

The financial markets context



The financial markets context



OpenLearn | Free learning from
The Open University

About this free course

This OpenLearn course provides a sample of postgraduate study in Business

<http://www.open.ac.uk/postgraduate/find/business>

This version of the content may include video, images and interactive content that may not be optimised for your device.

You can experience this free course as it was originally designed on OpenLearn, the home of free learning from The Open University:

www.open.edu/openlearn/money-management/money/accounting-and-finance/the-financial-markets-context/content-section-0.

There you'll also be able to track your progress via your activity record, which you can use to demonstrate your learning.

The Open University, Walton Hall, Milton Keynes, MK7 6AA.

Copyright © 2016 The Open University

Intellectual property

Unless otherwise stated, this resource is released under the terms of the Creative Commons Licence v4.0 http://creativecommons.org/licenses/by-nc-sa/4.0/deed.en_GB. Within that The Open University interprets this licence in the following way:

www.open.edu/openlearn/about-openlearn/frequently-asked-questions-on-openlearn. Copyright and rights falling outside the terms of the Creative Commons Licence are retained or controlled by The Open University. Please read the full text before using any of the content.

We believe the primary barrier to accessing high-quality educational experiences is cost, which is why we aim to publish as much free content as possible under an open licence. If it proves difficult to release content under our preferred Creative Commons licence (e.g. because we can't afford or gain the clearances or find suitable alternatives), we will still release the materials for free under a personal end-user licence.

This is because the learning experience will always be the same high quality offering and that should always be seen as positive – even if at times the licensing is different to Creative Commons.

When using the content you must attribute us (The Open University) (the OU) and any identified author in accordance with the terms of the Creative Commons Licence.

The Acknowledgements section is used to list, amongst other things, third party (Proprietary), licensed content which is not subject to Creative Commons licensing. Proprietary content must be used (retained) intact and in context to the content at all times.

The Acknowledgements section is also used to bring to your attention any other Special Restrictions which may apply to the content. For example there may be times when the Creative Commons Non-Commercial Sharealike licence does not apply to any of the content even if owned by us (The Open University). In these instances, unless stated otherwise, the content may be used for personal and non-commercial use.

We have also identified as Proprietary other material included in the content which is not subject to Creative Commons Licence. These are OU logos, trading names and may extend to certain photographic and video images and sound recordings and any other material as may be brought to your attention.

Unauthorised use of any of the content may constitute a breach of the terms and conditions and/or intellectual property laws.

We reserve the right to alter, amend or bring to an end any terms and conditions provided here without notice.

All rights falling outside the terms of the Creative Commons licence are retained or controlled by The Open University.

Head of Intellectual Property, The Open University

The Open University

United Kingdom by Hobbs the Printers Limited, Brunel Road, Totton, Hampshire SO40 3WX

Contents

Introduction	5
Learning Outcomes	6
1 The market context	7
2 Perfect and efficient markets	8
3 The Efficient Markets Hypothesis (EMH)	10
4 Conclusion	13
Keep on learning	14
References	14
Acknowledgements	15

Introduction

How do financial markets match providers with users, and how efficiently does the market determine prices? Financial markets can be notoriously volatile, and the stock market is possibly the most volatile of them all. This is after all the place where, depending on skill or on luck, investors either 'make a killing' or 'lose their shirts'. But which does it depend on – skill or luck? Or does it depend on a mixture of the two? In this unit, you will find the answers to these key questions and discover the importance of the Efficient Markets Hypothesis.

This OpenLearn course provides a sample of postgraduate study in [Business](#)

Learning Outcomes

After studying this course, you should be able to:

- make an informed judgement about whether or to what extent a financial market satisfies the conditions of an efficient market
- identify the main factors that could detract from that efficiency.

1 The market context

There is no other proposition in economics which has more solid empirical evidence supporting it than the Efficient Markets Hypothesis.

(Jensen, 1978)

I'd be a bum on the streets with a tin cup if the markets were efficient.

