.063	0.097	
6/30/2002	0.084	0.136	
7/31/2002	0.085	0.075	
8/31/2002	0.058	0.043	
9/30/2002	0.085	0.057	
10/31/2002	(0.013)	(0.095)	
11/30/2002	(0.273)	(0.162)	
12/31/2002	0.162	0.150	

Subsequent to this long period of concurrent similar performance, both strategies slowly reverted from having a positive to a negative correlation with each other through 2003 and 2004. The 1 year return correlation between Value and Price Momentum for the year 2001 was 0.80. It was 0.86 in 2002 before dropping to 0.61 in 2003 and -0.35 in 2004. The 1 year correlations following each of the three simultaneous under or outperformance instances outside the years 2002 and 2003 were also negative. This mean reversion of the correlations may be due to the continuing momentum of stocks, while, at the same time, those stocks become considered overvalued. Alternatively, it could be caused by the breaking of past momentum trends as the

value of stocks becomes more highly considered. Asness et al. propose that liquidity risk may partly explain these negative correlation periods.

How has the Regulation Fair Disclosure Act affected the predictive power of equity analysts in the United States since its inception in 2001?

In October of 2001, the United States Congress enacted the Regulation Fair Disclosure Act (Regulation FD or Reg FD). This law requires that when a company discloses material nonpublic information, the company must also publicly disseminate the same information at the same time or shortly thereafter. According to academic research, Reg FD has lowered the disparity and accuracy among analysts' forecasts (Findlay & Mathew 2006).

We will use a proxy here for analyst performance that combines four popular measures used by investors to gauge street sentiment: (a) estimate differences, (b) analyst revisions, (c) unexpected earnings, and (d) consensus growth estimates. We will examine our proxy within the S&P 500 Index, given that stocks within this universe are widely tracked by analysts.

Prior to Regulation FD, the analyst proxy performed very well. Figure 10 shows that the cross-sectional return had an average positive monthly spread of 0.51% before Reg FD. However, after Reg FD became effective in October of 2001, analyst performance has been far less impressive. The average spread has now become negative, dropping to -0.09% monthly.

Figure 9: Analyst Performance Pre and Post Reg FD, S&P 500, 01/1990-06/2011

Pre-Regulation	FD					
	Q1	Q2	QЗ	Q4	Q 5	Spread%
Cross Sec.	1.34	1.17	1.00	1.00	0.83	0.51
Post-Regulatio	n FD					
	Q1	Q2	QЗ	Q4	Q5	Spread%
Cross Sec.	0.75	0.84	0.81	0.95	0.84	(0.09)

Source: Capital IQ Alphaworks

We observe a similar pattern when we look at the number and magnitude of revisions in analyst estimates. Neither of these signals has the same predictive power as it did prior to Reg FD. However, the dispersion of analysts' EPS estimates does predict stock performance equally well both before and after the enacting of Reg FD.

Figure 10: Analyst Dispersion Pre and Post Reg FD, S&P 500, 01/1990-06/2011

Pre-Regulation	ı FD					
	Q1	Q2	QЗ	Q4	Q5	Spread%
Cross Sec.	1.43	1.17	1.05	0.95	0.81	0.63
Post-Regulatio	n FD					
	Q1	Q2	QЗ	Q4	Q5	Spread%
					0.53	0.67

Source: Capital IQ Alphaworks

Reg FD had a major effect on the predictive power of analyst forecasts. Analysts now appear to have fewer advantages over the general public in terms of the timeliness of information and the information quality itself (at least as measured by traditional metrics). This results in both initial forecasts and the revisions of these forecasts being less predictive of future stock performance. However, when analysts have disparate forecasts (showing disagreement), we do still see strong predictive power.

4 Global Investing

Are there any strategies that work globally?

Investors are actively looking for alpha beyond the US market. While value and price momentum have proven viable in the US, do they generate similar abnormal returns globally? We find that both of these ideas also work effectively outside the US market.

