



UNIVERSITY OF
BATH

MSc Applied Economics

MSc Applied Economics with Banking & Financial Markets

Department of Economics

ES50122 - Financial Markets

Exercises

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Lecture 1 - Efficient Markets

1. You have a market where upon analyzing daily returns you determine annualized returns of 7% and a annualized standard deviation of 25%. Over a time period of 2 years you find 142 instances of two subsequent price increases, 106 instances of subsequent price drops and 202 instances of price reversals on following days. Is the market efficient?
2. In the same market as above, you find 2-day returns to have a volatility of 3.25%. Is the market efficient?

Lecture 2 - Information contagion

1. Looking at the prices of a variety of stocks, you make the observation that it is mainly small and less well known, but liquid, stocks that exhibit prolonged patterns of increasing and decreasing prices. Other stocks do not show any prolonged periods of price trends. How can you explain this observation?
2. You start trading in a market in which you have very limited experience but know well a number of other traders. In order to learn how this market operates, you start to copy the behaviour of those traders you know. A friend tells you that you should not be doing that as it is very irrational and will lead to nothing and just gives rise to booms and bust in the market. Is your friend right in his assertion?

Lecture 3 - Stock valuation models

1. A stock currently pays a dividend of £1 and is expected to grow at 3% p.a. The risk-free rate is 2% p.a. and the company has a volatility of 20% p.a., its correlation with the market index is 0.7. What is the value of this stock?
2. How would your answer to question 1 change if the dividends in the coming two years were £2 and would then fall back to its previous growth path?
3. "If the price of a stock deviates from the fundamental value as determined ex-post through the observation of actual dividends, this is a sign of the market being inefficient." Is this statement correct?

Lecture 4 - Stock market bubbles

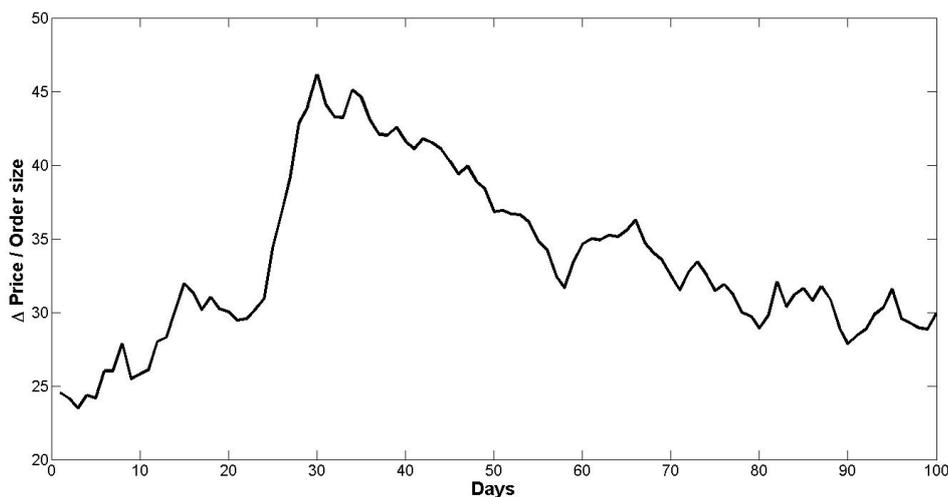
1. A stock currently pays a dividend of £1 and is expected to grow at 3% p.a. The risk-free rate is 2% p.a. and the company has a volatility of 20% p.a., its correlation with the market index is 0.7. The market is expected to return 8% p.a. and have a volatility of 16% p.a. The current stock price is £30.24 with the market consensus that the coming time period's price will be £35. Assuming the market consensus is correct, is there a bubble and if so how likely is this bubble to burst?
2. "If everyone knows that a stock is overvalued, it is not rational to buy this stock. Hence too high prices cannot be sustained." Why is this statement wrong?

Lecture 6 - Informed trading

1. What is the role of uninformed traders in the market and how do they make profits?
2. How do traders learn information?
3. Why are noise traders required to ensure (partial) market efficiency?

Lecture 7 - Trading with market impact

1. Why do more informed traders make markets more efficient?
2. Why do markets become less liquid with more informed traders?
3. You are given the following graph:



How can you explain the changes you see?

Lecture 8 - Information revelation

1. You observe two stocks with similar price movements. In one case the movement came unexpected and surprised all market participants while in the other case a few market participants had anticipated this movement a short while ago. What do you expect the trading volume to show in each case?
2. A recent regulatory reform made trading smaller stocks less attractive to small retail investors while encouraging more institutional investors. A subsequent empirical investigation has shown that trading in these stocks has reduced by more than would have been expected from the exclusion of retail investors. How can you explain this observation?

Lecture 9 - Myopic asset allocation

1. You have a market with 4 assets, having a mean of $[0.12 \ 0.15 \ 0.05 \ 0.20]'$ and

$$\text{covariance matrix} \begin{bmatrix} 0.0400 & 0.0350 & 0.0000 & 0.0300 \\ 0.0350 & 0.0625 & 0.0000 & 0.0450 \\ 0.0000 & 0.0000 & 0.0000 & 0.0000 \\ 0.0300 & 0.0450 & 0.0000 & 0.0900 \end{bmatrix}.$$

If your risk aversion is 3 what is your optimal portfolio?

2. Under which conditions is the portfolio choice of long-term investors who can re-balance their portfolios myopic?

Lecture 10 - Strategic asset allocation with labor income

1. You are a civil servant who has a very secure government job paying £36,000 p.a. You are 27 years old and are sure to retire at 70 with a pension paying 40% of you income for another 20 years. Currently your only asset is cash to the value of £100,000 which you inherited from a relative. You consider your optimal investment of this amount into the stock market and cash holding. If you expect the stock market to rise by 8% p.a. with a volatility of 25% p.a. and the risk free rate is 6% p.a., how much would you invest into the stock market? How would this allocation have changed 20 years later, assuming you have not accumulated more financial wealth. How can you explain the difference?

Assume an absolute risk aversion of 3.

2. Why do you hedge against the risk in your labor income using the stock market?

Lecture 11 - Tactical asset allocation

1. You are an investor with a risk aversion of 5 considering investing into a portfolio of two assets with a long term return of $[0.08, 0.10]'$, a covariance matrix of $\begin{bmatrix} 0.0225 & 0.015 \\ 0.015 & .04 \end{bmatrix}$ and you expect for the coming time period asset 1 to perform 2% better than the long-term average and asset 2 3% worse. What would be your strategic, tactical and total portfolio?
2. What effect does an increasing risk aversion have on the strategic and tactical portfolio?