

STOCKHOLM UNIVERSITY

Department of Economics

**Course name:** Portfolio Theory

**Course code:** EC7211

**Examiner:** Bo Larsson

**Number of credits:** 7,5 credits

**Date of exam:** Monday 14<sup>th</sup> of March 2016

**Examination time:** 3 hours (09.00–12.00)

Write your identification number on each paper and cover sheet (the number stated in the upper right hand corner on your exam cover).

Do not write answers to more than one question in the same cover sheet. Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked. No aids are allowed.

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The exam consists of 4 questions. Two questions are worth 25 points and one question is worth 20 points and the last 15 points, together with the maximum of 15 points on the assignments this amounts to 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

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Results will be posted on [www.mitt.su.se](http://www.mitt.su.se) (My studies) on 4<sup>th</sup> of April the latest

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**Good luck!**

## 1 Single index (25 points)

You have obtained the following using the Single index model to simplify your choice, the risk-free rate was 2 percent. (Note no further calculations are needed.)

Market	Asset A	Asset B	resid A	resid B
Jan	0.1793	0.1511	0.1553	-0.0027
Feb	-0.0055	0.0039	-0.0131	-0.0012
Mar	-0.0063	0.0196	-0.0385	0.0152
Apr	0.0685	0.2255	-0.1895	0.1608
May	-0.0660	-0.2029	0.1696	-0.1593
Jun	-0.0012	-0.0150	0.0241	-0.0235
Jul	0.3658	0.2882	0.3430	-0.0158
Aug	0.2410	0.0754	0.3989	-0.1280
Sep	0.1847	0.1205	0.2127	-0.0377
Oct	0.1295	0.2465	-0.0926	0.1328
Nov	0.1204	0.1523	0.0296	0.0459
Dec	-0.0101	0.0149	-0.0394	0.0136
mean	0.1000	0.0900	0.0800	0.0000
var	0.0149	0.0171	0.0289	0.0075
stdv	0.1220	0.1309	0.1701	0.0866
beta		0.8048	0.9000	

- a. Which asset is most attractive according to your results? (and why?)
- b. Is the Single index model a good idea to use with these two assets? (Justify)

## 2 Asset evaluation (25 points)

You observe the following data:

	E(R(i))-						
	E(R(i))	R(f)	beta	var(e(i))	var(R(i))	stdv(R(i))	alpha
A	17	12	2	0	256	16	0
B	6	1	0.6	76.96	100	10	-2.6
C	9	4	0.8	23.04	64	8	-0.8
D	17	12	1.5	25	169	13	3
E	12	7	1	36	100	10	1
F	15	10	1	92.25	156.25	12.5	4
IndexFund	11	6	1		64	8	

- a. What would be your ranking of the assets A-F if you were just out to get one asset and currently have no assets in your portfolio?

- b. What would be the ranking of the assets A-F if you already have a large portfolio and just are adding an asset to a large portfolio you already have?
- c. What would the relative relation be that you buy these stocks given that you are allowed to short sell and the IndexFund contains the individual assets?
- d. How much would you at most be prepared to pay the manager if the assets were managed funds that you are considering buying?

**Note it is ok to round the numbers just make sure you are clear with the qualitative relationship**

### **3 Equilibrium (20 points)**

There are only three assets in a market, A, B and C, and their respective returns are as follows: 9 percent, 14percent and 19 percent. The standard deviations are 5, 10 and 15 and the correlation between all assets is 1.

- a. What will the risky asset frontier look like?
- b. What would the risk free rate be?
- c. What would happen if the correlation between asset A and B was instead -1

### **4 Efficiency (15 points)**

If the market is semistrong efficient, is it also weak form efficient? What does it mean that the market is weak form efficient?

Good luck,

Bo