



**ABSTRACT**

Capital Advisors' investment philosophy is unconventional. This document provides a detailed account of what makes us different, presented in three parts: Theory, evidence and implementation. We hope readers will develop an understanding of why we invest the way we do (theory); why we believe our strategies can be effective in the future (evidence); and how each strategy works (implementation).

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- Capital Advisors' investment strategies are different because they are designed for an unconventional model of how asset markets work.
- The foundation of our viewpoint is an expectation that risk markets will overshoot their long-term average value in both directions from time to time.
- We believe overshooting prices are caused by rational mistakes among investors, and reinforced by shared incentives among many market participants.
- We believe investor mistakes are unavoidable because structural change ensures the future will be different from the past.

### **The Prevailing View of How Asset Markets Work...**

Professional investment management has followed a common rule book for more than 60 years. The rule book is called Modern Portfolio Theory (MPT), and it evolved from a ground-breaking paper on the topic of portfolio construction published in 1952 by an economist named Harry Markowitz.

In the decades since its introduction, countless professional investors have used MPT as the foundation for their investment process despite aspects of the theory that have been questioned throughout its existence. One particularly controversial element of MPT is the notion of market "efficiency," which assumes the market price of a tradable asset like a stock or a bond reflects everything there is to know about it.

According to the efficient market hypothesis (EMH), the current price of a traded security is assumed to be the best estimate of its "true" value. The model further assumes that future changes in the price of a security are random because they are driven by an unpredictable flow of new information. By assuming price changes are random, EMH concludes that active security selection is futile.

Using EMH as the model of how markets work, MPT directs investors to construct a portfolio of broad market positions appropriate for their own risk profile, and then maintain the portfolio with limited adjustments over time other than to re-balance toward the static targets for each asset class.

To the extent that EMH is an accurate model of how asset markets work, MPT is an optimal blue print for designing investment portfolios. Harry Markowitz shared the Nobel Prize in Economics in 1989 for proving this point mathematically.

## **An Alternative Model of Asset Markets**

**If there is a better model than EMH for describing how asset markets work, it stands to reason there might be an alternative approach for designing investment portfolios.** This is our belief at Capital Advisors.

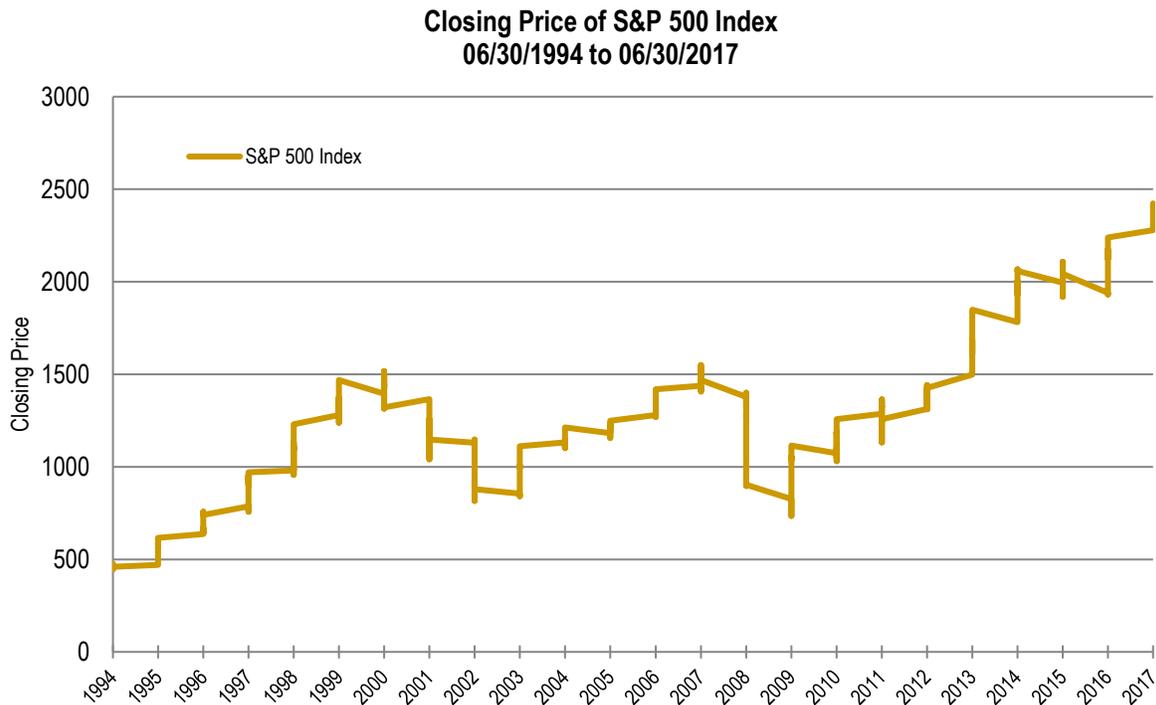
In the mid-1990s an alternative theory of asset market behavior was developed at Stanford University by professor, Mordecai Kurz. The theory of “Rational Belief Equilibrium” (RBE) represents progress in a scientific sense, because it generalized a predecessor theory – EMH – by rendering EMH as a special case within a broader explanation of how markets work. Specifically, RBE overcame two highly restrictive assumptions from the EMH model:

- 1) The assumption that asset market returns are independent and identically distributed random variables (i.i.d.). An example of an i.i.d. distribution is a coin toss, where the probability of heads is always 50% regardless of the sequence of outcomes that preceded it.
- 2) The assumption that market participants share a common pricing model for converting new information into a correct price for traded securities.