(Warren Buffett, attrib.)

Sell in May and go away.

(Old London Stock Exchange adage)

In this unit we examine a key question in finance.

- How do the financial *markets* match providers with users, and how *efficiently* does the market determine prices?

The financial markets perform much the same function as the markets for other goods and services. They bring large numbers of buyers and sellers together, thus relieving each party of the need for a potentially long and expensive search for a counterpart with exactly equal but opposite needs to his or her own. The existence of such a market improves price transparency, encourages competition and improves efficiency generally.

But the financial markets can also be notoriously volatile. The stock market is possibly the most volatile of them all. This is after all the place where, depending on skill or on luck, investors either 'make a killing' or 'lose their shirts'. But which does it depend on – skill or luck? Or does it depend on a mixture of the two?

A fair return on investment is one that offers the investor just the right level of compensation for the expected risk of the investment (in addition to the time preference rate and an adjustment for expected inflation). But why should it matter whether market prices for investments in fact offer fair returns? Could we argue that the pricing of investments is a zero-sum game in which one player's loss is another's gain? For every investor who loses by buying at the top of the market and selling at the bottom, there must be another who profits by doing the opposite. So can we argue that if a particular investment offers either an excessive or an inadequate return, total income and wealth are neither increased nor reduced but merely redistributed among the market participants?

On the other hand, if it could be shown that markets *do* price investments fairly, this would have genuinely radical consequences. It would mean that all the time and effort expended by investors on trying to 'pick winners' (that is, identify investments that pay excess returns) would be so much time and effort wasted. The converse argument would apply to organisations' efforts to spot windows of opportunity to finance their operations when funds are apparently cheap, because such cheapness would be in fact illusory. The rate demanded by the market would be a fair one in relation to the risks involved.

Is it possible, through the exercise of skill or experience, to predict the movement of share prices in such a way that excess returns can be earned not just occasionally but consistently?

2 Perfect and efficient markets

Before we consider whether financial markets are indeed efficient in the sense of offering fair prices, we need to look more closely at the definition of an efficient market. The best starting point for this is the concept, in general economic theory, of a perfectly competitive market (or perfect market for short). In a perfect market, there would be no barriers or even temporary delays to the formation of perfectly fair prices, that is, prices would instantaneously and universally reflect all available and relevant information. What conditions would have to be met in order to produce this ideal state of affairs? Here are the most important.

- There are so many individual buyers and sellers in the market that no one participant (or group of participants acting in concert with each other) can manipulate prices.
- All participants can gain all the information on which to base their purchases at no cost and as soon as it is available.
- There are no barriers to entry or exit.
- There are no transaction costs. This is a very wide concept in the context of financial markets. It embraces the following factors:
 - stamp duties;
 - broker's commissions;
 - exchange fees;
 - tax regulations affecting (a) the relative attractiveness of different investments or (b) the timing of purchases and sales;
 - accounting practices that affect either the relative attractiveness of different transactions or cause significant differences in the timing of the recognition of profits and losses;
 - regulatory constraints, for example, preventing particular classes of investor from purchasing specific types of investment;
 - adverse impact on market prices of an attempt to buy or sell. This could apply, for instance, if it became known that a prominent investor was trying to dispose of a large holding in a particular investment.

In the real world, no investment market quite meets all of the above conditions, because there are delays in the dissemination of information as well as transaction costs and taxes. If the markets are not actually perfect, then just how imperfect are they? Are they still sufficiently close to the status of perfect markets that it is still impossible to profit systematically (and not just occasionally and coincidentally) from mispricings that offer excess returns?

Random walk theory

Research into the workings of the stock market began by examining this question in its simplest form: are there patterns in share prices, so that future movements can be predicted from past history? The earliest relevant research (Bachelier, 1900) looked not at stock-market prices but at commodity prices and concluded that there were no discernible trends in historic prices. In the 1950s and 1960s these findings were extended to the stock markets, as successive research studies suggested that there was little or no correlation between successive movements in share prices. This observation was called the random walk theory, as it likened the progress of share prices to the walk of a drunken man; you cannot predict the direction of his next step from the last one.