Based on the BMI-EAFE universe, a long-short quintile portfolio formed around our valuation metrics is able to earn a monthly spread of 1.23% over the past 10 years. Similarly, a simple long-short price momentum strategy generates a 1.05% monthly spread. Both strategies have a monthly IC⁴ of nearly 0.04. It seems that the behavioral biases that make value and price momentum strategies successful in the US, such as overreaction and herding, are also pervasive among global investors. In addition, companies that can use their capital efficiently also outperform those that cannot by 1.15% per month.

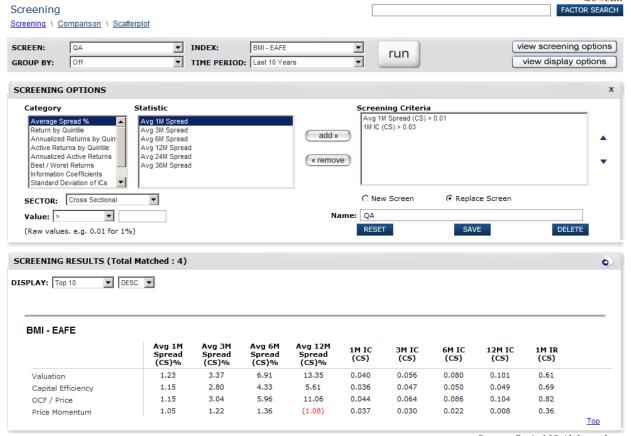


Figure 11: Best Global Strategies, BMI -EAFE, Last 10 Years

Source: Capital IQ Alphaworks

We find that markets in different geographic regions do behave with slight differences. For example, in Australia, value strategies are generally ineffective relative to the rest of the world. In Asia, markets reward companies that have attractive valuation multiples. Finally, European markets are the more similar to the US market. Value and Price Momentum strategies have generated 1.28% and 1.69% monthly long-short spreads respectively over the past 10 years in Europe.

Despite the differences among various markets, our observations suggest that global investors can adopt similar strategies in different regions to capture alpha.

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⁴ See IC definition on page 5

I read about price momentum's failure in a high volatility environment in your October 2010 report. Does this hold outside the US?

In our October 2010 publication "Another Brick in the Wall: The Historic Failure of Price Momentum", we showed that Price Momentum profitability is sensitive to the risk environment in the US market, with the best payoffs in normal and low VIX periods. Our observation in European market suggests similar results.

Using Euro STOXX 50 Volatility index (VSTOXX) as a measure of volatility in Euro zone, we define a high volatility period as those months when the average daily VSTOXX level is above 25. Our findings show that since 2000, companies with the highest price momentum earn only 9 bps of monthly excess return during high volatility periods, as opposed to 101 bps in a low risk environment. A long-short quintile portfolio that follows price momentum strategies generates a 2.55% monthly spread in low volatility periods. This is much higher than the 0.86% spread seen during high volatility periods. Therefore, outside the US market, price momentum also proves to be less profitable when volatility is high.

Figure 12: Price Momentum in the Euro Zone, BMI-Europe ex UK, 01/2000-06/2011



Source: Capital IQ Alphaworks

5 Building and Analyzing Alpha Strategies

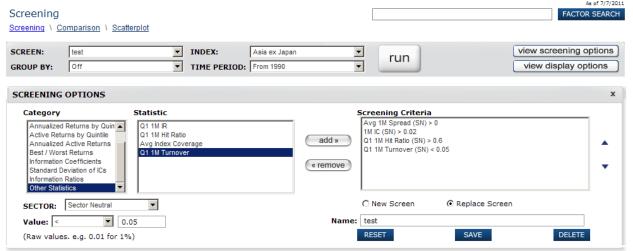
I want to construct a global strategy. How can Alphaworks help me to expedite a quick turnaround?

The goal for any investment professional is to develop strategies that generate positive alpha. This can be a cumbersome multistep process. Alphaworks is designed to help at every step of the way from simple idea generation to testing and fine-tuning a full strategy.

