TENTAMEN / EXAMINATION

12307683

Fylls i av **student** / *To be completed by the **student***

Skriv anonymiseringskoden på samtliga svarsblad / *Write your anonymity code on each sheet*

Anonymiseringskod / *Anonymity code*: NEGC18 - 0012 - W0M

Provbenämning / *Exam name*: Portföljval

Oanmäld:

Kurskod / *Course code*: NEGC18

Modul / *Module*: 0001

Tentamensdatum / *Examination date*: 2023-02-18

Jag har tagit del av regler som gäller vid tentamen / *I have read the current rules for examinations*: [X] Ja / *Yes*

Antal inlämnade blad med anonymiseringskod / *Number of sheets with anonymity code*: 08 ✓

Fylls i av **skrivvakt** / *To be completed by the **invigilator***

Kontroll av legitimation / *Identification checked*: [X] Ja / Yes

Kontroll av inlämnade blad / *Answer sheets checked*: [X] Ja / Yes

Inlämningstid / *Time of submission*: 11:59

Härmed intygas att kontroller utförts / *This is to certify that the checks have been carried out*

Tydlig sign. / *Signature*: Qm

Fylls i av **lärare** / *To be completed by the **examiner***

Bedömning av uppgifter / Questions attempted

1	2	3	4	5	6	7	8	9	10	~
5,175	2,5	3,5								

11	12	13	14	15	16	17	18	19	20	~

21	22	23	24	25	26	27	28	29	30	~

Totalt antal poäng / *Total points*:

Examin. lärare / Kursansvarig signatur / *Signature of the examiner*:

Betyg / *Grade*:

Namnförtydligande / *Clarification of the signature*:

12307683

Försättsbladet ska alltid lämnas in även om ingen uppgift behandlats / *Examination should always be submitted even if no questions are answered*

Utskriven 2023-02-13 kl. 13:42:06

Ange anonymitetskod / *Write your anonymity code*
(Vid icke anonym tentamen ange kurskod + namn + personnummer)
(For non-anonymous exams write the course code + name + civic registration number)

NEGC18-0012-wqeu

Löpande sidnr
Consecutive no:
1

Uppgift nr /
Question no:
1(1)

Poäng / *Points awarded:*
5,175.

Lärarens anteckning
Examiner's remarks:

a) SML: $\bar{R}_i = R_F + \beta(\bar{R}_M - R_f)$

$\bar{R}_M - R_F = \text{slope} = \frac{12-7}{2-1} = 5$

$\bar{R}_M = 7 = R_F + 1(5)$

$R_f = 2$

$\bar{R}_M = 7\%$
$\beta_M = 1$
$\bar{R}_i = 12\%$
$\beta_i = 2$

SVAR a):

SML: $\bar{R}_i = 2 + 5\beta$

1

b) CML: $\bar{R}_i = R_F + \left(\frac{R_m - R_f}{\sigma_M}\right)\sigma_i$

$\bar{R}_i = 2 + \frac{5}{4}\sigma_i$

Svar b):

CML: $\bar{R}_i = 2 + 1{,}25\sigma_i$

1

c) The CML is the efficient frontier when risky assets and riskfree assets combine. It shows the most return for a combination of assets for the lowest amount of risk. Risk is measured in std.dev. Only efficient assets and combinations thereof are on the CML.

combination of R_m and R_f

While CML shows assets' return relative to both systematic and unsystematic, the SML only shows assets' return relative to their systematic risk - risk that isn't possible to diversify away. Correctly priced assets lie on the SML, both efficient and inefficient.

0,175

d) An asset with $\beta = 1,5$ should have an $E(R)$ of $= 2+5(1,5) = 9,5$ R

Meaning Asset 2 is underpriced.

Find combination of Asset 1 and Market portfolio so that their $\beta = \beta_2 = 1,5$

$\beta_1 \cdot X_1 + \beta_M \cdot (1-X_1) = 1,5$ & (X_1: weight in asset 1)

$2X_1 + 1(1-X_1) = 1,5$

$2X_1 + 1 - X_1 = 1,5$

$X_1 = 0,5$

$\hookrightarrow 1 - X_1 = X_M = 0,5$

} weights in Asset 1 R and Market portfolio

Net investment $= (-0,5) + (-0,5) + 1 = 0$

We short sell the combination of Asset 1 and Market portfolio R

and buy Asset 2

$E(R) = (-0,5) \cdot 12 + (-0,5) \cdot 7 + 1 \cdot 16,5 = 1\%$ R

$\beta = (-0,5) \cdot 2 + (-0,5) \cdot 1 + 1 \cdot 1,5 = 0$

2

SVAR D)

We've now created a zero-investment portfolio with the following proportions:

Market portfolio: $X_M = -0,5$

Asset 1 $X_1 = -0,5$

Asset 2 $X_2 = 1$

with following return and risk

$E(R) = 1\%$

$\beta = 0$

Without investing anything.