MA2 - Advanced Empirical Finance

9 May 2021

Contents

Introduction

##Exercise 1

Table 1: Parameters descriptions

Variable_names	Explanation
date	Date, month
mktcap	Market Capitalization
ret.adj	Adjusted returns
mom1m	1-month momentum
mom12m	12-month momentum
indmom	Industry momentum
dolvol	Dollar trading volume
baspread	Bid-ask spread
retvol	Return volatility
idiovol	Idiocratic return volatility
maxret	Maximum daily return
betasq	Beta squared
turn	Turnover
b_m	Book-to-market
lty	Long-term yield

`summarise()` has grouped output by 'sic2'. You can override using the `.groups` argu

`summarise()` has grouped output by 'Industry'. You can override using the `.groups`
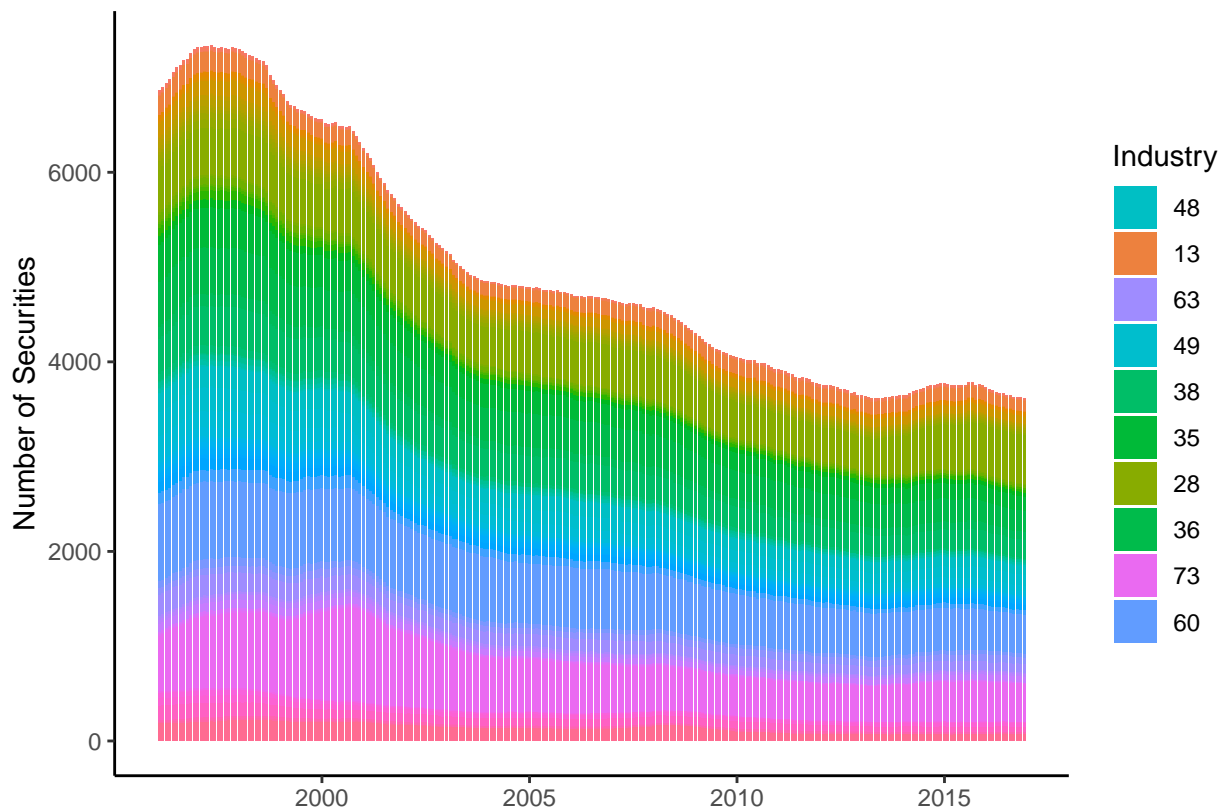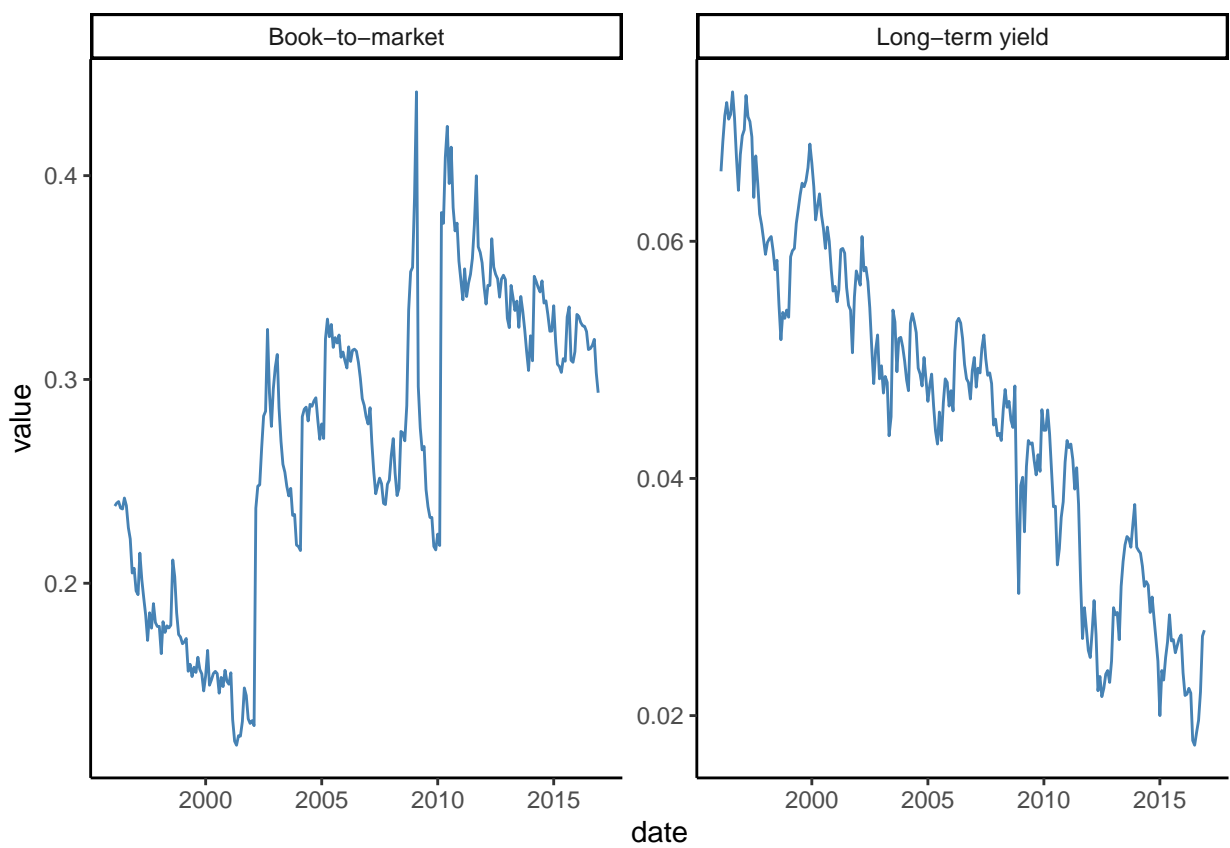
Exercise 2
Exercise 3
Exercise 4

