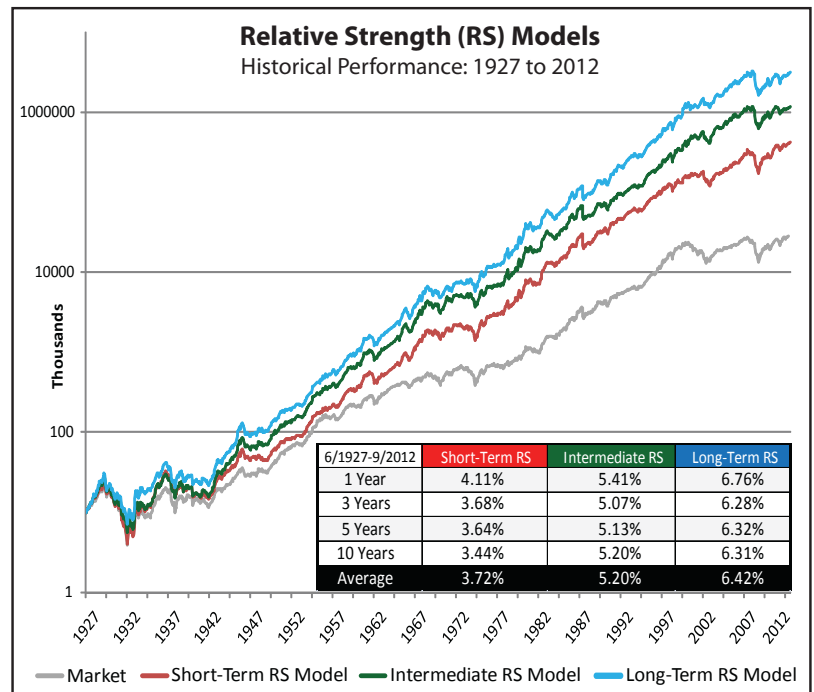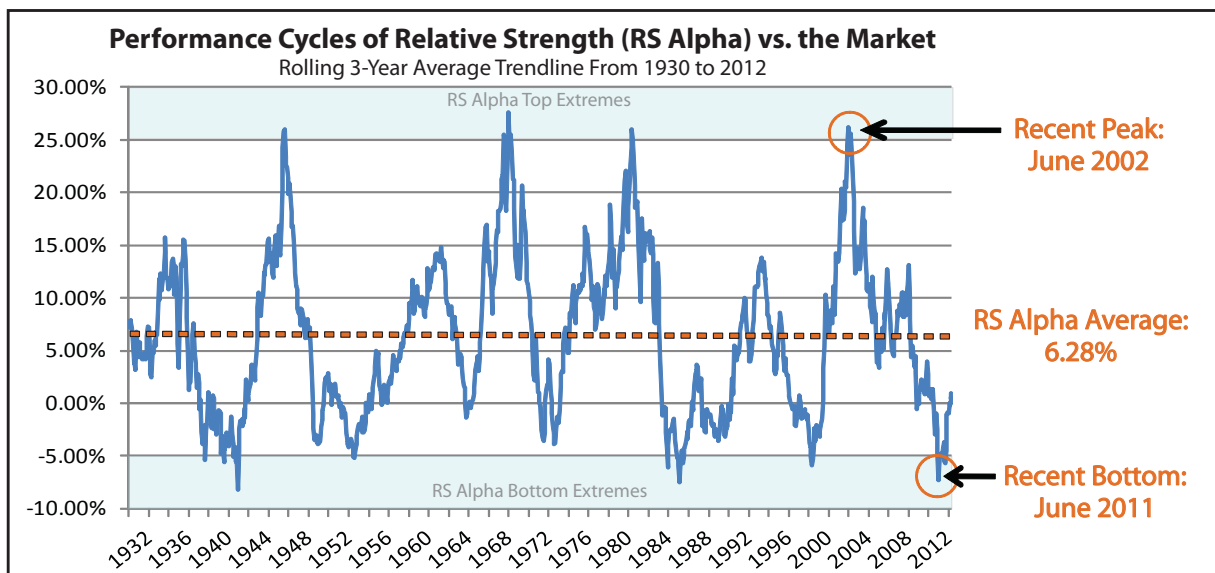# Relative Strength Turns

There is plenty of evidence among academia that supports the potential value of relative strength, also called momentum, as an investment factor. This research has shown that, over multiple decades, relative strength strategies have consistently outperformed the overall market during bull and bear market cycles. Relative strength is the measurement of an investment instrument's performance relative to another instrument. That performance can be measured against the market, some combination of securities (i.e., sectors) or across asset classes. A relative strength strategy is easy to understand: you simply buy only the strongest performing instruments. When an instrument slips enough so it's no longer the strongest, sell it and replace it with whatever is the strongest among the instrument's universe.