The first step in developing a strategy is idea generation. It is easy to explore the performance of many factors, across different periods, and in different universes leveraging the Alphaworks signal library. This will help you determine what type of strategy may be profitable in the particular universe you would like to cover.

For example, let's say that we would like to formulate a value strategy in the Asian markets (excluding Japan). We will start with signal selection first. We have options to select the prebuilt signals in our library based upon different investment themes. We are able to filter out potential factors by certain criteria, such as requiring IC's, return spreads, hit ratios⁵, and/or average Index coverage to be above predefined thresholds. Similarly, we may require turnover and/or signal volatility to stay within a determined range. This may seem like a daunting task, but it becomes a trivial exercise when using the Screening functionality of Alphaworks. Figures 13 and 14 show how we can screen factors using our predefined criteria.

Figure 13: Screening Factors for the Asian Value Strategy, Asia ex Japan, 01/1990-06/2011



Source: Capital IQ Alphaworks

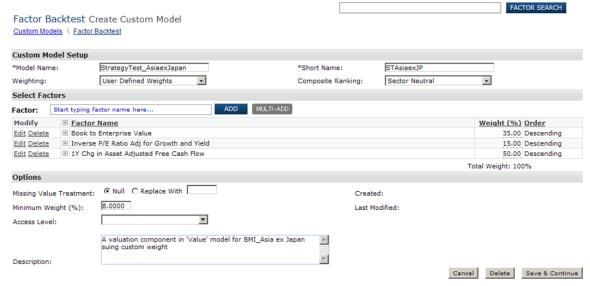
 $_{5} \ \textit{Hit Ratio} = \frac{\textit{\# of Quintile Returns} > \textit{Benchmark Return}}{\textit{\# of Quintile Returns}}$

CORRELATION TIMESERIES (LAST 60 MONTHS) **CORRELATION MATRIX % (LAST 60 MONTHS)** Base Factor (Adi GFP) TDA to EV (3) Asset / Price (6) Adjusted FCFP (1) Adj GFP (2) Adj. EBITDA to EV Net Current Assets/ Price (6) Adjus (4) BVEV ■ AdjEBITDAEV 46.00% NCAP 10.65% AdjFCFP 30.83% Jun 30, 2006 - Jun 30, 2011 100.00 40.00% 2 46.37 100.00 3 3.96 27.93 100.00 4 18.36 27.32 40.33 100.00 (11.96) (72.34) 6.59 10.09 5 100.00 24.80 34.50 13.10 10.36 6 (7.38)100.00 1 5 6 r20.001% (40.00)% 2007 2008 2009 2010 2011 0 2041 Select number to generate correlation on the right 2007 2009 2010 2008

Figure 14: Select Factors Based upon Correlation, Asia ex Japan, 06/2006 – 05/2011

Once we have determined those factors that fit our requirements, we can choose the weights that we would like to apply to each of these factors, seen in Figure 16. Another option would be to export the raw values (IC's and return spreads) and use users own processes to determine the weights. This tool also provides users with flexibility to handle missing factor values by using substitution rules to replace a missing value with another comparable factor. Finally, users can test their strategy over one or multiple universes with multiple holding periods.

Figure 15: Create a Custom Model



Source: Capital IQ Alphaworks

Here we choose to test our simple strategy from 2000 to 2006. After this process is done, our strategy can be examined across relevant performance metrics and categories. By having the flexibility to define our own testing periods and universes, we can run out-of-sample tests by choosing different time periods or even check our model's performance in a different universe (e.g. Asia including Japan or just Japan)!

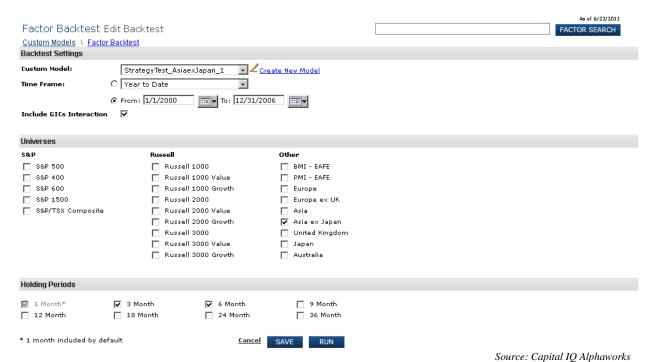


Figure 16: Set up the Back Test for Custom Model

Do factors with the best return spread by theme always have the best IC? What are strategies where this does not hold?

