

Security Market Indexes

Abstract

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1. The Concept of Market Efficiency

1.1 Description of Efficient Markets

An **efficient market** (informationally efficient market) is a market in which asset prices reflect new information quickly and rationally. An efficient market reflects all past and present information.

But how "quickly" is quick? The time frame for an asset's price to incorporate information must be the shortest time a trader needs to execute a transaction in the asset. If the time frame is too big, it would allow many investors to earn economic profits with little risks, making the *market inefficient*.

1.2 Market Value versus Intrinsic Value

Market value is the price at which an asset can be bought or sold in the market. **Intrinsic value (fundamental value)** is the value that would be placed on by investors if they had complete information and understanding of the asset. Intrinsic value, consequently, is tied to the underlying characteristics of the asset which are oblivious to the market value.

1.3 Factors determining Market Efficiency

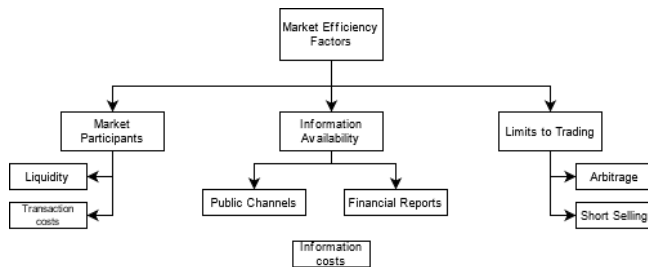


Figure 1

1.3.1 Market Participants

A large number of investors are actively looking for mispricings in markets every day. Some markets have more investors in them, such as blue chip companies, and thus they have more liquidity and are less likely to be inefficient because any efficiency disappears quickly so that investors earn normal economic profits.

However, small cap companies may have much less active investors and less liquidity and as result are more prone to inefficiencies and opportunities to earn economic profits.

1.3.2 Information Availability

The information availability, whether through public channels (news) and financial reports to shareholders should promote market efficiency. Market efficiency is the capacity of incorporating new information in market prices, so, the more diffused informations are the less likely it is for market inefficiencies to occur.

However, if the availability of information is discriminated between the public and private entities (insiders), markets can be inefficient and insiders can try to earn abnormal profits from informational advantage considering weak or medium market efficiency hypothesis.

The US SEC regulation FD (Fair Disclosure) requires that if security issuers provide any nonpublic information to some investors, they must also disclose this information to the public. This helps ensure markets are "fair, orderly and efficient".

1.3.3 Limits to Trading

Arbitrage is a set of transactions destined to produce riskless profits by exploring market inefficiencies. Arbitrageurs that actively seek these opportunities are also contributing to market efficiency. If arbitrageurs can't operate due to operating inefficiencies such as difficulty in executing operations in a timely manner, excessive trading costs and lack of transparency, markets are more likely to be inefficient.

Sort Selling is pretty much the act of investing in securities that are overvalued, the same way investors invest in undervalued securities. In theory, this should induce market efficiency because it enables a two-way bet, and not just a way to profit from price appreciation.

1.3.4 Other

Transaction costs are included in the costs incurred in exploiting any perceived market inefficiency. That means markets can only be efficient to the extent of transaction costs: the more expensive they are the least likely the market is efficient.

Information-acquisition costs argue that prices must also offer a return on information acquisition, mostly for active managers. In equilibrium, markets are efficient if the economical profits include the costs of acquiring information (normal profits). Hence, the normal profits for an active information investor should be higher than the profits of a passive investor.

2. Forms of Market Efficiency

Forms of Market Efficiency	Market Prices Reflect:		
	Past Market Data	Public Information	Private Information
Weak form of market efficiency	✓		
Semi-strong form of market efficiency	✓	✓	
Strong form of market efficiency	✓	✓	✓

Figure 2

2.1 Weak Form Efficient Market Hypothesis

The **weak-form efficient market hypothesis** states that security prices reflect all past market data, which means that the past data is already priced in the current market. This implies that investors can't earn abnormal profits by trading based on past performances or try to predict future prices based on past prices.

