

The Relationship Between Actual Price and Intrinsic Value: Evaluating Efficient Market Hypothesis in the Short and Long Term Today

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Abstract. This paper examines the relationship between actual prices and intrinsic value, evaluating the Efficient Market Hypothesis (EMH) in both short and long-term contexts. While EMH suggests prices reflect all available information, short-term deviations occur due to behavioral biases and market shocks, amplified by the rise of retail investors. Over time, improved regulations and market mechanisms align prices with intrinsic value. The introduction of artificial intelligence and big data analytics may mitigate human biases and enhance market efficiency. Although perfect efficiency is unlikely, advancements in technology and regulation are narrowing the gap between theory and practice.

Keywords: Efficient Market Hypothesis, intrinsic value, behavioral economics.

1. Introduction

This article explores the relationship between the actual price of a security and its intrinsic value, focusing on the extent to which this relationship holds in contemporary markets. Intrinsic valuation, as described by Damodaran, seeks to determine the fundamental worth of a security by discounting its expected future cash flows. [1] This method provides a benchmark for assessing whether a security is overvalued or undervalued relative to its market price. Building on Eugene Fama's Efficient Market Hypothesis (EMH), which posits that in an efficient market, the actual price of a security reflects all available information and closely approximates its intrinsic value, this essay critically evaluates the applicability of this theory today. While short-term market dynamics often result in significant deviations from intrinsic value due to behavioral and external factors, long-term market mechanisms tend to facilitate price corrections, promoting closer alignment between market prices and intrinsic values.

2. Concept of Efficient Market Hypothesis and Type of Efficiency

The Efficient market hypothesis (EMH) states that "In an efficient market, since the market prices reflect all available information, the actual price of a security will be a good estimate of its intrinsic value at any point". [2] The direct implication of EMH is that it is impossible to "beat the market" consistently on a risk-adjusted basis since market prices should only react to new information. Stock prices quickly incorporate information from earnings announcements, making it difficult to beat the market by trading on these events.

In the long run, the EMH is valid, and actual price would be a better estimator of intrinsic value. In Figure1, the data illustrate that after the adjustment of the efficient market, the price of the ETF in most cases was around 2 times DCF (represent the intrinsic value), and the variance of this data showed a downward trend during the decade.

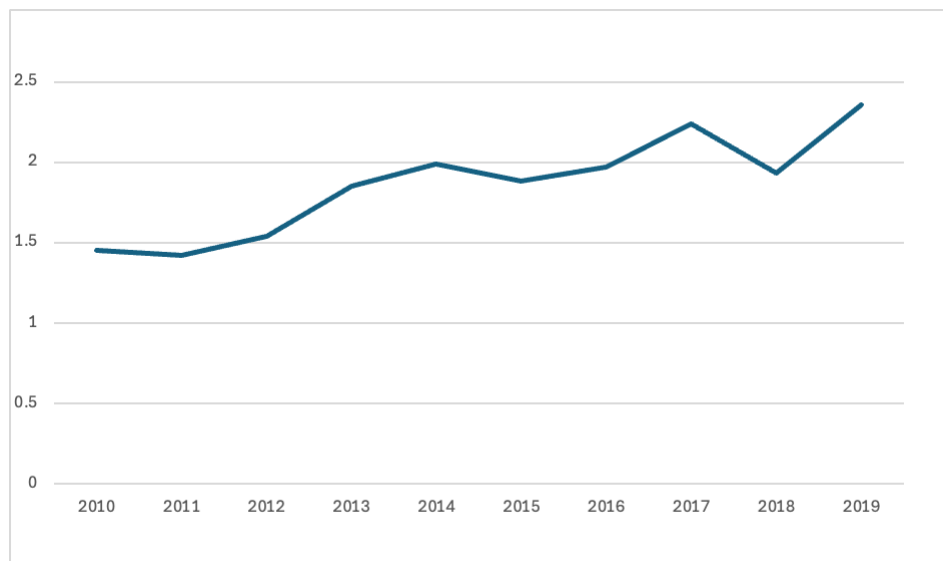


Figure 1. The ratio of price of SPY to intrinsic value during the decade 2010-2019

The main reason is that access to information is more convenient and information spreads faster. At the same time, with the improvement of market rules and supervision, companies must provide real information. For example, the Dodd–Frank Wall Street Reform and Consumer Protection Act in 2010, mandated regular disclosure of key financial information and risk management practices by large companies, enhancing investors' understanding of a company's operations and financial health. This is conducive to making the market more efficient and the long-term stock price gradually closer to the real intrinsic value of the company.

However, critics of EMH, such as Warren Buffett, have argued that the hypothesis is not entirely applicable in practice. Buffett contends that “the preponderance of value investors among the world's money managers with the highest rates of performance rebuts the claim of EMH proponents.” [3] If the price of a security is always close to its intrinsic value, and only moves in response to news, no investor will win in the stock market which does not correspond to reality. In other words, the flaw in EMH is that even when investors have access to accurate information, their analytical abilities and behavioral tendencies can introduce deviations between market prices and intrinsic values. This influence happens more frequently in the short term, where market behavior is influenced by psychological biases and external factors. Over time, however, the availability of information and the self-correcting mechanisms of the market tend to offset these influences, allowing prices to move closer to intrinsic values. Nonetheless, many investors, as Buffett suggests, take advantage of short-term inefficiencies by frequently adjusting their portfolios to capture opportunities, thereby generating profits that challenge the assumptions of EMH.

