

YLIOPISTOTENTTI - UNIVERSITY EXAM

Opiskelijan nimi / Student name:	Opiskelijanumero / Student number:
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Opettaja täyttää / Lecturer fills in:

Opintojakson koodi and nimi / The code and the name of the course: Koodi / Code: 721954S Tentin nimi / Exam name: Financial Econometrics	
Tiedekunta / Faculty: OBS	
Tentin pvm / Date of exam: 22.02.2018	Tentin kesto tunteina / Exam in hours: 3 h
Tentaattori(t) / Examiner(s): Hannu Kahra	Opintopistemäärä / Credit units: 6
	Sisäinen postios. / Internal address: OBS
Sallitut apuvälineet / The devices allowed in the exam: <input checked="" type="checkbox"/> Funktiolaskin / Scientific calculator <input type="checkbox"/> Ohjelmoitava laskin / Programmable calculator <input type="checkbox"/> Muu materiaali, tarkennettu alla / Other material, specified below:	
Tenttiin vastaaminen / Please answer the questions: <input checked="" type="checkbox"/> Suomeksi / in Finnish <input checked="" type="checkbox"/> Englanniksi / in English Suomenkielisessä tutkinto-ohjelmassa olevalla opiskelijalla on oikeus käyttää arvioitavassa opintosuorituksessa suomen kieltä, vaikka opintojakson opetuskieli olisi englanti. Tämä ei koske vieraan kielen opintoja. (Kts. <u>Koulutuksen johtosääntö 18 §</u>) In a Finnish degree programme a student has a right to use Finnish language for their study attainment, even though the language of instruction is English, (excluding language studies) even when the language of instruction is other than Finnish. (See <u>the Education Regulations 18 §</u>)	
Kysymyspaperi on palautettava / Paper with exam questions must be returned: <input type="checkbox"/> Kyllä / Yes <input checked="" type="checkbox"/> Ei / No	

Problems

February 20, 2018

1. Consider the following model

$$y_t = \alpha + \beta x_t + e_t,$$

where y_t is excess return on durables and x_t is market excess return with $\bar{y} = 0.525$, $\bar{x} = 0.416$ and $\text{cov}(y, x) =$

$$\begin{array}{cc} & \begin{array}{c} y \quad x \end{array} \\ \begin{array}{c} y \\ x \end{array} & \begin{array}{cc} 33.586 & 22.346 \\ 22.346 & 20.108 \end{array} \end{array} .$$

- (a) Solve $\hat{\alpha}$ and $\hat{\beta}$.
 - (b) The estimates have $\text{s.e.}(\hat{\alpha}) = 0.131$ and $\text{s.e.}(\hat{\beta}) = 0.029$. Test the two hypotheses $H_0 : \alpha = 0$ and $H_0 : \beta = 1$ *separately*.
 - (c) What is the name for the *joint* hypothesis $H_0 : \alpha = 0$ and $H_0 : \beta = 1$.
2. What are the tests available for maximum likelihood estimation and testing?
 3. What is the motivation for panel data models.
 4. Consider the basic CCAPM specification

$$1 = \beta \left(\frac{C_{t+1}}{C_t} \right)^{-\gamma} R_{t+1},$$

where C is consumption, R is the pay-off $R = 1 + r$ and $\theta = (\alpha, \beta)$ are the parameters. Taking logs on both sides

$$0 = \ln \beta - \gamma \Delta c_{t+1} + r_{t+1}$$

$$r_{t+1} = -\ln \beta + \gamma \Delta c_{t+1}.$$

We can estimate the models using OLS

$$r_{t+1} = \alpha + \gamma \Delta c_{t+1} + e_{t+1}. \tag{1}$$

What are the possible problems when we estimate (1).