



## Subsuming the Efficient Market Hypothesis

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In a recent article in *Advisor Perspectives*, [Beyond the Efficient Market Hypothesis](#), Michael Edesess highlighted important gaps in the efficient markets model (EMH) that limit its practical applications. In so doing, Edesess encouraged a search for a new theory of markets that builds upon EMH by rendering it as a special case within a broader, more general theory. In essence, Edesess seeks scientific progress... a new theory of markets to subsume EMH the way Einstein's relativity theory subsumed Newtonian physics.

I present Rational Belief Equilibrium (RBE) as such a theory.

Readers inspired by Edesses' call to action should investigate RBE, which has been developed at Stanford University by Dr. [Mordecai Kurz](#) over the past 16 years. Kurz' groundbreaking work is under-appreciated outside academic circles, but it represents a "subsuming" theory for EMH that deserves greater attention from investors.

RBE holds a key advantage over EMH, in that the assumptions needed to "make the math work" pass the smell test of common sense. For example, one of the key variables in the RBE model is the notion that *rational* investors make mistakes. Unlike EMH, which assumes investors are rational robots that know the "true" probability distribution of everything, RBE acknowledges there is no such thing as a "true" probability distribution because the mean, variance and covariance of everything is always changing. Asset relationships that prevailed before the Great Depression, World War II, the advent of the Internet, or 9/11, were no longer the same in the aftermath of those events

In addition to those major structural changes in the world order, smaller shifts occur all the time that disrupt the behavior of asset prices. For instance, the correlation between stocks and gold is sometimes positive and sometimes negative. Knowing the long-term *average* correlation between stocks and gold is not particularly helpful if the relationship cannot be counted on to remain stable through time.

By acknowledging there is no "true" measure of mean, variance and covariance for anything, RBE strives to model the world the way it really is. RBE addresses practical uncertainty by asserting that any opinion that cannot be *proven* false by historical facts should be considered rational. In this way, two investors can hold opposite opinions about an issue (a buyer and a seller, for example), yet both sides can be rational as long as the historical record does not refute either viewpoint. Since opposite opinions about the future



can never both be proven right, RBE concludes that rational people make mistakes all the time. The relevance for investors is that these mistakes reflect themselves in asset prices.

Consider the recent boom-bust cycle in the U.S. housing market. Several thoughtful people correctly anticipated the bust in housing prices. We consider them the “smart” people today because they were proven right. But does that imply the remaining 98% of us are imbeciles, including the best and brightest at our leading investment banks, the leadership at the Federal Reserve and the Treasury Department, and the Ph.D.s that populate the major ratings agencies?

Those very bright people together choked on the assumption that housing prices would never collapse on a nationwide basis. How silly was this assumption *at the time*, when in recent history, U.S. housing prices had never collapsed on a nationwide basis? Anyone who built a model of the housing market from the actual history of home prices might be forgiven for failing to anticipate an event unprecedented in the long-term historical record. Rational? Yes. But *very* wrong nonetheless.

Rational Irrationality (RI), as presented by Edesess in his recent article, is a fascinating complement to RBE because it supports the same notion that *rational* investors get it wrong from time to time, but it reaches the same conclusion from a different starting point. Whereas RBE describes investor mistakes as a natural consequence of normal people feeling their way through an uncertain world, RI shows that, sometimes, incentives in the marketplace align in such a way that the practical self-interest of individuals produces disastrous results for the system as a whole. A classic example is bank runs, wherein each individual depositor is justified in withdrawing money from a struggling bank, but many individuals doing so ultimately *cause* the bank to fail.

Referring back to the recent housing crisis, it is clear that elements of both RBE and RI were at work in that cycle. The collective mistake that allowed a housing bubble to form in the first place can be explained by Kurz’ theory of Rational Beliefs. Yet it was the perverse incentive structure that evolved within the ecosystem of lenders, mortgage brokers, investment banks, and ratings agencies that ultimately inflated the bubble to disastrous proportions. This latter element is a case study in Rational Irrationality.