In *weak-form efficient markets* any trading rule that aims to exploit historical trading data will not generate abnormal risk adjusted profits, otherwise this would contradict weak-form efficiency. **Technical analysis** does not work in weak efficient markets.

2.2 Semi-Strong Form Efficient Market Hypothesis

The **semi-strong form efficient market** states that prices reflect every publicly known information, including historical prices (financial data) and financial disclosures (earnings, dividends, etc). A market that incorporates all this information into its prices is said to be *semi-strong efficient*.

This implies that trading based on new information would not yield abnormal returns.

2.3 Strong Form Efficient Market Hypothesis

In a **strong form efficient market** security prices reflect both public and private information. This implies that insiders wouldn't be able to earn abnormal profits from trading on the basis of private information because private information would already be priced in the market value.

2.4 Implications of the Efficient Market Hypothesis

- In weak-form efficient security markets, investors cannot earn abnormal profits by trading on the basis of past trends (prices)
- In semi-strong efficient security markets, investors must assess whether the information is already reflected on current prices (investors cannot generate consistent abnormal profits based on new public information)
- Security markets are not strong-form efficient because security laws prohibit insider trading (there is no private information, there is only public information to ensure the fairness of markets)

2.4.1 Implications in Fundamental Analysis

Fundamental analysis is the examination of publicly available information to estimate intrinsic values. Fundamental analysis creates a comparative advantage toward other investors but requires an additional profit due to the costly process of acquiring/interpreting information.

Considering the semi-strong efficiency market hypothesis, fundamental analysis cannot generate abnormal returns consistently but they facilitate the semi-strong efficiency by disseminating value information.

In short, fundamental analysis can profit normal economic gains while contributing to the market efficiency.

2.4.2 Implications in Technical Analysis

Technical analysis attempts to profit by looking at trading patterns (price and volume). Making consistent abnormal profits by exploiting this pattern is not possible in weak/semi-strong markets, because arbitrageurs will seize these opportunities quickly.

2.4.3 Implications in Portfolio Management

The semi-strong market hypothesis implies that its impossible to exploit price patterns of public information for superior gains. This means active portfolio managers do not outperform passive portfolio managers as both should get similar risk-adjusted profits.

3. Market Pricing Anomalies

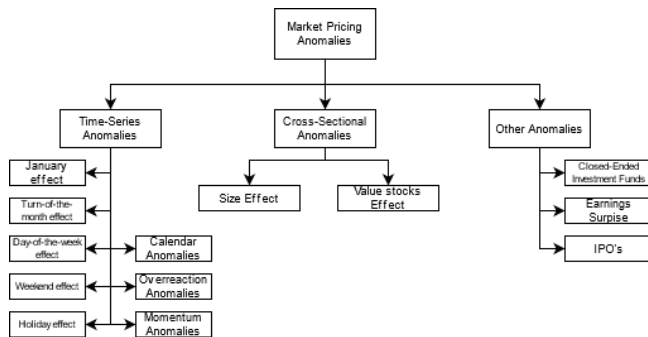


Figure 3

Time Series	Cross-Sectional	Other
January effect	Size effect	Closed-end fund discount
Day-of-the-week effect	Value effect	Earnings surprise
Weekend effect	Book-to-market ratios	Initial public offerings
Turn-of-the-month effect	P/E ratio effect	Distressed securities effect
Holiday effect	Value Line enigma	Stock splits
Time-of-day effect		Super Bowl
Momentum		
Overreaction		

Figure 4

A market anomaly is present when the change in the price of an asset cannot be directly linked to the release of new information into the market.

3.1 Time-Series Anomalies

3.1.1 Calendar Anomalies

The calendar anomalies derive from reported different market returns in different months or days.

