# View Report

## R1

(Number of First Attempts: 91)

MCQ

**Question 1**

What function are we trying to minimize when we derive the OLS estimators?

| | | |
|---|---|---|
| ⇨ Minimize sum of squared errors | 89 | (97.8 %) |
| Minimize sum of absolute errors | 1 | (1.1 %) |
| Maximize sum of squared errors | 1 | (1.1 %) |
| Maximize sum of absolute errors | 0 | (0 %) |

Average Grade: 0.98 / 1 (97.8 %)

**Question 2**

What does the Gauss Markov Theorem tell us?

| | | |
|---|---|---|
| Least square estimators are the only unbiased linear estimators possible | 0 | (0 %) |
| ⇨ Least square estimators have the smallest variance out of all linear unbiased estimators (i.e. most efficient) | 87 | (95.6 %) |
| Least square estimators have the smallest variance out of all linear unbiased estimators (i.e. most consistent) | 4 | (4.4 %) |
| Least square estimators have the highest variance out of all linear unbiased | 0 | (0 %) |

Average Grade: 0.96 / 1 (95.6 %)

estimators (i.e. most efficient)

**Question 3**

We use the following as an estimator for sample mean: (X1 + X10 + X200)/3, where the index denotes the observation number. E.g. X10 is the 10th observation. Is this estimator unbiased, and is it efficient?

| | | |
|---|---|---|
| Biased but efficient | 1 | (1.1 %) |
| Unbiased and efficient | 4 | (4.4 %) |
| Unbiased but not efficient | 66 | (72.53 %) |
| Biased and not efficient | 20 | (21.98 %) |

Average Grade: 0.73 / 1 (72.53 %)

**Question 4**

I am thinking of a statistical test. It will test whether error term of a least squares estimation has constant variance. I split sample into two and run an estimation separately on each half. Lets call the "sum squared error" of regression 1 as "RSS1", and "sum squared error" of regression 2 as "RSS2". What is distribution of RSS1/RSS2?

| | | |
|---|---|---|
| t-distribution | 1 | (1.1 %) |
| chi-squared distribution | 1 | (1.1 %) |
| normal distribution | 0 | (0 %) |
| F-distribution | 89 | (97.8 %) |

Average Grade: 0.98 / 1 (97.8 %)

**Question 5**

What is the process for minimizing sum of squared errors in least squares regression?

| | | |
|---|---|---|
| Find partial derivatives of sum squared errors with respect to each parameter, and set each partial derivative to 0 to obtain N simultaneous equations in N unknowns | 54 | (59.34 %) |

Average Grade: 0.59 / 1 (59.34 %)

| | | |
|---|---|---|
| Find partial derivative of sum squared errors with respect to constant term and set that to 0 | 2 | (2.2 %) |
| Find partial derivative of sum squared errors with respect to each independent variable | 2 | (2.2 %) |
| All of the above are valid steps | 33 | (36.26 %) |

**Question 6**

Which of the following is not a valid reason to use adjusted R-square

| | | |
|---|---|---|
| To determine how much of variation in dependent variable is explained by independent variables | 4 | (4.4 %) |
| To sure that goodness of fit measure is adjusted for number of independent variables, so that 'poorly performing' independent variables are penalized | 0 | (0 %) |
| ⇨ To determine how much of variation in independent variable is explained by independent variables | 85 | (93.41 %) |
| To evaluate quality of regression as a whole rather than any single one individual variable | 2 | (2.2 %) |

Average Grade: 0.93 / 1 (93.41 %)

**Question 7**

What is the central conclusion of Capital Assets Pricing Model (CAPM)?

| | | | |
|---|---|---|---|
| ⇨ Expected excess returns of an asset depends on its beta to market risk premium | 71 | (78.02 %) | |
| Excess returns of an asset depends on its beta to market risk premium | 6 | (6.59 %) | Average Grade: 0.78 / 1 (78.02 %) |
| Expected returns of an asset depends on its beta to market risk premium | 14 | (15.38 %) | |
| Expected returns of an asset depends on its beta to market return | 0 | (0 %) | |

**Question 8**

We can use an F-test to compare whether the RSS of two regressions are significantly different. What kind of restrictions can we impose on one regression versus the other?

| | | | |
|---|---|---|---|
| None of these | 0 | (0 %) | |
| Inequality restrictions | 0 | (0 %) | Average Grade: 0.96 / 1 (95.6 %) |
| Both equality and inequality restrictions | 4 | (4.4 %) | |
| ⇨ Equality restrictions | 87 | (95.6 %) | |

**Question 9**

What is the intuition behind the R-square of a regression?

| | | | |
|---|---|---|---|
| Unexplained variation in the dependent variable over total variation | 2 | (2.2 %) | Average Grade: 0.89 / 1 (89.01 %) |
| ⇨ Explained variation in the dependent variable over total variation | 81 | (89.01 %) | |
| Explained variation in the independent variable over total variation | 8 | (8.79 %) | |

| | | |
|---|---|---|
| Unexplained variation in the independent variable over total variation | 0 | (0 %) |

**Question 10**

What is the 'plain English' summary of the Gauss Markov theorem?

| | | |
|---|---|---|
| ⇨ Assuming there exists another linear and unbiased estimator, variance of such an estimator must be greater than or equal to least squares estimator.  Hence, OLS estimator is most efficient out of 'class' of linear and unbiased estimators | 83 | (91.21 %) |
| Assuming there exists another linear and unbiased estimator, such an estimator cannot be different from the OLS estimator.  Hence, OLS estimator is most efficient out of 'class' of linear and unbiased estimators | 1 | (1.1 %) |
| Assuming that there exists another linear and unbiased estimator, variance of such an estimator must be equal to least squares estimator.  Hence, OLS estimator is most efficient out of 'class' of linear and unbiased estimators | 5 | (5.49 %) |
| Assuming that there exists another linear estimator which is different from the OLS estimator, such as estimator must be biased.  Hence, OLS estimator is most efficient out of 'class' of linear and unbiased estimators | 2 | (2.2 %) |

Average Grade: 0.91 / 1 (91.21 %)

## Question 11

If an asset is plotted above the security markets line, this means:

| | | | |
|---|---|---|---|
| Expected return on the asset is greater than what we would predict given its volatility | 2 | (2.2 %) | Average Grade: 0.96 / 1 (95.6 %) |
| Expected return on the asset is lower than what we would predict given its beta | 2 | (2.2 %) | |
| Expected return on the asset is greater than what we would predict given its beta | 87 | (95.6 %) | |
| Expected return on the asset is lower than what we would predict given its volatility | 0 | (0 %) | |

## Question 12

If CAPM holds perfectly, what should y-intercept in an OLS estimation of excess asset return against excess market returns be?

| | | | |
|---|---|---|---|
| 0 | 90 | (98.9 %) | Average Grade: 0.99 / 1 (98.9 %) |
| Negative | 0 | (0 %) | |
| Positive | 1 | (1.1 %) | |
| Beta | 0 | (0 %) | |