Theories like RBE and RI are important because they have the potential to change investor behavior for the better if market participants ever adopt them to the same degree that they have embraced EMH over the past 50 years. Consider how differently investors might behave if they begin with an assumption that market prices are more likely to be wrong than right. One thing that might change is the dumbfounding refusal among proponents of EMH to acknowledge that asset markets move in cycles. Exploitation of these cycles may be the most valuable service professional investors can provide, yet the vast majority of them chooses to behave as if the cycles don’t even exist.



Two market cycles offer practical value for investors willing to exploit them. The first is a valuation cycle based on the cyclically adjusted price-to-earnings ratio (CAPE) in the stock market. Yale economist Robert Shiller provides a valuable service for investors by sharing his [database](#) for the U.S. CAPE going back to 1871. The research team at my firm, [Capital Advisors, Inc.](#), has studied Shiller’s data extensively. We found a stark difference in the distribution of outcomes for stocks based on different starting points. The table below tracks the distribution of three-year returns for the U.S. stock market starting from four different valuation quartiles for the CAPE:

**Distribution of 3-Year Returns  
U.S. Stocks: 1881 - 2010  
1,524 Overlapping (monthly) Observations**

<b>Beginning Valuation (CAP)</b>	<b>Average Three-Year Return</b>	<b>Best</b>	<b>Worst</b>	<b>Frequency of Negative Returns</b>
<b>Cheapest Quartile (4.8 – 11.6)</b>	16.3%	194.5%	0.9%	None
<b>2<sup>nd</sup> Quartile (11.7 – 15.6)</b>	9.6	176.2	(23.5)	9.0%
<b>3<sup>rd</sup> Quartile (15.7 – 19.4)</b>	6.8	99.5	(35.4)	23.4%
<b>Expensive Quartile (19.5 – 44.2)</b>	5.9	134.1	(80.8)	32.0%

*Source: Robert J. Shiller; Standard & Poor’s; Bloomberg, LP; Capital Advisors, Inc.*

Armed with this information, how many investors would demand that their investments be handled differently when the stock market trades at a CAPE of 23.7 (where it sits today), as opposed to when this multiple is in the cheapest or second quartile?

The second cycle is driven by momentum in the asset markets. The table below tracks the average monthly return when markets start from two distinct starting points – positive momentum or negative momentum. A second table tracks the likelihood of a negative month in each scenario. "Momentum" is defined by a monthly moving average for each asset class in the study.



**Momentum Indicator  
Monthly Moving Average**

	<b>Average Subsequent Month Return</b>				
<u>Pre-Condition</u>	<b>US Stocks (1872-2009)</b>	<b>International (1970-2009)</b>	<b>Emerg. Mkt. (1989- 2009)</b>	<b>Nat. Resource (1989-2009)</b>	<b>Real Estate (1972- 2009)</b>
<b>Index Above its Moving Average.....</b>	1.17%	1.32%	1.79%	1.21%	1.14%
<b>Index Below its Moving Average.....</b>	0.25	-0.07%	0.14%	-0.48%	0.17%

	<b>Frequency of Negative Months</b>				
<u>Pre-Condition</u>	<b>US Stocks (1872- 2009)</b>	<b>International (1970-2009)</b>	<b>Emerg. Mkt. (1989- 2009)</b>	<b>Nat. Resource (1989- 2009)</b>	<b>Real Estate (1972- 2009)</b>
<b>Index Above its Moving Average.....</b>	35.0%	35.9%	33.3%	41.9%	33.1%
<b>Index Below its Moving Average.....</b>	46.3%	46.5%	42.4%	60.2%	43.3%

Source: [Robert J. Shiller](#) (1872-1925): Standard & Poor's; Ibbotson; Bloomberg LP (1926-2010) ; [MSCI Barra](#); [REIT.com](#); Deutsche Bank AG; Capital Advisors, Inc.

For my money, I would like at least part of my portfolio to be positioned to dynamically adjust to recent market momentum, since the distribution of likely outcomes is much better in positive-trending markets than in negative-trending markets.

Booms and busts in asset prices are not anomalies resulting from unpredictable spasms of "irrationality." Rather, they are fundamental to the way asset markets work. The mistakes we all make as we feel our way through one structural change after another cause asset prices to overshoot their longer-term values in both directions. A primary responsibility of



professional investors is to exploit these market cycles, rather than try to avoid them, or worse yet, pretend they don't even exist.

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