Identifying the "strongest" is based on measuring the performance over a predefined time horizon: short-term (one to three months); intermediate (six to nine months) and long-term (12 months or greater). The chart to the right compares the historical growth of short, intermediate and long-term relative strength models against the broad equity market S&P 500. Historically, over long time periods, each of these relative strength models outperformed the buy-and-hold equity index.

Relative Strength (RS) Models
Historical Performance: 1927 to 2012

6/1927-9/2012	Short-Term RS	Intermediate RS	Long-Term RS
1 Year	4.11%	5.41%	6.76%
3 Years	3.68%	5.07%	6.28%
5 Years	3.64%	5.13%	6.32%
10 Years	3.44%	5.20%	6.31%
Average	3.72%	5.20%	6.42%

Market — Short-Term RS Model — Intermediate RS Model — Long-Term RS Model

Performance displayed represents past performance, which is no guarantee of future results. Index performance assumes reinvestment of dividend, but does not include fees. Indexes are not available for direct investment. Source: Standard & Poor's, calculated by Arrow.

However, like many investment approaches, relative strength will sometimes underperform the market, and at other times it may outperform. Alpha refers to the amount of performance above or below an index. In this case, the alpha of relative strength (i.e., RS Alpha) has shown long-term cyclical trends with significant tops followed by underperformance and bottoms followed by outperformance, as the chart below illustrates.

Performance Cycles of Relative Strength (RS Alpha) vs. the Market
Rolling 3-Year Average Trendline From 1930 to 2012

RS Alpha Top Extremes
Recent Peak: June 2002
RS Alpha Average: 6.28%
RS Alpha Bottom Extremes
Recent Bottom: June 2011

Performance displayed represents past performance, which is no guarantee of future results. Index performance assumes reinvestment of dividend, but does not include fees. Indexes are not available for direct investment. Relative Strength (RS Alpha) is represented by the 3-year rolling average performance for a long-term RS model versus the market (S&P 500 Index). Source: Standard & Poor's, calculated by Arrow.

What happens to relative strength when it makes the turn from its highest and lowest points? The relationship between the alpha that relative strength can generate and the overall market can become significant. Historically, a new bottom occurs every 11 years on average, but in between, relative strength historically turns and establishes a new top within 6 years after the bottom. Therefore, the longer you hold a relative strength strategy, the less the impact of tops and bottoms can be felt. In the tables below, we look at the alpha that a relative strength strategy generated for various time periods leading into these bottoms, turns and tops. In general, relative strength strategies often underperform in the near (1-3 years) term leading into a bottom, and have historically generated significant positive alpha once it turned from its bottom. With relative strength bouncing off a low point in June 2011 and trending upward as of April 2012, today's investors have the opportunity to take advantage of RS Alpha's potential.

At a bottom, relative strength generally underperformed the market in the near term, yet performance improved with a longer time horizon.

RS Alpha During Down-Trends
Periods Prior to Establishing a Bottom

Bottom	1 Year	3 Years	5 Years	10 Years
5/31/1941	(6.8%)	(8.1%)	(2.2%)	2.1%
1/31/1953	(1.3%)	(5.1%)	(1.8%)	5.1%
3/31/1964	2.5%	(1.3%)	6.5%	6.2%
1/31/1973	(4.1%)	(3.9%)	0.5%	8.4%
7/31/1985	(0.4%)	(7.5%)	0.6%	7.3%
10/31/1998	(9.4%)	(5.8%)	(2.8%)	3.0%
6/30/2011	(2.1%)	(5.6%)	0.3%	5.5%
Average	**(3.1%)**	**(5.3%)**	**0.1%**	**5.4%**

When the trend turned upward, it started long periods of time when relative strength outperformed the market.

RS Alpha Turning Periods
After a Bottom and the Start of an Up-Turn

Up-Trend	1 Year	3 Years	5 Years	10 Years
7/31/1941	5.1%	13.6%	17.4%	6.8%
5/31/1953	2.8%	0.7%	5.7%	6.6%
1/31/1965	37.4%	24.9%	17.0%	10.6%
4/30/1973	21.5%	16.1%	14.4%	13.6%
4/30/1986	(2.4%)	(2.7%)	0.1%	3.2%
9/30/1999	26.5%	25.8%	15.3%	9.5%
4/30/2012	?	?	?	?
Average	**15.2%**	**13.1%**	**11.6%**	**8.4%**

At the top, relative strength had generated significant "alpha" over the market.

RS Alpha During Up-Trends
Periods Prior to Establishing a Top

Top	1 Year	3 Years	5 Years	10 Years
2/28/1934	49.1%	15.9%	7.0%	0.0%
1/31/1946	40.7%	26.2%	17.7%	5.6%
9/30/1961	18.0%	15.0%	13.2%	6.7%
6/30/1968	31.7%	27.9%	17.4%	12.4%
10/31/1980	51.7%	26.2%	18.6%	12.5%
9/30/1993	23.3%	14.0%	9.3%	2.9%
6/30/2002	37.6%	26.4%	16.6%	10.2%
Average	**36.0%**	**21.6%**	**14.3%**	**7.2%**