

Efficient Market Hypothesis

Can you beat the market?

Financial Risk MVE220

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1. Introduction

In early 1960s, Eugene Fama put forth the efficient market hypothesis (EMH) which states that at any given time, stock prices fully reflect all available information. Since all the buyers and sellers have the same information available, price fluctuations are unpredictable and will react to unknown information for the market.

This report will contain a background section, an analysis part and finally a conclusion on how efficient market hypothesis is used in the financial markets to reduce risks. Additionally, there will be references for readers that are interested in digging deeper into the topic.

2. Background

Eugene Fama, born February 14, 1939, is an American economist, who is mainly known for his work on the efficient market hypothesis, but also on portfolio theory, asset pricing and fama-french three-factor model.



The efficient market hypothesis began with Fama's Ph.D. thesis at the University of Chicago. In May 1970, Fama published an article called "Efficient Capital Markets: A Review of Theory and Empirical Work". In the article, Fama proposed two theories. First, he proposed that there are three types of efficiency: weak form, semi-strong form and strong form.

Second, Fama stated that the market efficiency hypothesis per se is not testable. This is called the joint hypothesis problem. These will be presented further in the following section. [1]

3. Delimitations

The report will give a general understanding of the efficient market hypothesis, but it will not deeply explore the empirical work and the math behind it. Further, no experiments will be done by the report writers to compare the hypothesis to empirical data.

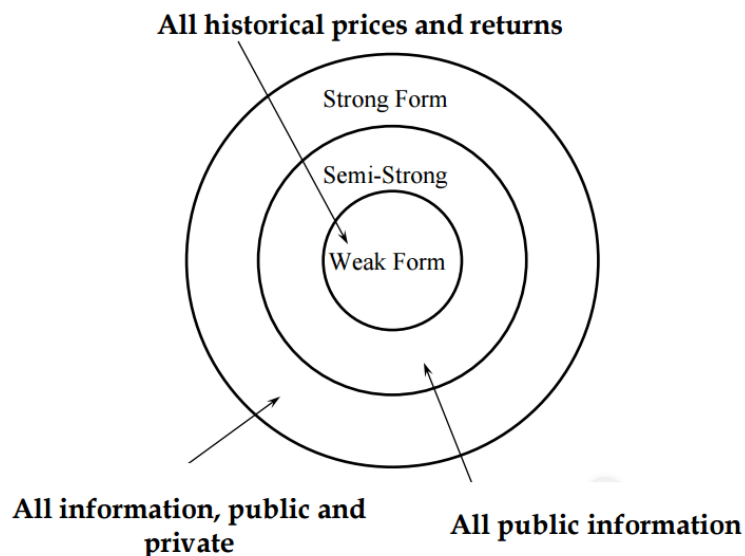
4. Purpose

The report can be seen as an introduction to the efficient market hypothesis. The reader will be able to understand the hypothesis and how it can be used in the financial markets.

5. Analysis

5.1 Efficient Market Hypothesis

There are different ways for the market to get access to information about public companies. It can be different channels, different sources and so on. Fama means that this leads to three forms of efficiency; weak form, semi-strong form and strong form.



Strong form efficiency is when all information, anything from public information to private and confidential information, is reflected in the share prices. This indicates that there is no possibility for investors to achieve a competitive advantage over the market. Even if the investor would have access to a piece of information, this would already be reflected in the share price – in other words, one cannot predict the future price movement.

On the other hand, semi-strong efficiency proposes that share prices only reflect publicly available information, e.g. annual reports and company announcements. Since the market

already reflects publicly available information, the investor cannot gain a competitive advantage unless she or he has access to private information, also called insider information. Examples of private and confidential information one can have access to is monthly internal reports or an acquisition that have not been announced to the public yet.

In its weakest form, weak efficiency, the information that reflects share prices are simply historical prices. In this case, one could say that technical analysis is not a useful tool. Technical analysis is a way to predict future share prices by looking at historical prices and identifying trends. Since historical prices are already reflected in the share price in a weak form market, the investor cannot gain an advantage by using technical analysis. [3]

As stated previously, Fama means that it is not possible to prove that markets are inefficient. The reason is that there is no universal usable reference model – whether the market is efficient or inefficient depends on the reference benchmark. This is also called the joint hypothesis problem and indicates that if one can show that it is possible to gain abnormal profits, it does not necessarily mean that the market is inefficient, since the reference benchmark itself could be wrong. [1]

5.2 Concerns

Although it is not possible to prove that markets are inefficient according to Fama, there are some valid concerns with the theory.

The weak form of the theory suggests that stock prices always reflect all historical information, and that no gains are possible through analysis of these. However, many financial analysts would argue that it is possible to establish relationships between past and future stock prices through rigorous technical analysis. For example, it is often claimed that stock prices follow so called trend-reversal patterns, where the growth of a stock price is followed by a decline in a predictable way. Although there is some evidence of such patterns, subsequent studies have concluded that they mainly occur for companies with small market shares, and thus limit the gains that can be made using this strategy. For larger companies and the market as a whole, there seem to be little correlation between past and future stock prices, which instead seem to follow a so called random walk model.

In the semi-strong form, the market prices reflect all available public information. Studies of market reactions to stock split announcements have shown that most markets tend to adjust almost instantly to such information, and that it therefore is not possible for investors to make abnormal gains using a strategy based on this. Even though this supports the theory of a semi-efficient market form, there is disagreement about whether or not this efficiency is perfect. Financial analysts once again argue that it is possible to find undervalued stocks by calculating future returns based on fundamental analysis. Furthermore, there are professional investors with track records that strongly suggests an ability to exploit such market inefficiencies, which also supports non-perfect efficiency. Lastly, since markets often adjust to inefficiencies as soon

as they are detected, an investor who identifies one is financially incentivized to keep it a secret and instead exploit in his own favor, which makes hidden statistics a strong possibility.