Just because a factor has the best return spread does not necessarily mean that it will have the best IC or vice versa. Return spread simply characterizes the difference in performance between top and bottom quintiles and is essentially based upon the extremes of factor distribution. Conversely, the IC statistic captures the predictive power across the entire distribution. Therefore, a strategy's long/short return may show impressive results, but the strategy's IC might not.

We can see an example of this in Figure 17. Here we examine Price Momentum (PM) in the Russell 2000 Index. We are able to sort across any of the columns we have displayed. In this case, we sort our strategies by Return Spread % in descending order. We can easily compare which PM strategies have had the highest return spread as well as the corresponding 1 month, 6 month, and 12 month IC's of those strategies. We highlight the strategies outlined in red. The strategy with the lowest return (Max Return in 6 Months) actually has the highest IC, and the strategy with highest spread (Short Interest / ADTV) has the lowest average IC among the five highlighted.

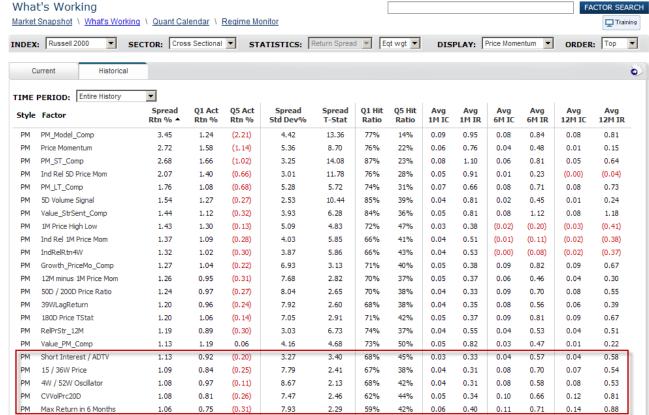


Figure 17: Return Spread and IC Comparison, Russell 2000, 01/1987-06/2011

Are there strategies with low hit ratios⁶ and good performance or vice versa?

The hit ratio refers to the frequency of a strategy's success relative to total number of periods. It is a good measure of determining how reliable or consistent a strategy is over time. A good strategy should deliver consistent positive returns through time, rather than delivering the majority of its excess return in a few months. In a majority of instances, we observe that strategies with high active (excess) returns usually have high hit ratios, suggesting that the strategy earns consistent positive returns over different economic cycles. However, this relationship does not necessarily hold true all the time. There are strategies that produce high returns with low hit ratios and vice versa (low performance with high hit ratios). If a strategy's positive excess return is concentrated in a few months, then it is possible for that strategy to have a relatively low hit ratio with an excellent average active return.

To explore further, we subset our library to view only those strategies that look at the quality of a firm's earnings using the Russell 3000 as our universe. We use monthly active return in top quintile stocks (Q1) as our measure of performance. For our screening criteria, we set a return of 0.22% and a hit ratio of 0.5 as our thresholds for Q1 (we are screening for strategies that have produced Q1 monthly active returns of under 0.22% and Q1 hit ratios over 0.5).

Over the last 23 years that we used to examine the returns of the top quintile (Q1), we find six strategies that fit our criteria. If we look at the corresponding hit ratios, we can see that the strategy highlighted in green (Cash Ratio) has the lowest Q1 one month hit ratio (58.5%). However, its active return was the best among all the strategies from an equally weighted and the second best from cap-weighted standpoint. Similarly, the strategy highlighted in yellow (1YChg EPS / OCF) has the highest hit ratio, but its performance was the worst based upon both an equally and cap-weighted one month Q1 return.