The very earliest critics of MPT suggested that neither of these two assumptions passed the smell-test of common sense. Numerous empirical studies have subsequently proven these assumptions to be false (examples provided in Section II). Even so, it took more than 40 years for an alternative theory to emerge that explained market behavior more effectively than EMH using mathematical proofs that work without the restrictive assumptions of EMH.

**That theory is Rational Belief Equilibrium (RBE), and it is the basis for the investment strategies we implement at Capital Advisors.**

## Are Stock Market Returns Random? Persistent Trends Suggest Not...



Source: Standard & Poor's; Bloomberg

*Bull and bear market cycles reflect "serial correlation" in the historical time series of asset market returns. Serial correlation would not be possible if the distribution of market returns was random (or i.i.d.), as EMH and MPT assume.*

### The Theory of Rational Belief Equilibrium

Rational Belief Equilibrium (RBE) explains why asset markets tend toward *cycles* – bull and bear markets; booms and busts – in a way that EMH never could. The key ingredient in the RBE model is ignorance. Not that some investors are ignorant at the expense of others, but rather, that we are all ignorant about what matters most in investing – the future.

The assumptions that underlie RBE are refreshing because they acknowledge the obvious – none of us are clairvoyant. Rather than assume market prices are always "right," RBE allows for the probability that rational investors make mistakes from time to time.

**In other words, asset prices are frequently wrong.**

## The Role of Structural Change

According to RBE, our ability to forecast the future is constantly derailed by *structural change* within the systems we must forecast. For example, in 1996 who knew how this new thing called the Internet might impact the future of business and society? How altered was the world view of the average American on the evenings of December 7, 1941, or September 11, 2001? Such is the nature of structural change – we can't rely on historical experience alone to interpret what's happening because nothing quite like it has ever happened before.

According to RBE cycles emerge in asset markets whenever the mistakes we make as investors become correlated. The financial crisis in 2008 provides an extreme example of a correlated mistake involving the housing market. Prior to 2008 the risk models used by banks and securities dealers assumed home prices would not decline on a national basis. This seemed like a rational belief at the time because it was consistent with the historical record of home prices prior to 2007. But structural change in the mortgage market caused home prices to evolve in a novel direction, and the rest is history.

The booms and busts that populate the history of all risk markets represent self-reinforcing feedback loops built upon a foundation of assumptions that includes at least one, as yet un-recognized, error; followed by a self-reinforcing unwind when market participants recognize their collective mistake.

Shared incentives among market participants can reinforce these cyclical trends. Many professional investors are incentivized by job security to “follow the herd” due to narrow investment mandates and frequent benchmarking of performance. Short-term traders can reinforce trends due to a profit incentive. Trading strategies that follow the direction of recent price action have been prevalent for as long as there have been markets.

## Conclusion

**If markets move in cycles – bull and bear markets; booms and busts – optimum portfolio strategy requires dynamic adjustments to prevailing market conditions.** Such an approach represents an important departure from the more traditional buy-and-rebalance philosophy of MPT. We employ a dynamic approach to portfolio management at Capital Advisors.



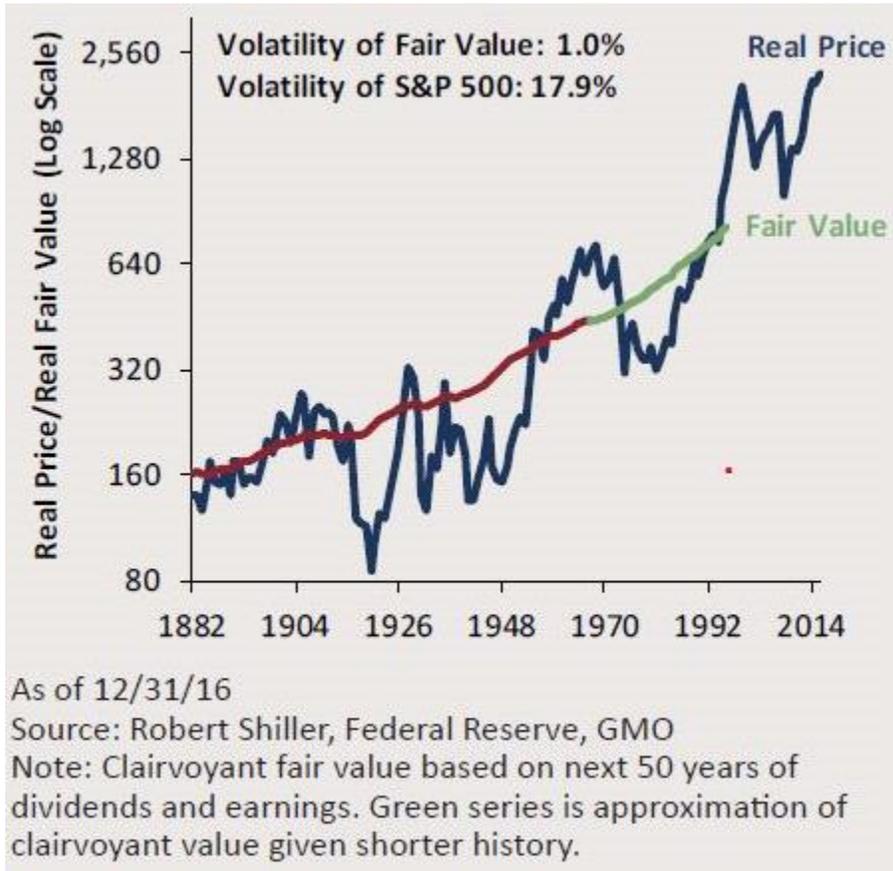
- The historical record of numerous risk-based markets reflects overshooting prices.
- Market cycles reveal themselves as “serial correlation,” or “memory,” in the historical record of asset prices.
- When conditions in an asset market today can influence likely conditions in the market tomorrow (or next week, month, etc.), knowing something about recent conditions can offer predictive value about what might happen next.
- Modern Portfolio Theory (MPT) is blind to the cyclical tendencies of markets because MPT assumes market returns are random, like the flip of a coin.
- The studies in this section demonstrate that market returns are *not* entirely random.