Observers of the random walk in share prices naturally sought to explain their findings in terms of the efficiency with which new information was incorporated into prices. They reasoned that if there were delays as new relevant information became disseminated through the market, the price of the affected share would not move instantaneously to the new equilibrium level reflecting the information, but would trend towards the new level over time. This might happen gradually or quite rapidly, but would still not be instantaneous. If this were the case then there would be periods (immediately following the release of new information) when price trends could be discerned. This in turn would mean that excess returns could be made, either by buying shares before the price had finished moving up to the new equilibrium level justified by good news, or by selling before the price had finished moving down to the new equilibrium level justified by bad news. The fact that these early studies found no such trends or correlations was seen as powerful support for the argument that the markets were efficient. It seemed to be the case that at any point in time, all available information was reflected in the price: the next move could not be predicted from the last one, as the next piece of news would not be genuine news if it was already implied in past prices. This finding was the central feature of what became known as the Efficient Markets Hypothesis (EMH) – the theory that the major stock markets, in particular those of the USA and UK, while not perfect, are at least efficient.

3 The Efficient Markets Hypothesis (EMH)

The classic statements of the Efficient Markets Hypothesis (or EMH for short) are to be found in Roberts (1967) and Fama (1970).

An 'efficient' market is defined as a market where there are large numbers of rational, profit 'maximisers' actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants. In an efficient market, competition among the many intelligent participants leads to a situation where, at any point in time, actual prices of individual securities already reflect the effects of information based both on events that have already occurred and on events which, as of now, the market expects to take place in the future. In other words, in an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic value.

(Fama, 1970)

Fama identified three distinct levels (or 'strengths') at which a market might actually be efficient.

Strong-form EMH

In its strongest form, the EMH says a market is efficient if all information relevant to the value of a share, whether or not generally available to existing or potential investors, is quickly and accurately reflected in the market price. For example, if the current market price is lower than the value justified by some piece of *privately* held information, the holders of that information will exploit the pricing anomaly by buying the shares. They will continue doing so until this excess demand for the shares has driven the price up to the level supported by their private information. At this point they will have no incentive to continue buying, so they will withdraw from the market and the price will stabilise at this new equilibrium level. This is called the *strong form* of the EMH. It is the most satisfying and compelling form of EMH in a theoretical sense, but it suffers from one big drawback in practice. It is difficult to confirm empirically, as the necessary research would be unlikely to win the cooperation of the relevant section of the financial community – insider dealers.

Semi-strong-form EMH

In a slightly less rigorous form, the EMH says a market is efficient if all relevant *publicly available* information is quickly reflected in the market price. This is called the *semi-strong* form of the EMH. If the strong form is theoretically the most compelling, then the semi-strong form perhaps appeals most to our common sense. It says that the market will quickly digest the publication of relevant new information by moving the price to a new equilibrium level that reflects the change in supply and demand caused by the emergence of that information. What it may lack in intellectual rigour, the semi-strong form of EMH certainly gains in empirical strength, as it is less difficult to test than the strong form.

One problem with the semi-strong form lies with the identification of 'relevant publicly available information'. Neat as the phrase might sound, the reality is less clear-cut, because information does not arrive with a convenient label saying which shares it does and does not affect. Does the definition of 'new information' include 'making a connection for the first time' between two pieces of already available public information?

Weak-form EMH

In its third and least rigorous form (known as the *weak* form), the EMH confines itself to just one subset of public information, namely historical information about the share price itself. The argument runs as follows. 'New' information must by definition be unrelated to previous information, otherwise it would not be new. It follows from this that every movement in the share price in response to new information cannot be predicted from the last movement or price, and the development of the price assumes the characteristics of the random walk. In other words, the future price cannot be predicted from a study of historic prices.

