UNIVERSITY OF EXETER

SCHOOL OF BUSINESS AND ECONOMICS

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Investment Research Methods 1

Module Convenor: Professor George Bulkley

Duration: TWO HOURS

Candidate Number _____

Student ID Number _____

Degree Programme _____

You must answer ALL multiple choice questions – each question is worth 2.5 marks.
Read all options before answering. Note that in some cases the later choices are "all of the above" or a combination of some of the choices. Note that for some questions there are 5 choices, but only 4 choices for other questions.

All questions MUST be answered in THIS booklet.

You MUST NOT remove this book from the exam room.

Only approved silent non-programmable calculators are permitted.

This is a closed note paper.

Q. 1
A manager forecasts the return on an equity portfolio to be 6% with a standard deviation of 3%. The probability that the portfolio will deliver negative returns is closest to

a) 0.1
b) 0.01
c) 0.05
d) 0.025
e) 0.0025

Q. 2
A stock rises by 12% in the first year, zero in the second year and 73% in the third year. The compound rate of return is closest to

a) 25%
b) 28%
c) 30%
d) 32%
e) 28.33%

Q. 3
Which of the following statements are TRUE?

a) Using a 0.01 level of significance rather than 0.05 increases the probability of Type I error.
b) The power of a test is the probability of incorrectly rejecting a false null.
c) A Type II error occurs when we accept a false null
d) We cannot increase the power of a test by increasing the sample size
e) Using a 0.01 level of significance rather than 0.05 decreases the probability of Type II error.

Q.4
Consider a stock whose monthly returns are normally distributed and independent from period to period. If the expected value of these returns is 5% percent and their variance is 6 percent, the probability that the return will exceed 5 percent each month for the next two months is CLOSEST to:

a) 25%.
b) 30%.
c) 60%.
d) 15%.
e) 50%

Q. 5
An analyst forecasts that over the coming year, the probability of an economic boom is 40% and the probability of a recession is 60%. Also they estimate that the stock of taxicorp Inc has a 55% probability of rising during an economic boom and only a 20 percent probability of rising during recession. The unconditional probability of a rise in taxicorp's stock price is CLOSEST to:

    a) 34%
    b) 22%
    c) 38%
    d) 26%
    e) 27.5%

Q. 6
The Variance of a population can be estimated from a sample of size n as

    a) The sum of the squared deviations of the sample observations from the sample mean divided by n.
    b) The sum of the squared deviations of the sample observations from the population mean divided by n-1.
    c) The sum of the squared deviations of the sample observations from the sample mean divided by n-1
    d) The sum of the squared deviations of the sample observations from the population mean divided by n

Q. 7
Which of the following is least likely to be true

    a) The standard deviation of the sample mean is called the standard error
    b) The standard error of the sample mean can be estimated by dividing the population standard deviation by $\sqrt{n-1}$
    c) The central limit theorem implies sample means will be normally distributed in large samples
    d) The standard error of the sample mean can be estimated by dividing the population standard deviation by $\sqrt{n}$

Q. 8
Manager A claims to beat the market. Over the past year, the average return of the 100 stocks selected by them has been 11 percent when the average return of all the stocks in the market was only 9 percent. Assuming that standard deviation of the returns on the stocks that they selected was 15 percent, with 95% confidence we can:

    a) Accept the null hypothesis that Manager A's selections are significantly above average.
    b) Accept the null hypothesis that Manager A's selections are not significantly above average.
    c) Accept the alternate hypothesis that Manager A's selections are significantly above average.
    d) Accept the alternate hypothesis that Manager A's selections are not significantly above average.

Turn over/…

The following data is covered by the next three questions, Q9, Q10, Q11
An analyst regresses the returns from two stocks against the FTSE100 Index, using annual data, measured as a percentage return, for 10 years. The results are shown below.

	Stock_A	Stock_B
Intercept	0.8%	0.1%
Standard Error of Intercept	0.3%	0.2%
Slope coefficient	1.02	0.7
Standard Error of slope coefficient	0.9	0.38

Q. 9
Which of the following statements is TRUE using a 0.1 significance level?

a) Only security A is significantly influenced by the FTSE100
b) Only security B is significantly influenced by the FTSE100.
c) Both security A and security B are significantly influenced by the FTSE100.
d) Neither security A nor security B is significantly influenced by the FTSE100.

Q. 10
If the FTSE100 unexpectedly rises 20% you would expect:

a) The unexpected return on security A to be 20.4%
b) The unexpected return on security A to be 10.2%
c) The unexpected return on security A to be 21.2%
d) The unexpected return on security A to be 20.04%

Q. 11
If the expected return on the FTSE100 is 8% the expected return on security B is

a) 0.54%
b) 6.4%
c) 5.7%
d) 5.6%
e) 7.1%

Q. 12
Which of the following statements about the Sharpe Ratio are true

a) It is measured as the ratio of average monthly returns on a portfolio divided by the standard deviation of the portfolio returns
b) It is measured as the ratio of average monthly returns on a portfolio divided by the variance of the portfolio returns
c) It is measured as the ratio of average monthly returns on a portfolio minus the risk free rate divided by the variance of the portfolio returns
d) It is a measure of the mean excess return on the portfolio, over the risk free rate, per unit of risk, measured by the standard deviation.