The last form of efficiency, the strong form, suggests that all public and private information is reflected in the market prices. It should therefore not be possible to make abnormal gains by investing based on so called "insider information", but history might suggest otherwise. There are some cases of prosecutions against "insider dealers" who have made enormous gains by investing based on information that was not publicly available, which would not be possible in a strong form efficient market and therefore speak against it. Since such activity is considered heavily illegal in most countries, this at least suggests that there is no consensus about the idea of strong form efficiency. [4]

There are also several historical anomalies that suggest a non-perfect efficiency in the stock market. If the market always reflects all available information - speculative bubbles and excessive volatility should not be possible. A speculative bubble is a situation where stock prices grow to sizes that does not reflect the value of the underlying companies and is generally caused by investors making irrational decisions fueled by beliefs in potential arbitrage opportunities. This would not occur in a fully efficient market, since the prices would correct to rational levels before the bubble started growing.

To explain the occurrence of these anomalies, several theories have been proposed that tries to take this irrational investor behavior in to account. One of the most successful is called behavioral finance, which combines cognitive psychology and traditional finance in an effort to try to explain the tendency for behavioral biases to affect investor decisions. There are several such biases, but the most common are overconfidence, anchoring, hindsight bias and gambler's fallacy. All of these affect the rationality behind the decisions that investors make and may contribute to a market that is not perfectly efficient. [2]

5.3 Are fund managers worth it?

Since the stock prices in a perfectly efficient market always reflect all available information, it is not possible to gain an upper hand through expertise. Thus, amateur investors are equally likely to receive good investment results as expert investors are, since the outcome is completely random. For this reason, investing in actively managed mutual funds and paying expensive management fees will not benefit an investor and therefore cannot be motivated. A mutual fund may still claim that it has consistently outperformed the market in which it operates, but this is not inconsistent with the efficient market hypothesis. Outperforming a perfectly efficient market is entirely possible but comes down purely to luck and is very unlikely to happen over long time periods.

However, the previous discussion of market inefficiencies may suggest a non-perfect market, and under these conditions, it may be possible for expert investors to leverage such inefficiencies to their advantage. If these investors can consistently detect and act on market inefficiencies caused by undervaluations or psychological effects, for example rising stock prices

due to speculation, they may be able to receive higher returns and thus “beat the market”. However, this does not mean that all actively managed mutual funds, or even any of them, will be the best investment option. Even though there may exist mutual funds that outperform the market more frequently than randomness would suggest, it does not guarantee that they will keep doing so in the future. Moreover, it is also up to the individual investor to identify the mutual funds that actually do this and separate these from the vast majority that just make false claims to do so. Lastly, the investor often has to pay large management fees to the high performing mutual funds, which lowers the return on investment and may therefore still fall below the return that a passively managed, free index fund would give. [2]

6. Conclusion

As the previous discussion has shown, there is no widespread consensus about the form of efficiency in the stock market. Most evidence seems to favor an almost perfectly weak efficiency in most stock markets, where the stock prices reflect all historical information, but even this weak form is difficult to fully prove. Most markets also seem to be semi-strong efficient to large extents, but there may exist temporary inefficiencies that can be exploited by skillful investors. The strong form efficiency seems to be too much of an idealization, since historical records of “insider trading” seems to support the possibility of making large gains by acting on private information.

However, even though market inefficiencies may exist, it is important to emphasize that the exploitation of these remains an impossibility for the vast majority of investors. Modern technology has made access to information available for everyone, which makes it close to impossible to get an information edge over the market. Investors often claim that it is possible to find undervalued companies, but one can argue that the “undervaluation” is motivated by a higher risk.

If you still believe that you can beat the market, bear in mind that only 0.6% of all US domestic mutual funds beat the market consistently - and they are considered to be professionals. [5]

7. Further reading

“Efficient Capital Markets: A Review of Theory and Empirical Work” by Eugene Fama himself is highly recommended to read for the ones interested in learning more about the efficient market hypothesis.

Additionally, it is highly recommended for swedish readers to read “Investerar du i aktier? Då är du högst sannolikt en förlorare...” by blogger RikaTillsammans. English readers can instead read “Almost no one can beat the market” by MarketWatch. Both articles discuss how hard it is to beat the market in the long-run and might be worth reading for oneself savings’ sake.

8. References

[1] Wikipedia. "Eugene Fama". (2018) URL: https://en.wikipedia.org/wiki/Eugene_Fama [Accessed 2018-05-18]

[2] Trevir Nath. "Investing Basics: What Is The Efficient Market Hypothesis, and What Are The Shortcomings?". (2015) URL: <https://www.nasdaq.com/article/investing-basics-what-is-the-efficient-market-hypothesis-and-what-are-its-shortcomings-cm530860> [Accessed 2018-05-18]

[3] Morningstar. "Efficient Market Hypothesis". (2018) URL: http://www.morningstar.com/InvGlossary/efficient_market_hypothesis_definition_what_is.aspx [Accessed: 2018-05-18]

[4] David Carter. "An evaluation of the efficient market hypothesis". (2018) URL: <https://www.ivoryresearch.com/writers/david-carter-ivory-research-writer/> [Accessed 2018-05-18]

[5] Howard Gold. "Almost no one can beat the market". (2013) URL: <https://www.marketwatch.com/story/almost-no-one-can-beat-the-market-2013-10-25> [Accessed 2018-05-18]