Each of the three forms of EMH has different consequences in the context of the search for excess returns, that is, for returns in excess of what is justified by the risks incurred in holding particular investments.

If a market is weak-form efficient, there is no correlation between successive prices, so that excess returns cannot consistently be achieved through the study of past price movements. This kind of study is called *technical* or *chart* analysis, because it is based on the study of past price patterns without regard to any further background information.

If a market is semi-strong efficient, the current market price is the best available unbiased predictor of a fair price, having regard to all publicly available information about the risk and return of an investment. The study of *any* public information (and not just past prices) cannot yield consistent excess returns. This is a somewhat more controversial conclusion than that of the weak-form EMH, because it means that *fundamental* analysis – the systematic study of companies, sectors and the economy at large – cannot produce consistently higher returns than are justified by the risks involved. Such a finding calls into question the relevance and value of a large sector of the financial services industry, namely investment research and analysis.

If a market is strong-form efficient, the current market price is the best available unbiased predictor of a fair price, having regard to all relevant information, whether the information is in the public domain or not. As we have seen, this implies that excess returns cannot consistently be achieved even by trading on inside information. This does prompt the interesting observation that *somebody* must be the first to trade on the inside information and hence make an excess return. Attractive as this line of reasoning may be in theory, it is unfortunately well-nigh impossible to test it in practice with any degree of academic rigour.

Critics of EMH

For about ten years after publication of Fama's classic exposition in 1970, the Efficient Markets Hypothesis dominated the academic and business scene. A steady stream of studies and articles, both theoretical and empirical in approach, almost unanimously tended to back up the findings of EMH. As Jensen (1978) wrote: 'There is no other proposition in economics which has more solid empirical evidence supporting it than the EMH.'

However, as Shleifer (2000) put it, 'strong statements portend reversals' – and in the two decades following Jensen's statement, a growing volume of theoretical and empirical work either contradicted the EMH outright or sought at least to show that its case was 'not proven'.

Critics of EMH have produced a wide range of arguments, of which the following is a summary.

The assumption that investors are rational and therefore value investments rationally – that is, by calculating the net present values of future cash flows, appropriately discounted for risk – is not supported by the evidence, which shows rather that investors are affected by:

- herd instinct
- a tendency to 'churn' their portfolios
- a tendency to under-react or over-react to news (Sheifer, 2000; Barber and Odean, 2000)
- asymmetrical judgements about the causes of previous profits and losses.

Furthermore, many alleged anomalies have been detected in patterns of historical share prices. The best known of these are the 'small firm' effect, the January effect and the mean reversion.

The 'small firm' effect. Banz (1981), in a major study of long-term returns on US shares, was the first to systematically document what had been known anecdotally for some years – namely, that shares in companies with small market capitalisations ('small caps') tended to deliver higher returns than those of larger companies. Banz's work was followed by a series of broadly corroborative studies in the US, the UK and elsewhere. Strangely enough, the last twenty years of the twentieth century saw a sharp reversal of this trend, so that over the century as a whole the 'small cap' effect was much less marked. Whatever the reason or reasons for this phenomenon, clearly there was a discernible pattern or trend that persisted for far too long to be readily explained as a temporary distortion within the general context of EMH.

The January effect. Following on from the 'small firm' effect, it was also observed that nearly all of the net outperformance by small cap stocks was achieved in successive Januarys. Again, this was a discernible trend that under EMH should have been arbitrated away. As one commentator rather acidly remarked, it was not as if the annual coming of January could be characterised as entirely fresh news!

Mean reversion. This is the name given to the tendency of markets, sectors or individual shares following a period of sustained under- or out-performance to revert to a long-term average by means of a corresponding period of out- or under-performance. This was picked up in detailed research by De Bondt and Thaler (1985), who showed that, if for each year since 1933 a portfolio of 'extreme winners' (defined as the best-performing US shares over the past three years) was constructed, it would have shown poor returns over the following five years, while a portfolio of 'extreme losers' would have done very well over the same period.