### **If markets are efficient, why are they so volatile?**

Throughout history, risk-based asset prices have been more volatile than the underlying fundamentals they reflect. A widely cited demonstration of this idea comes from a paper published in 1981 by Nobel Prize winning economist, Robert J. Shiller, who used the historical record of interest rates and dividends to calculate a theoretical “rational” price for the stock market, assuming investors had perfect knowledge of future interest rates and dividends. This experiment was extended in 2016 by the research team at the Boston based asset manager, GMO.

By contrasting the volatility of this theoretical price with the actual track record of the stock market, **Shiller concluded that changes in underlying fundamentals only explain about one-third of the actual volatility that occurs in the stock market.**

**U.S. Stock Market  
Actual Price vs. Rational Price  
Jan. 1882 to Dec. 2016**



*Source: Robert J. Shiller, "Do Stock Prices Move Too Much to be justified by Subsequent Changes in Dividends?" American Economic Review, June 1981; GMO Quarterly Letter, July 2017*

## Valuation Cycles

Extensive studies have shown a strong correlation between the beginning valuation level of the stock market and subsequent returns over the ensuing three years or more. Historically, holding periods that began at a low valuation level produced materially better subsequent outcomes compared to periods that started at a higher valuation level.

The table below reflects this dynamic for the U.S. stock market. This particular study measured every 3-year holding period (monthly) for the U.S. stock market from 1881 to 2017 (1,722 rolling 3-year observations in all). The outcomes are grouped into four quartiles based on the valuation range at the beginning of each 3-year holding period. Valuation was defined by a cyclically adjusted price-to-earnings ratio (CAPE) according to the Shiller method:

## U.S. Stock Market Valuation Cycles (January 1881 to June 2017)

Data Range	Beginning CAPE Range	Average Subsequent 3-Yr. Return	Worst Cumulative 3-Yr. Return	Best Cumulative 3-Yr. Return	% of 3-Yr. Periods Negative
Cheapest Quartile	<11.8	16.97%	0.85%	194.52%	None
2 <sup>nd</sup> Cheapest Quartile	11.9 – 16.1	10.07%	-23.47%	176.15%	12.0%
3 <sup>rd</sup> Cheapest Quartile	16.2 – 20.4	7.63%	-35.35%	125.43%	21.8%
Most Expensive Quartile	>20.4	6.64%	-80.84%	134.08%	30.5%

*Source: Robert Shiller – [www.econ.yale.edu/~shiller/data.htm](http://www.econ.yale.edu/~shiller/data.htm) (1881-1925); Standard & Poor's; Ibbotson; Bloomberg LP (1926-2017); Capital Advisors, Inc.*

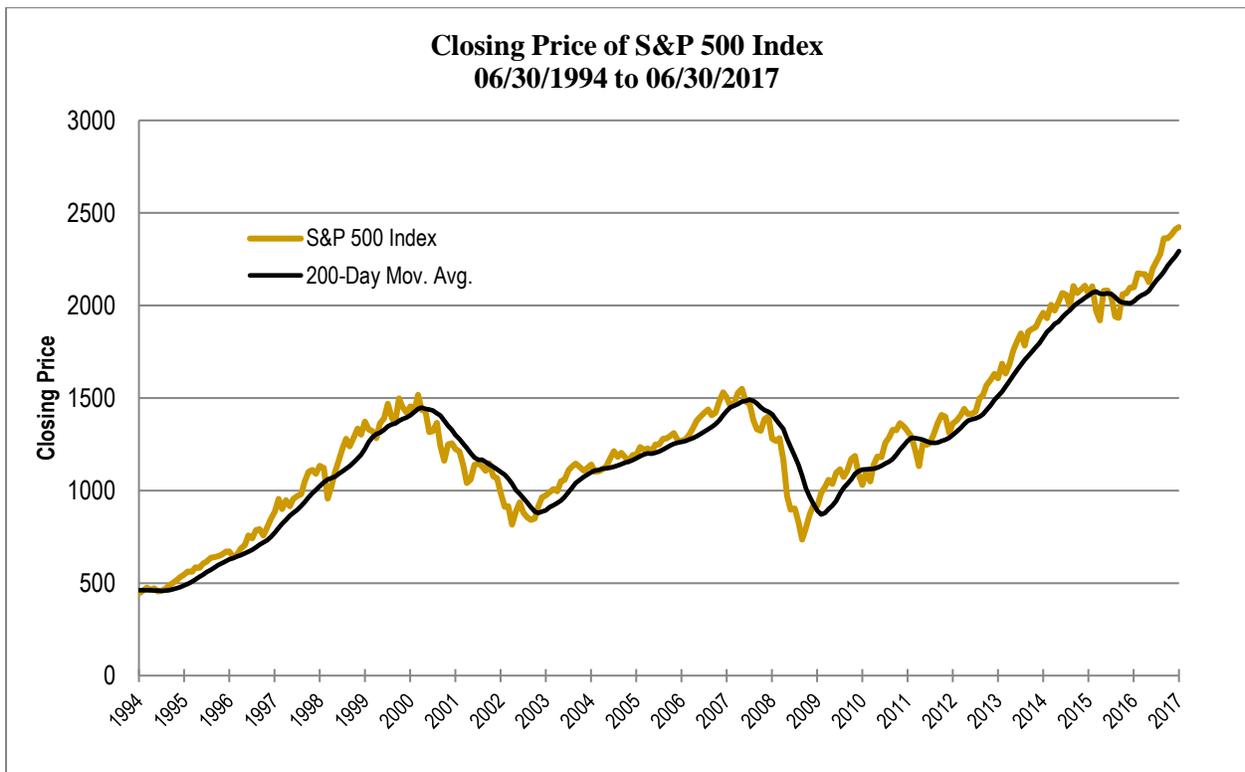
This data reveals two fundamental characteristics of stock market behavior related to valuation:

- 1) The risk-reward tradeoff in the stock market is not static over time.
- 2) The current valuation level of the stock market offers predictive value about the range of outcomes most likely to follow over intermediate holding periods of 3-years or more.

**The implication for investment strategy is that portfolios should be more dynamic than the buy-and-rebalance prescription of Modern Portfolio Theory.** The optimum allocation to stocks is not the same when the current valuation level is low versus high, regardless of the risk profile of the investor.

## The Trend is Your Friend

A quantitative metric called a **moving average** is a common input for trend following investment strategies. A moving average represents the rolling historical average price of a security or market index measured over the previous few months (typically 6 to 10). Studies spanning numerous asset markets, time periods and geographies reveal a tendency for asset markets to deliver a more favorable risk-reward distribution when the recent price of a market index is above its moving average, versus below it.



Source: Standard & Poor's; Bloomberg

The data on the next page shows that monthly returns have been higher, while the frequency of negative returns has been lower, in months following a positive moving average reading across five major asset markets.

**In each of these markets, knowing one simple fact – whether the index was trading above or below its moving average – offered predictive value about the range of short-term outcomes most likely to follow.**

## Distribution of Future Outcomes Based on Recent Trend:

### Average Subsequent Month Return:

Pre-Condition	US Stocks (1872-2017)	International (1970-2017)	Emerging Markets (1989-2017)	Natural Resources (1989-2017)	Real Estate (1972-2017)
Index <b>ABOVE</b> its Moving Average	1.16%	1.19%	1.46%	0.88%	1.21%
Index <b>BELOW</b> its Moving Average	0.29%	0.23%	0.50%	0.35%	0.46%

### Frequency of Negative Months:

Pre-Condition	US Stocks (1872-2017)	International (1970-2017)	Emerging Markets (1989-2017)	Natural Resources (1989-2017)	Real Estate (1972-2017)
Index <b>ABOVE</b> its Moving Average	34.50%	37.60%	35.90%	42.40%	34.30%
Index <b>BELOW</b> its Moving Average	46.20%	46.40%	43.80%	49.60%	42.50%

*Dates for specific markets relate to the year in which the index data for that market began. All periods end as of June 30, 2017. Sources: Robert J. Shiller; Standard & Poor's; Ibbotson; Bloomberg; [www.mscibarra.com](http://www.mscibarra.com); [www.reit.com](http://www.reit.com); Capital Advisors, Inc.*

## Tactical Rotation

Another way to apply moving averages to the study of market cycles is to simulate a binary trading rule that invests in risk markets when the outlook is favorable, and shifts to a low-risk bond index when it is not. The study below compares the historical risk-reward data for the *S&P 500 Index* with a hypothetical binary trading strategy that holds the *S&P 500 Index* in months that follow a positive moving average reading (i.e. the stock index closed the previous month-end above its moving average), and shifts to a bond market index in months that follow a negative moving average reading (i.e. the stock index closed below its moving average as of the previous month-end).

***Please note that these market studies do not represent actual portfolio performance.***

### Historical Market Study: Buy-and-Hold vs. Tactical Rotation

#### Domestic Stock Market – Post WWII

01/01/1945 to 06/30/2017

	Buy & Hold	Tactical
Annualized Return	11.25%	12.17%
Standard Deviation	14.30	10.90
Best 12-Months	61.18%	60.98%
Worst 12-Months	-43.28%	-20.78%
% of 12-Months Negative	21.70%	15.90%
Best 3-Years	136.90%	138.21%
Worst 3-Years	-40.88%	-20.44%
% of 3-Years Negative	11.50%	1.70%
Best 5-Years	266.05%	217.28%
Worst 5-Years	-29.02%	9.79%
% of 5-Years Negative	7.40%	None

*Source: Capital Advisors, Inc.; Ibbotson Associates; Standard & Poor's; Barclays PLC*

## Tactical Rotation – International Markets

Capital Advisors has applied this same tactical rotation strategy to numerous different asset markets and time periods with similar results from each study. In each case, the tactical approach delivered lower volatility, shallower drawdowns, and a much narrower range of outcomes over rolling holding periods of three and five years.