Q. 13
We may use Critical Values for Confidence Intervals based on the standard normal distribution when sampling from:

a) A non-normal distribution with an unknown variance when the sample size is small.
b) A normal distribution with an unknown variance when the sample size is small.
c) A non-normal distribution with a known variance when the sample size is small.
d) A non-normal distribution with an unknown variance when the sample size is large

Q. 14
You have annual data on stock returns for the last 10 years. The sample mean is 5.5% and your estimate of the population standard deviation is 10%. Assume stock returns are normally distributed then with 95% confidence you calculate that the population mean lies between:

a) -1.65% and 12.65%
b) -0.69% and 11.69%
c) -2.65% and 13.65%
d) 0.30% and 10.70%

Q. 15
Suppose stock returns are drawn from a normal distribution with mean 7% and standard deviation of 13%. What is the probability that returns lie between zero and 5% in a particular year?

a) 14.58%
b) 15.73%
c) 12.31%
d) 16.52%
e) 18.75%

Q. 16
Assume that you have 50 years of monthly data on Devon Investments. The mean return has been 10% with sample standard deviation of 13%. What is the confidence interval for the average returns that this manager delivers at 0.05 significance level?

a) [9.13%, 10.87%]
b) [8.01%, 10.85%]
c) [8.96%, 11.04%]
d) [7.55%, 11.32%]
e) [7.83%, 11.21%]

Turn over/…

Q. 17
You have 50 months data on returns on the S and P 500 and T-bills. You
calculate the correlation coefficient as 0.27. This is:

    a) Not statistically significant
    b) Statistically significant at the 0.01 level
    c) Statistically significant at the 0.05 level, but not at the 0.01
    d) Statistically significant at the 0.1 level

Q. 18
Suppose that 10% of firms go bankrupt in a particular year, 20% of firms pay
no dividend in a particular year, and 40% of firms that went bankrupt in a
particular year paid no dividend in the previous year. What is the probability of
a firm going bankrupt if you observe that it paid no dividend in the previous
year?

    a) 15%
    b) 18%
    c) 20%
    d) 25%
    e) 30%

Q. 19
Suppose in any year the unconditional probability of a particular stock price
rising is 50%. However you notice that there seems to momentum in stock
prices so that if a stock falls one year it is less likely to rise the next. You
calculate that the probability that a stock rises given that it fell the previous
year is only 40%. What is the probability that the stock rises in a particular
year given that it rose the previous year?

    a) 30%
    b) 45%
    c) 50%
    d) 60%

For the next two questions assume that the price of BP shares on each of 5
successive days is 498, 456, 434, 471, 499.

Q. 20
The mean value of continuously compounded annual returns, assuming a
trading year of 250 days, is

    a) 10%
    b) 12.5%
    c) 15%
    d) 17.5%
    e) 18.5%

Q. 21
Annualized volatility based on a trading year of 250 days is:

   a) 0.59
   b) 0.93
   c) 1.30
   d) 1.67
   e) 1.59

Q. 22
Suppose the government cuts interest rates to avoid a deep recession. Which of the following statements are true?

   a) This is likely to cause an appreciation of the currency which will reduce exports
   b) This is likely to cause an appreciation of the currency which will increase exports
   c) This is likely to cause a depreciation of the currency which will increase exports
   d) This is likely to cause a depreciation of the currency which will reduce exports

Q. 23
The covariance between stock A and stock B is 25%, the variance of stock A is 121% and the variance of stock B is 124%. The correlation between the two stocks is closest to

   a) 0.16
   b) 0.18
   c) 0.20
   d) 0.22
   e) 0.24

Q. 24
Suppose we estimate an Ordinary Least Squares regression to forecast returns as a function of the dividend yield. If we use this regression to forecast returns then the size of our forecast error will depend on:

   a) The value of the dividend yield in the year we make the forecast
   b) The variance of the error in the regression model
   c) The standard error of the slope coefficient on the dividend yield
   d) All of the above
   e) b and c but not a

Turn over/…

Q. 25
We run a regression of Y on X, Y=a+bX, with 62 observations and our point estimate of b is 0.6 and the standard error of our estimate of b is 0.2. We want to test whether X actually causes Y. Which of the following statements are true?

a) We can reject the null hypothesis that X causes Y
b) We cannot reject the null hypothesis that X causes Y
c) We can reject the null hypothesis that X does not cause Y
d) We cannot reject the null hypothesis that X does not cause Y

Q. 26
If we estimate an Ordinary Least Squares regression of returns on the price-earnings ratio which of the following statements are FALSE

a) We need to assume the price-earnings ratio is normally distributed
b) We need to assume that the variance of the error term is the same in all observations
c) We need to assume the error term is uncorrelated across observations
d) We need to assume the relation between returns and the price-earnings ratio is linear
e) All of the above