January effect reports abnormal returns on the first 5 days of trading in January. This can be explained (speculatively) that investors sell their losing securities in order to *create capital tax liabilities* which can be used to reduce taxes. Another possible explanation is the "*window dressing*" which is the common practice of portfolio managers to discard their riskier securities prior to their annual reports (31 December) in order to attempt to make their portfolios look less risky.

Turn-of-the-month effect

Day-of-the-week effect

Weekend effect

Anomaly	Observation
Turn-of-the-month effect	Returns tend to be higher on the last trading day of the month and the first three trading days of the next month.
Day-of-the-week effect	The average Monday return is negative and lower than the average returns for the other four days, which are all positive.
Weekend effect	Returns on weekends tend to be lower than returns on weekdays.
Holiday effect	Returns on stocks in the day prior to market holidays tend to be higher than other days.

Figure 5

Holiday effect

3.1.2 Momentum Anomalies

Momentum anomalies relate to short-term price patterns which increase the variation in prices (trends). Therefore, stock prices gather momentum when their price will be inflated in a short term basis: either the release of information depresses or increases prices continuously losing grip from the fundamental value.

3.1.3 Overreaction Anomalies

Tied to momentum is the overreaction from investors to the incorporation of new informations in markets. Usually there is an informational shock and investors that were not expecting different financial releases either become too overconfident or overdepressed, leading to price shocks that may deviate from fundamental values.

3.2 Cross-Sectional Anomalies

Cross-Sectional anomalies are restricted to a specific environment or study and therefore may not be extended to the general population (the broad markets) and at all times.

3.2.1 Size Effect

The size effect results from an observation that equities of small-cap companies tend to outperform equities of large-cap companies on a risk-adjusted basis.

3.2.2 Value Effect

A number of observations suggests that value stocks tend to outperform growth stocks.

3.3 Other Anomalies

3.3.1 Closed-End Investment Fund Discounts

Theoretically, these shares should trade at a price approximately equal to their net asset value (NAV) per share which is the total market value of the funds security holdings less any liabilities. However, research shows that closed-ended funds trade at discount from NAV.

An explanation is that some discounts are due to management agreements and other performance fees and also due to the expectations about management performance. An alternative explanation is due to liquidity problems and errors in calculating NAV.

3.3.2 Earnings Surprise

3.3.3 Initial Public Offerings (IPO's)

Due to the underlying risk of issuing securities, investment banks oftentimes push prices down. This can produce dramatic results when these securities become traded on secondary markets where they often rise. The difference between the issuing price in primary markets and the closing price at the end of day one in secondary markets is called the *degree of underpricing*.

4. Behavioral Finance

Behavioral Finance examines investor behavior to understand how people make decisions, individually and collectively. In the broader sense, behavioral finance attempts to explain why individuals make decisions and whether those decisions are rational or irrational.

Market efficiency requires market rationality, however, rational markets do not require that each and every individual is rational.

4.1 Loss Aversion

Financial models assume people dislike risk and require additional compensation to compensate for additional exposure to risks. This behavior is called **risk aversion**. **Loss aversion** refers to the tendency of people to dislike losses more than they like comparable gains.

4.2 Herding

Herding is the behavior that aims to explain under or overreaction in financial markets. Herding occurs when investors trade on the same side of the market and the same securities, often ignoring their own information and analysis in favor of what other investors do.

4.3 Overconfidence

Overconfidence is when investors overestimate their ability to process and interpret information about a security.

4.4 Information cascade

Information cascading is the process of transmission of information in markets, from the participants that act first and whose decisions influence the decisions of others.

4.5 Other Behavioral Biases

- *representativeness* - investors assess current events based on past events of familiar classification
- *mental accounting* - investors keep track of different investments in separate mental accounts and treat those differently
- *conservatism* - investors tend to be slow to react to new information and continue to maintain their prior views
- *narrow framing* - investors focus too much on isolated issues

References

[cfa, 2019] 2019. *CFA program curriculum*. CFA Institute.