**Please note that these market studies do not represent actual portfolio performance.**

### **Historical Market Study: Buy-and-Hold vs. Tactical Rotation**

#### **Developed International Markets**

01/01/1971 to 06/30/2017

	<b>Buy &amp; Hold</b>	<b>Tactical</b>
Annualized Return	8.85%	13.98%
Standard Deviation	16.90	12.20
Best 12-Months	103.07%	103.07%
Worst 12-Months	-50.23%	-15.39%
% of 12-Months Negative	29.00%	16.10%
Best 3-Years	293.37%	327.78%
Worst 3-Years	-48.13%	-12.60%
% of 3-Years Negative	21.30%	4.30%
Best 5-Years	477.74%	607.58%
Worst 5-Years	-31.69%	-2.46%
% of 5-Years Negative	12.10%	0.60%

Source: Capital Advisors, Inc.; Ibbotson Associates; MSCI, Inc.; Barclays PLC

### **Historical Market Study: Buy-and-Hold vs. Tactical Rotation**

#### **Emerging Markets**

01/01/1988 to 06/30/2017

	<b>Buy &amp; Hold</b>	<b>Tactical</b>
Annualized Return	10.91%	14.18%
Standard Deviation	22.90	15.80
Best 12-Months	91.65%	77.34%
Worst 12-Months	-56.42%	-31.12%
% of 12-Months Negative	31.80%	23.90%
Best 3-Years	215.44%	206.23%
Worst 3-Years	-45.23%	-17.70%
% of 3-Years Negative	30.40%	8.50%
Best 5-Years	443.86%	410.55%
Worst 5-Years	-41.57%	-8.14%
% of 5-Years Negative	24.70%	3.70%

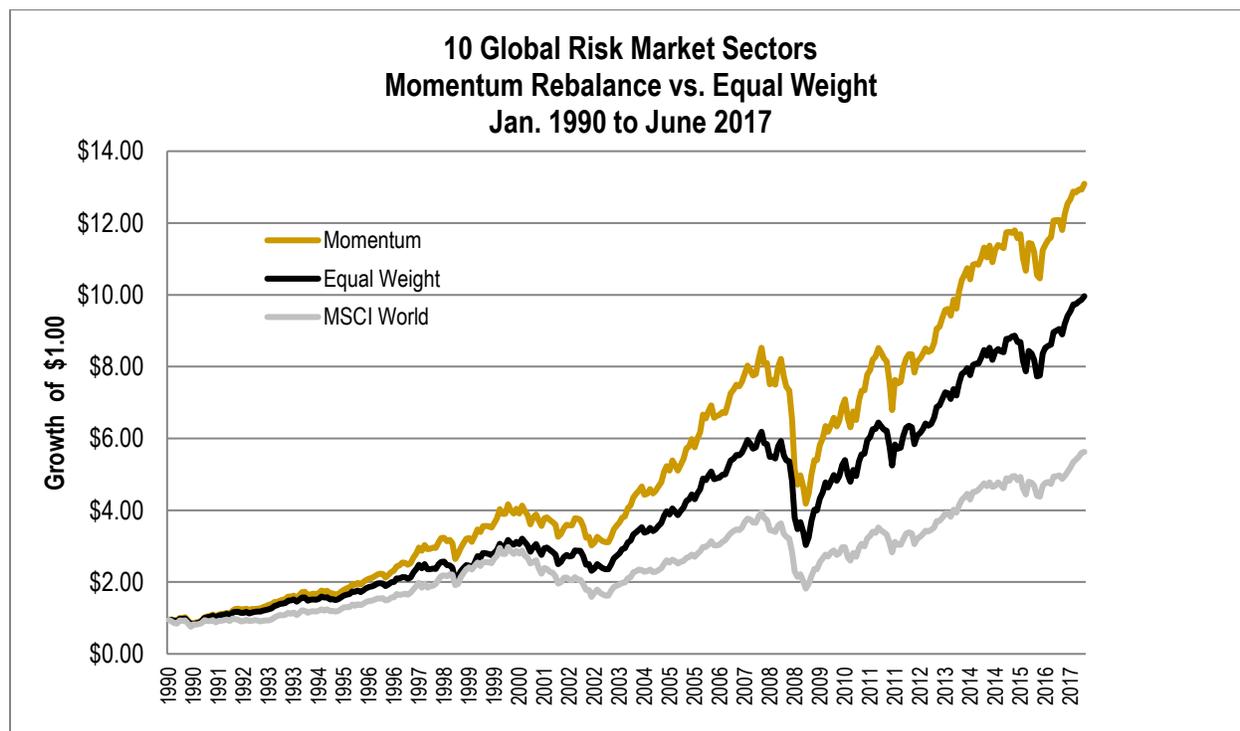
Source: Capital Advisors, Inc.; Ibbotson Associates; MSCI, Inc.; Barclays PLC

**Note about these studies:** S&P 90 Index calculated by Ibbotson from January 1, 1945 to December 31 1955; S&P 500 Index from January 1, 1956 to June 30, 2017. Intermediate bond index returns calculated by Ibbotson from January 1, 1945 to December 31, 1985; Barclays Aggregate Bond Index from January 1, 1986 to June 30, 2017. MSCI EAFE Index from January 1, 1970 to June 30, 2017. MSCI Emerging Markets Index from January 1, 1988 to June 30, 2017. The 10 month moving average was used in this study. The moving average was calculated by adding the closing price of the market index for 10 months then dividing this total by 10 months. A Bullish Pre-condition refers to the market index trading above the 10 month moving average. A Bearish Pre-condition refers to the market index trading below the 10 month moving average. See end of presentation for disclosures.

**The implication for investment strategy is that dynamic exposure to risk markets can deliver higher returns per unit of risk assumed.** The range of outcomes has been more favorable for numerous risk-based assets when they were trading above their moving average versus below it. This characteristic of markets might be exploited through systematic trading rules that invest in risk markets following favorable pre-conditions, and step aside when pre-conditions are unfavorable.