Q. 27
If we find a correlation between X and Y and a commentator describes it as a "spurious correlation" they could mean:

a) The correlation between two variables reflects a chance relationship in a particular data set
b) The correlation between two variables does not reflect any direct causation between them but reflects the relationship of each of them with a third variable, Y, that is correlated with them both.
c) The way X and Y have been constructed from the raw data has induced a correlation between them, for example in both cases raw data has been divided by price to get the values of X and Y
d) Any of the above
e) a and b but not c

Q. 28
According to Keynsian Macro-economics an increase in government spending financed by borrowing will be most likely to result in

a) Increased investment because of increased interest rates
b) A depreciation of the exchange rate
c) The crowding out of private consumption
d) Increased exports
e) None of the above

Q. 29.
According to Keynsian Macro-economics an increase in the money supply will be most likely to result in

    a) Reduced investment because of increased interest rates
    b) Increased private consumption
    c) Increased imports
    d) Crowding out of private consumption.

Q. 30
You read in the newspaper that there has been an unexpected decrease in unemployment. Which of the following statements are true?

    a) Stock prices may fall because an increase in interest rates will be expected.
    b) Stock prices may rise because of higher aggregate demand.
    c) Stock prices may rise because an increase in interest rates will be expected.
    d) All of the above are possible.
    e) Both a and b are possible, but not c.

Q. 31
If a country has an overvalued exchange rate then
    a) The price of exports in the foreign market will be lower than purchasing power parity would imply.
    b) The price of exports in the foreign market will be higher than purchasing power parity would imply.
    c) It is likely to run a surplus on the current account of the Balance of Payments.
    d) The capital account of the Balance of Payments is likely to be in deficit.
    e) Both b and d are true

Q. 32
According to the Quantity theory of money the following are predicted

    a) An increase in the money supply leads to a decrease in interest rates
    b) Changes in the stock of money directly affect nominal output
    c) An increase in the money supply leads to a decrease in the Velocity of circulation
    d) Changes in the stock of money directly affect real output
    e) Both a and b are true

Turn over/…

Q. 33
Interest rates in the UK are 6% and in the US are 8%. If a $1=2.05GBP today what would you expect the spot rate to be in 12 months

    a) 2.09
    b) 2.01
    c) 2.14
    d) 1.96
    e) 2.19

Q. 34
If we estimate an Ordinary Least Squares regression of Y on X then

    a) If a plot of the data shows that it plots very closely to the fitted regression line then we should expect a low value for the R squared statistic
    b) If a plot of the data shows that it plots very closely to the fitted regression line then we should expect a high value for the t-statistic on the slope coefficient
    c) If a plot of the data shows that it plots very closely to the fitted regression line then we should expect a low value for the t-statistic on the slope coefficient
    d) The R squared statistic measures the fraction of the variation in the independent variable that is explained by the dependent variable

Q. 35
Assume exchange rate changes are such that Purchasing Power Parity always holds. Which of the following statements are true

    a) The country with higher inflation will see it's currency appreciate
    b) Nominal interest rates will be the same in both countries
    c) The country with higher inflation will see it's currency depreciate
    d) The country with higher inflation will have a balance of payments deficit on current account

Q. 36
According to the crowding out model increased government deficits are likely to cause

    a) Increased private spending
    b) A reduction in exports
    c) A reduction in imports
    d) An increase in real GDP

Q. 37
Assume Covered Interest Parity holds

 a) If the home country has a higher interest rate than the foreign country the domestic currency will be expected to appreciate
 b) If the home country has a higher interest rate than the foreign country then the domestic currency will be expected to depreciate
 c) Uncovered interest parity will also hold
 d) Investors should purchase the bonds of whichever country pays the higher interest rate.

Q. 38
Suppose a manager is given a stock option contract in order to give them an incentive to work harder. Which of the following statements are true?

 a) If the exercise price for the option is far below the current share price this may give them an incentive to work harder to make the option valuable
 b) If the option price is far below the current share price this may not give them an incentive if it is not likely to be valuable
 c) If the stock price later drops a long way below the exercise price then lowering the exercise price might be increase manager effort.
 d) All of the above

Q. 39
If the correlation between X and Y is -1 this means

 a) When X increases by 1 unit then this causes Y to decrease by exactly 1 unit.
 b) A plot of X and Y will show them lying around a 45% line with a slope of -1.
 c) A plot of X and Y will show them exactly lying on a straight line.
 d) When X increases by 1 unit then Y decreases by exactly 1 unit, but we cannot say X causes Y.
 e) The variance of X and Y must be the same.

Q. 40
We run a regression of Y on two variables, X and Z, and want to test whether X actually causes Y. Which of the following statements are true?

 a) We should use the R squared statistic to test the null hypothesis that X causes Y.
 b) We should use the R squared statistic to test the null hypothesis against the alternative that X causes Y.
 c) We should use the t-statistic to test the null hypothesis that X causes Y.
 d) We should use the t-statistic to test the null hypothesis against the alternative that X causes Y.
 e) A regression can tell us nothing about causation

End of Paper