 $_{6} \ \ \textit{Hit Ratio} = \frac{\textit{\# of Quintile Returns} > \textit{Benchmark Return}}{\textit{\# of Quintile Returns}}$

Figure 18: Hit Ratio and Q1 Return Comparison, Russell 3000, 01/1990-06/2011

Russell 3000 / Earnings Quality

	1M Q1 Rtn (Equal Weight) (CS)%	1M Q1 Rtn (Cap Weight) (CS)%	Q1 1M Hit Ratio (CS)%
CashRatio	0.74	2.18	58.5
QuickRatio	0.71	2.21	58.5
EPS to Sales 1-Yr Change	0.70	1.68	60.1
Current Ratio	0.69	2.21	59.3
SGA to Sales 1-Yr Change	0.67	1.64	59.3
1YChg EPS / OCF	0.61	1.63	60.9

Source: Capital IQ Alphaworks

6 Conclusion

This report covers several relevant topics that concern investors, such as regime switching, popular investment strategies, global investing, alpha strategy construction, etc. Using the prebuilt strategy library and a variety of analytic solutions provided by Alphaworks, we discuss our findings for these questions and offer our insights.

Macroeconomic regimes impact the relative strength of select strategies. Specifically, value investing works well in periods of economic distress, as signaled by high unemployment, while growth strategies underperform in such environments. We further demonstrate that value strategies that buy "cheap" stocks in terms of current assets are still viable in periods that favor growth.

Investors looking to move beyond a "one size fits all" investment process should consider incorporating sector and industry level information into their decisions. We illustrate the success of price momentum strategies relative to other strategies in European financial sector amidst the European sovereign debt crisis. We also show that industry specific signals outperform similar generic signals in terms of both returns and IC's.

Addressing popular investment strategies has given us insight into the effectiveness and practicality of implementing those strategies. We demonstrate the usefulness of contrarian strategies, and in particular, their application to profit from the January Effect. We also discuss the positive relationship between value and price momentum in 2001-2002, and what this can mean to investors in future periods of concurrent similar performance. Finally, we explore how Reg FD has negatively affected the predictive power of analysts.

Strategies that have been exploiting behavioral biases in the US for years are equally valid in a global context. Value and price momentum strategies over a BMI-EAFE universe generate considerable positive returns and IC's. Additionally, the relative strength of these strategies changes geographically. We find Value strategies are less successful in Australia than in other regions, and the European market is the most similar to the US amongst all global markets.

Finally, Alphaworks is an extremely valuable tool throughout the entire strategy development process. It facilitates nimble idea generation, factor selection, model building, and performance validation.

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OUR RECENT RESEARCH

June 2011: Our Retail Industry Strategy

Does Industry Specific Data tell a Different Story? Investors are on a constant quest for new investment insights. A more complete understanding of the dynamics that shape an industry is integral to this search. As Capital IQ's Quantitative Research begins a more thorough examination of industry specific sources of alpha, we turn our attention first to the retail industry utilizing the Compustat database. Many of the strategies validate common investor best practice when looking at the retail space. In this paper we develop several new retail specific factors and use them to construct a 6-factor retail specific model. We then blend our retail model with our Value and Growth Composite Models.

May 2011: Introducing Capital IQ's Global Fundamental Equity Risk Models

Global investors invest in assets across multiple countries. In order to characterize the overall risk they need the ability to compute the total risk of their entire holdings. Using a global risk model summarizes the risk across multiple geographies into a more easily consumed single number rather than looking at the risk characteristics in isolation for separate geographies. A single global model also captures inter-country correlations so as to not miss important contagion effects.

May 2011: Topical Papers That Caught Our Interest

Favorite Papers on a Few Favorite Topics – Regime Switching and Minimum Variance Two current topics of significant interest and frequent discussion to investors are regime switching, or a strategy's sensitivity to the current environment, and minimum variance portfolios.

April 2011: Can Dividend Policy Changes Yield Alpha?