## Momentum Effects

Numerous studies have demonstrated a “momentum effect,” where stocks and/or market sectors that demonstrate strong relative price performance over a period of 6 to 12 months continue performing well over the subsequent 3 to 6 months with non-random frequency. **Please note that these market studies do not represent actual portfolio performance.**



Source: Capital Advisors, Inc.; MSCI, Inc.

The study compared a static, equal-weight allocation among 10 global equity market indices to a systematic quarterly rebalancing that over-weights the 3 top-performing sectors over the previous 12-months, while under-weighting the 3 under-performing sectors. It is not possible to directly invest in the strategy reflected in this study.

**The implication for investment strategy is that portfolios might benefit from systematic shifts toward relative strength, and away from relative weakness.** Historically, the probability that recent trends in the asset markets might persist in the short-term has been greater than 50%.

## Conclusion

Extensive historical evidence illustrates that asset markets returns are not entirely random. Objective pre-conditions associated with measurable factors like valuation, trend, and relative strength can offer predictive value about the range of outcomes most likely to follow. **Investors might achieve higher risk-adjusted returns through a dynamic approach to portfolio construction that systematically adjusts to prevailing market conditions rather than re-balancing to static asset allocation targets over time.**



- Returns in the asset markets are a function of future prices relative to current prices.
- Active investment management requires a *less wrong* forecast of future prices, and there are only two legitimate strategies for achieving this.
- One strategy is to have a better forecast for the “news” that might influence future asset prices, where “news” refers to anything that matters to investors, such as earnings growth, new products, market share shifts, geopolitics, inflation, etc.
- Success with a “news-prediction” strategy requires an investor to develop a deep understanding of a particular structural change that impacts a company (or a commodity, currency, industry, etc.) before the change is fully reflected in securities prices.
- A second strategy is to develop a better forecast for how asset prices might react to “news” after it occurs.
- Success with a “price-reaction” strategy requires an understanding of what kinds of news announcements and market conditions give rise to overshoot and/or mean reversion in different asset markets.
- These two active investment strategies are commonly referred to as “fundamental” and “quantitative,” respectively.
- Either of these strategies, or a combination of the two, is justifiable if asset prices overshoot their long-term average values from time to time.
- Capital Advisors employs both approaches across the various investment strategies we offer.

The remainder of this document describes the specific investment process for each of Capital Advisors’ portfolio strategies. Each strategy operates independently, but the strategies were deliberately designed to complement one another when used in combination within a diversified portfolio.

**Summary of Capital Advisors’ Investment Strategies:**

**Fundamental/Intrinsic Value**

Managed Equity Growth  
Managed Equity Dividend  
Fixed Income Strategies<sup>1</sup>

**Quantitative**

Tactical Dynamic Allocation  
Tactical Global Growth  
Tactical Global Income  
International Focus

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<sup>1</sup> Capital Advisors offers multiple strategies within the fixed income asset class, including taxable bonds, tax-exempt municipal bonds; and model portfolios that use ETFs and mutual funds.



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<b>Objective:</b>	Long-Term Growth	<b>Process:</b>	Fundamental/Intrinsic Value
<b>Asset Class:</b>	Domestic Equity	<b>Implementation:</b>	Individual Stocks
<b>Holdings:</b>	30-35	<b>Style Box:</b>	Large Growth
<b>Inception:</b>	June 1978	<b>Structure:</b>	SMA / Mutual Fund

### Description

Rigorous fundamental analysis and quantitative disciplines are combined to manage risk within a strategy that emphasizes *long-term* commitments to great companies. The portfolio typically holds 30-35 positions, many of which are expected to be retained for many years, if not decades. The strategy strives for lower volatility and drawdown risk relative to peer group benchmarks by complementing its long-term commitments with tactical positions in stocks with a shorter time horizon driven by a more event-driven investment thesis.

### Process

We segment the stocks in the strategy into three risk management categories as follows:

**Core Holdings** pursue large market opportunities with the benefit of a material competitive advantage that is expected to persist for many years into the future. We anticipate holding these stocks for several years, if not decades, because the sell discipline for these stocks is driven by the durability of their competitive advantage more than any other factor. While we might reduce the position in a Core Holding from time to time, the decision to sell a Core Holding outright would likely require a material deterioration in its competitive advantage.

**Tactical Opportunities** seek to exploit shorter-term mismatches between a company's stock price and our estimate of its intrinsic value. The framework for these stocks is more event-driven, where we believe the stock price may have over-reacted to a recent negative event, or under-appreciate a potential favorable development. These stocks require deep due diligence and an intermediate time horizon to exploit mismatches between price and value ahead of consensus opinion. In contrast to Core Holdings, the sell discipline for these stocks is driven primarily by the stock price. When a Tactical Opportunity achieves its price objective, we expect to sell it.

**Emerging Franchises** pursue ground-breaking opportunities. These are frequently smaller companies in an earlier stage of development. Uncertainty can be very high because important drivers of the company's future value may be unknowable at the time of investment. We seek extraordinary returns over time from these stocks to compensate for the uncertainty we accept by investing at an early stage. These are likely to be the most volatile positions in the portfolio, requiring a patient sell discipline that tolerates wide swings in the stock price.

We manage risk in this strategy by tilting the relative weightings among stocks based upon the market climate. Cash may be used as a complementary risk management tool over shorter time periods.

### Role in Portfolio

The Managed Equity Growth strategy serves as a core allocation to the domestic equity asset class to achieve long-term capital appreciation and prudent diversification.