And finally, a word of caution about the EMH debate

EMH states that an investor cannot make excess returns out of stale information. It is not difficult to define stale information, but the calculation of an excess return depends also on an accurate assessment of the risk associated with holding a share. Despite all the work done in this area since the 1960s, there is still no single, universally accepted or objectively verifiable measure of risk in the context of investment holdings. Supporters of EMH can plead with some justification that pricing anomalies may be more apparent than real, as they may be based on inaccurate measures of risk.

4 Conclusion

This unit looked at the question of whether the financial markets are efficient in the sense that prices demanded are fair and reflect all known and relevant information about investments. The Efficient Markets Hypothesis defines such efficiency at three levels, depending on how much information is in fact incorporated into prices. The weak form states merely that the current price already reflects all information incorporated into previous prices, so that each successive price move is a reaction to fresh news and therefore cannot be predicted from old prices. The semi-strong form states that all public information is already in the price; and the strong form states that all information, public or private, is already discounted.

Having carried all before it in the 1970s and for much of the 1980s, the EMH has had to contend with subsequent challenges of both a theoretical and empirical nature. But it remains the most robust model of how the stock markets operate in the most advanced economies of the world.

Keep on learning



Study another free course

There are more than **800 courses on OpenLearn** for you to choose from on a range of subjects.

Find out more about all our [free courses](#).

Take your studies further

Find out more about studying with The Open University by [visiting our online prospectus](#).

If you are new to university study, you may be interested in our [Access Courses](#) or [Certificates](#).

What's new from OpenLearn?

[Sign up to our newsletter](#) or view a sample.

For reference, full URLs to pages listed above:

OpenLearn – www.open.edu/openlearn/free-courses

Visiting our online prospectus – www.open.ac.uk/courses

Access Courses – www.open.ac.uk/courses/do-it/access

Certificates – www.open.ac.uk/courses/certificates-he

Newsletter –

www.open.edu/openlearn/about-openlearn/subscribe-the-openlearn-newsletter

References

Bachelier, L. (1900) *Théorie de la Speculation*, Paris, Gauthier-Villars.

- Banz, R. (1981) 'The relationship between return and market value of common stocks', *Journal of Financial Economics*, Vol. 9, pp. 3–18.
- Barber, B. and Odean, T. (2000) 'Trading is hazardous to your wealth: the common stock investment performance of individual investors', *Journal of Finance*, Vol. 55, No. 2, p. 773.
- De Bondt, W.F.M. and Thaler, R. (1985) 'Does the stock market overreact?', *Journal of Finance*, Vol. 40, pp. 793–805.
- Fama, E. (1970) 'Efficient capital markets: a review of theory and empirical work', *Journal of Finance*, Vol. 25, pp. 383–417.
- Jensen, M. (1978) 'Some anomalous evidence regarding market efficiency', *Journal of Financial Economics*, Vol. 6, pp. 95–101.
- Roberts, H. (1967) 'Statistical versus clinical prediction of the stock market', unpublished paper presented to the Seminar on the Analysis of Security Prices, University of Chicago.
- Shleifer, A. (2000) 'Inefficient Markets: an Introduction to Behavioral Finance', Oxford University Press.

Acknowledgements

Course image: [sachab](#) in Flickr made available under [Creative Commons Attribution 2.0 Licence](#).

The content acknowledged below is Proprietary (see [terms and conditions](#)) and is used under [licence](#).

Author: Ramy Majouji

All other materials included in this unit are derived from content originated at the Open University.

Don't miss out:

If reading this text has inspired you to learn more, you may be interested in joining the millions of people who discover our free learning resources and qualifications by visiting The Open University - www.open.edu/openlearn/free-courses

This free course is adapted from a former Open University course B821 *Financial strategy*. B821 has been replaced in the business syllabus by BB831 *Corporate finance*.