3. Counterargument of EMH: Behavioral economics

Behavioral economics challenges the assumptions of the Efficient Market Hypothesis (EMH) by highlighting the impact of psychological biases on investor decision-making. For instance, the representativeness heuristic often leads investors to overemphasize typical patterns or categories, resulting in excessive pessimism about past underperforming stocks and unwarranted optimism about past winners, a phenomenon referred to as the "winner-loser effect." Consequently, even with adequate information, investors may make judgments that excessively overvalue or undervalue a stock, causing deviations from intrinsic value.

At the same time, there are many other biases in human behavior which lead investors to make irrational judgments, including herd behavior, emotional gaps, and self-attribution. Herd behavior can lead investors to imitate the financial behavior of most of the group in their trading, which causes violent rallies and sell-offs in the market. Decisions based on extreme emotions or emotional stress, such as anxiety, anger, fear, or excitement, explain why investors do not make rational choices. Self-

attribution shows that the tendency to be overconfident in one's knowledge or skills and make choices, or to selectively believe information is consistent with one's preferences. All of this makes the market volatile, and investors amplify that volatility, driving the price of security further away from its intrinsic value.

A notable example of these dynamics occurred during the COVID-19 pandemic. The stock market plunge during Covid-19 led to renewed scrutiny and criticism of the EMH. This illustrates that market prices could be far removed from the real intrinsic value at some points in time. During the Covid-19 epidemic, the volatility index (VIX) more intuitively reflected the volatility and panic of the market.



Figure 2. Changes in the VIC index over time, 2016-2024

In the US stock market over the past decade in figure 1, the long-term average of the VIX index was between 20 and 25. Because of the Covid-19 outbreak, the VIX index rose significantly in early 2020. On February 20, 2020, the VIX index was around 16, and by March 23, the VIX index reached 70, indicating extreme market fear. Such a large fluctuation is obviously inconsistent with the change of the intrinsic value of the companies, and indicates that over certain periods of time, the price of the stock market may be affected by investor panic, which creates large deviations from the intrinsic value. Therefore, the price of a stock is not only determined by information, but also influenced by the individual behaviors of the investors, which causes the actual price to deviate from its intrinsic value.

Today, the Internet has lowered the threshold for stock trading, which has greatly increased the number of non-professional individual investors. The Financial Times report pointed out that retail investors in the US stock market accounted for more than 25% of the trading volume in 2020 and 2021. In 2010, individual investors accounted for about 10 to 15 percent of the trading volume in the U.S. stock market, which means that individual investors' trading volume has nearly doubled in a decade. As mentioned before, many non-professional and non-institutional investors make decisions based solely on personal judgment. As a result, the effect of behavior economics is amplified when more individual investors enter the market.

4. Discussion

Traders have convenient access to a large amount of accurate and effective information regarding the pricing of stocks. In addition, the development of artificial intelligence (AI) has made computation possible using big data models that are able to make use of this amount of information. However, even with current technology, it is impossible to get a perfect model, so investors will still need to make judgments and individually modify the calculations from the big data model. This means that investors' personal ability will still affect their judgment. As described above, it is difficult to eliminate the psychological dilemma of judgment, and different degrees of overestimation and underestimation will always be present. In addition, different investors use different models, and these biases will still cause the price of securities to deviate from their intrinsic value. However, when AI and mathematical models and big data are gradually improved, one day models can make the decision without human suggestions. With this tool, traders can analyze market information more rationally which enhance delaminate the behavior bias efficiently. In other words, the quantitative investment

strategies can be viewed as a rational response to market information and behavior. Furthermore, automated execution of quantitative strategies can reduce human error, while quickly reacting to changes in market information, capitalizing on short-term market fluctuations, and driving efficient market outcomes. With the improvement AI models, investors can make rational and professional trading decisions so that the prices of securities become better estimates of their intrinsic value.

5. Conclusion

In conclusion, the relationship between the actual price of a security and its intrinsic value is influenced by both theoretical concepts and practical limitations. The EMH offers a strong framework for explaining how market prices should align with intrinsic values. However, in reality, short-term deviations persist due to behavioral biases, external market shocks, and the growing participation of non-professional investors, which often disrupt this alignment. Over the long term, improved information dissemination, regulatory developments, and market self-correction work to bring prices closer to intrinsic values.

The rapid advancements in AI and big data analytics offer promising tools to address these inefficiencies. While current technologies are still imperfect and require investor input, future improvements could significantly reduce human error and behavioral biases. Quantitative investment strategies driven by AI enable faster and more precise reactions to market information, capitalizing on short-term fluctuations and enhancing overall market efficiency.

Although achieving perfect market efficiency remains unlikely, the gradual integration of advanced technologies and ongoing regulatory improvements are narrowing the gap between theory and practice. As these tools evolve, they have the potential to bring market prices closer to intrinsic values, ultimately fostering a more efficient and trustworthy financial system.

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