<b>Objective:</b>	Dividend Income	<b>Process:</b>	Fundamental/Intrinsic Value
<b>Asset Class:</b>	Global Equity	<b>Implementation:</b>	Individual Stocks
<b>Holdings:</b>	20-25	<b>Style Box:</b>	Multi-Cap Value
<b>Inception:</b>	Jan. 2011	<b>Structure:</b>	SMA <sup>2</sup>

### Description

This strategy seeks to maximize the annual income stream from a strategically diversified portfolio of equity securities. We apply deep fundamental analysis to the companies selected for this strategy in an effort to filter out stocks with potentially unsustainable dividend yields due to insufficient earnings coverage, or balance sheet weakness.

### Process

We use a categorization discipline to support risk management in the strategy. The core of the portfolio consists of two complementary categories we call “Income & Growth” and “Aggressive Yield.” We believe companies in the **Income & Growth** category enjoy a sustainable competitive advantage that can support a growing dividend policy. The current dividend yield for these companies may be lower than other stocks in the strategy, but we expect these companies to grow the dividend consistently over time.

Stocks in the **Aggressive Yield** category help to maximize the current cash flow from the portfolio. These stocks are the primary source of differentiation for the strategy compared to passive index funds or ETFs. The research process for these companies seeks to identify special situations with unusually generous dividend yields, while avoiding stocks whose enticing dividends are to-good-to-be-true.

The third category is **Tactical Opportunities**, which serves a similar role as in the *Managed Equity Growth* strategy. These are higher yielding stocks that involve a more idiosyncratic, event-driven investment thesis that supports diversification and risk management for the portfolio as a whole.

### Role in Portfolio

The Managed Equity Dividend strategy complements the equity and fixed income allocations of a diversified portfolio. For the equity portion of a portfolio this strategy provides a value tilt due to its emphasis on mature companies and industries. Dividend stocks can also be less sensitive to swings in market sentiment because a greater portion of the total return is derived from near-term cash payments. For the fixed income portion of a portfolio the strategy diversifies the sources of cash flow to include dividend income in addition to interest from bonds. The strategy might also serve as an inflation hedge due to an expectation that corporate dividends tend to grow over time.

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<sup>2</sup> The acronym SMA refers to “Separately Managed Account.”



<b>Objective:</b>	Tactical Allocation	<b>Process:</b>	Quantitative
<b>Asset Class:</b>	Global Multi-Asset	<b>Implementation:</b>	ETFs
<b>Holdings:</b>	2 - 5	<b>Style Box:</b>	Large Blend
<b>Inception:</b>	Oct. 2009	<b>Structure:</b>	SMA <sup>3</sup>

### Description

This strategy complements the core of a portfolio by delivering tactical adjustments to market exposures on a weekly basis. The strategy holds up to five ETFs representing the major risk markets globally, with a fixed income out-position that ranges from zero to 90%. Portfolio changes are driven by a quantitative marker called a “moving average.” Risk market ETFs are retained in the portfolio when they demonstrate a positive trend, and they are removed when the trend turns negative.

### Process

Risk market exposures are diversified across four quadrants – domestic equity, international equity, emerging markets and tangible assets (natural resources and real estate). Each quadrant is reviewed on a monthly cycle, but the reviews are staggered weekly throughout the month.

On the first Friday of the month, the ETF for developed international equities is measured against its intermediate term moving average as of the close of markets on Thursday. If the price of the ETF is higher than its moving average the ETF is retained in the portfolio until its next scheduled review. If the international ETF closes below its moving average on Thursday, it is sold on Friday and replaced with an ETF for investment-grade fixed income and cash reserves.

On the second Friday of the month the ETF for domestic equities is reviewed according to the same process. The emerging markets ETF is reviewed on the third Friday of the month, while natural resources and real estate are reviewed together on the fourth Friday. The objective is to retain exposure to risk markets when their moving average indicator suggests a relatively favorable short-term outlook, while switching to fixed income and cash when the outlook is less favorable.

### Role in Portfolio

The Dynamic Allocation strategy systematically adjusts the risk profile of a diversified portfolio to reflect prevailing market conditions. When the recent trend in the global risk markets has been positive, this strategy is likely to contribute more exposure to these markets within a diversified portfolio. When the recent trend has been negative an allocation to this strategy is likely to add more to the fixed income portion of a diversified portfolio.

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<sup>3</sup> The acronym SMA refers to “Separately Managed Account.”



<b>Objective:</b>	Long-Term Growth	<b>Process:</b>	Quantitative
<b>Asset Class:</b>	Global Equity	<b>Implementation:</b>	ETFs
<b>Holdings:</b>	10	<b>Style Box:</b>	Multi-Cap Blend
<b>Inception:</b>	June 2007	<b>Structure:</b>	SMA <sup>4</sup>

**Description:**

This strategy delivers global exposure to multiple asset classes through continuous exposure to ETFs representing 10 broad asset markets worldwide. Portfolio weightings among the 10 sectors are rebalanced quarterly using a quantitative discipline to systematically over-weight sectors that demonstrate recent relative price strength, while reducing exposure to sectors that exhibit relative weakness. The strategy seeks to exploit momentum effects in various asset classes using low-cost ETFs that track widely recognized index benchmarks.

**Process:**

At the end of each calendar quarter in March, June, September and December, the 10 equity market sectors in the strategy's investment universe are ranked according to trailing 12-month performance. The three top-performing sectors receive an over-weight allocation for the subsequent quarterly holding period. The three bottom-performing sectors are under-weighted for the subsequent holding period, while four sectors receive a neutral weight each quarter. This re-weighting discipline is repeated every three months.