Investors are acutely sensitive to changes in dividend policy. Literature suggests that dividend change announcements provide information about management's assessment of companies' prospects, and therefore are predictive of future stock returns. The implication for investors is worth noting. In the first quarter of 2011 alone, 105 of the 384 dividend paying S&P 500 companies (27.3%) increased their dividends, while only 1 (0.26%) decreased dividends. In this paper, we analyze the market reaction to different types of dividend policy changes.

In this paper, we analyze the market reaction to different types of dividend policy changes, specifically initiation, increase, decrease and suspension of dividends.

April 2011: CQA Spring 2011 Conference Notes

Several of our team's members attended the Chicago Quantitative Alliance (CQA) Spring Seminar in Las Vegas. We present our collective notes from the conference in this report.

March 2011: How Much Alpha is in Preliminary Data?

Companies often report financials twice: first, through a preliminary press release and again in their official, i.e., final, SEC filings. In theory, there should be no difference between the numbers reported in a company's preliminary financial filings and their final filings with the SEC. In practice, often significant difference can occur between the preliminary and final filings. In this month's research report, we focus on these observed differences within the Capital IQ Point-In-Time database in order to ascertain the nature and exploitability of these differences.

February 2011: Industry Insights – Biotechnology: FDA Approval Catalyst Strategy

Biotechnology is a challenging sector for investors due to the binary nature of the product cycle. Indeed many biotechnology firms' futures rest upon the success of a single product. A critical stage in the product life-cycle is the FDA approval process. In this report we look at the exploitability of a strategy centered on FDA filings.

January 2011: US Stock Selection Models Introduction

In this report, we launch our four US Stock Selection models -- Value, Growth, Quality, and Price Momentum. Built using Capital IQ's robust data and analytics, these four models are the culmination of over two years of research and development. Each model is intended to be employed as the basis for a stand-alone stock selection strategy or integrated into an existing systematic process as an overlay or new component.

January 2011: Variations on Minimum Variance

Various explanations for why risk is mispriced have been offered; the most common one is that leverage restrictions incite some investors to chase volatility at the individual issue level. In this paper, we explore various methodologies for construction of minimum variance portfolios of US listed equities and analyze the features of these portfolios.

January 2011: Interesting and Influential Papers We Read in 2010

As researchers, we spend a large amount of time trying to generate new ideas. In order to discover and refine these ideas, we find ourselves in a continuous quest for innovative and interesting articles and papers from academics, analysts, and other researchers. There is such a large body of information out there that it can be difficult to wade through all the material to find what is truly of value and interest to us. To assist in sifting through all this information, our group recently took the time to find and discuss articles that recently struck us.

November 2010: Is your Bank Under Stress? Introducing our Dynamic Bank Model

Leveraging Capital IQ's Bank industry data, we have built a stock selection model that encompasses three themes -- Momentum, Value, and Balance Sheet Quality -- and includes a proprietary Markov-regime switching component which dynamically changes the model's weights depending on whether or not banks are in a "stressful" (or crisis) environment. This month, we will review how we built our model and its switching component.

October 2010: Getting the Most from Point-in-Time Data

In this paper, we will examine PIT data's origins, structure, variations, and proper use in implementations from Compustat and Capital IQ. Misusing PIT data, or applying it haphazardly, can discard valuable information and obscure otherwise clear signals.

October 2010: Another Brick in the Wall: The Historic Failure of Price Momentum

In 2009, investors witnessed the cataclysmic failure of Price Momentum strategies. Now that accounts of this failure have been on the books for some time, it is appropriate to place the events in a historical context and further analyze the fundamental relationships that affect this strategy. We look at a number of questions from practitioners interested in the strategy. Within a historical context, how pronounced has this recent failure been? When Price Momentum fails, what is the strategy's subsequent performance? And, what factors are concurrent or predictive of the performance of Price Momentum?

July 2010: Introducing Capital IQ's Fundamental US Equity Risk Model

In this paper we document the process of building and testing of our fundamental US Equity risk model across a number of short to medium term forecast horizons. The paper reviews typical risk model applications; discusses the relative merits of alternative forms of multifactor risk models; documents our data and methodology; 4 describes the chosen test metrics; and presents our results.

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