The 10 asset markets are: Domestic Large Value, Domestic Large Growth, Domestic Mid-Cap, Domestic Small-Cap, International Equity, Emerging Markets, International Small-Cap, Global Natural Resources, Real Estate and High-Yield Credit.

**Role in Portfolio:**

The Tactical Global Growth strategy participates in the long-term growth of the global risk markets. The discipline of tilting the sector weightings in the portfolio toward relative strength incorporates a momentum effect into the portfolio to exploit the historical tendency for relative strength to persist in the asset markets with a frequency in excess of 50%. This strategy can serve as a core position for investors seeking global diversification within the equity portion of their portfolio.

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<sup>4</sup> The acronym SMA refers to "Separately Managed Account."



<b>Objective:</b>	Long-Term Growth	<b>Process:</b>	Quantitative
<b>Asset Class:</b>	International Equity	<b>Implementation:</b>	ETFs
<b>Holdings:</b>	5	<b>Style Box:</b>	Multi-Cap Blend
<b>Inception:</b>	Dec. 2016	<b>Structure:</b>	SMA <sup>5</sup>

**Description:**

The International Focus strategy delivers broad exposure to the global equity markets, excluding the United States. The strategy seeks to capture a return premium relative to common international equity benchmarks through disciplined exposure to three market factors that have demonstrated a long-term history of producing attractive risk-reward characteristics: value, momentum and low market capitalization. The portfolio model is strategically diversified across five ETFs that provide broad exposure to international stocks and emerging markets. Two of the five ETFs use a quantitative discipline to overweight securities that exhibit characteristics of value such as low price-to-book, low price-to-earnings or low price-to-sales. Two ETFs apply a quantitative process to overweight securities that demonstrate recent price momentum. The fifth ETF focuses on small-cap and mid-cap companies outside the United States.

**Process:**

Systematic adjustments to tilt the portfolio toward characteristics of value, momentum and low market capitalization occur within the five ETFs that comprise the portfolio model. The strategy includes two ETFs for developed international markets – one designed to emphasize value stocks and one that focuses on momentum; and two ETFs for emerging markets – one for value and one for momentum. The fifth ETF offers broad exposure to small-cap and mid-cap stocks across both developed and emerging markets. The strategy maintains flexibility to shift the relative weightings among these five ETFs in response to market conditions, but changes are expected to be modest, and infrequent.

**Role in Portfolio:**

The International Focus strategy participates in the long-term growth of the global equity markets, excluding the United States. It can be used as a complement to domestic portfolio strategies to enhance the diversification of a portfolio's risk market exposure. By systematically overweighting securities that exhibit characteristics of value, momentum and low market capitalization, the strategy seeks to capture a return premium relative to common international equity benchmarks over time. Since the systematic adjustments that maintain the strategy's factor tilts occur within each ETF, rather than at the portfolio level, the strategy may be relatively tax efficient.

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<b>Objective:</b>	Capital Preservation	<b>Process:</b>	Fundamental/Intrinsic Value
<b>Asset Class:</b>	Fixed Income	<b>Implementation:</b>	Bonds, ETFs
<b>Holdings:</b>	4 - 20	<b>Style Box:</b>	Intermediate High Quality
<b>Inception:</b>	June 1978	<b>Structure:</b>	SMA <sup>6</sup>

### Description

Within an overall philosophy that emphasizes preservation of capital, we design bond portfolios for one of three client priorities: Liquidity, Income, or an Aggregate of the two. For tax-sensitive portfolios we emphasize tax exempt municipal bonds, including state-specific municipal bonds for residents of states with an income tax. For others, the strategy invests in taxable bonds with a heavy emphasis on corporate credits rated investment-grade by the major ratings agencies.

### Process

We combine credit research with yield curve optimization to maximize income from the municipal and credit markets within the boundaries of a priority to preserve capital. Our fixed income portfolios utilize investment-grade securities almost exclusively, although we may include high-yield, international or non-rated securities in some Aggregate and Income portfolios. Our clients' bond portfolios can be constructed with individual securities, while allocations less than \$250,000 are designed with low-cost exchange traded funds (ETFs).

### Role in Portfolio

Our fixed income strategies are customized according to three broad priorities – Liquidity, Income or Aggregate. A Liquidity portfolio invests exclusively in high credit quality securities and short-term maturities to achieve stability of principal and ready access to capital. An Income portfolio extends further out on the yield curve and includes a broader range of credit quality to generate a higher level of income. The Aggregate approach incorporates elements of the Liquidity and Income designs for a “core” exposure to the fixed income asset class.

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<sup>6</sup> The acronym SMA refers to “Separately Managed Account.”

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## DISCLOSURES

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**MSCI EAFE Index** is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.

**MSCI Emerging Markets Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.

**S&P North American Natural Resource Index** is an equity index that represents U.S. traded securities across a broadly defined North American Natural Resource sector. S&P Indices uses GICS® to determine a company's classification. The index is modified-capitalization weighted, where a stock's weight is capped at a level determined on a sector basis.

**FTSE NAREIT U.S. Real Estate Index:** An equity index that represents traded securities in the U.S. market structured as real estate investment trusts (REITs).

**Bank of America/Merrill Lynch Government/Corporate 1-5 Year Bond Index** is an index consisting of Treasury or government agency securities and investment grade corporate debt securities with maturities of one to five years.

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