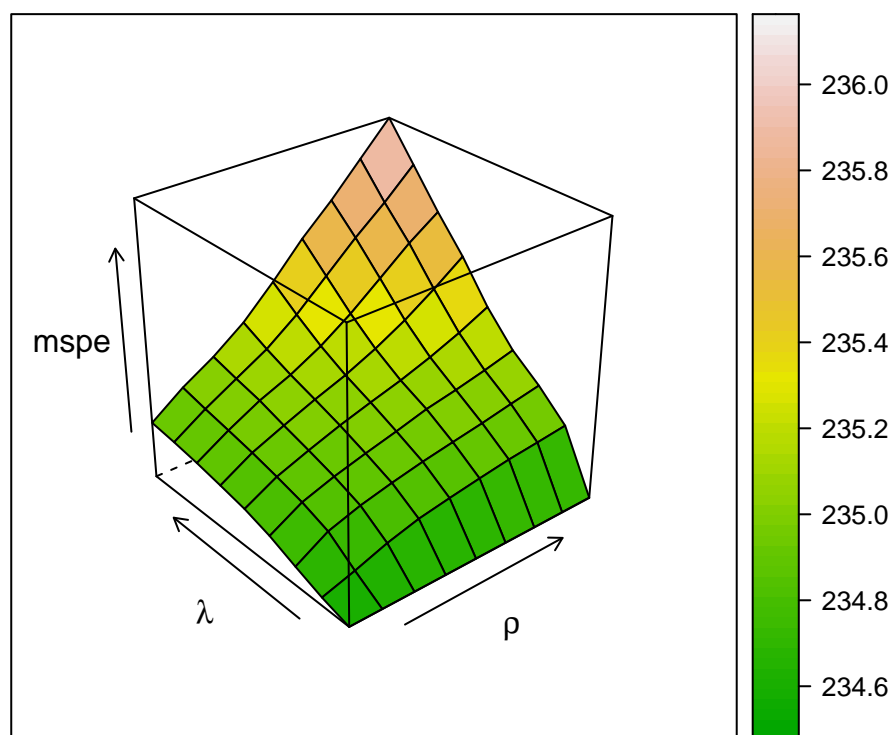**Figure 4: MSPE for traning data in Elastic Net model**

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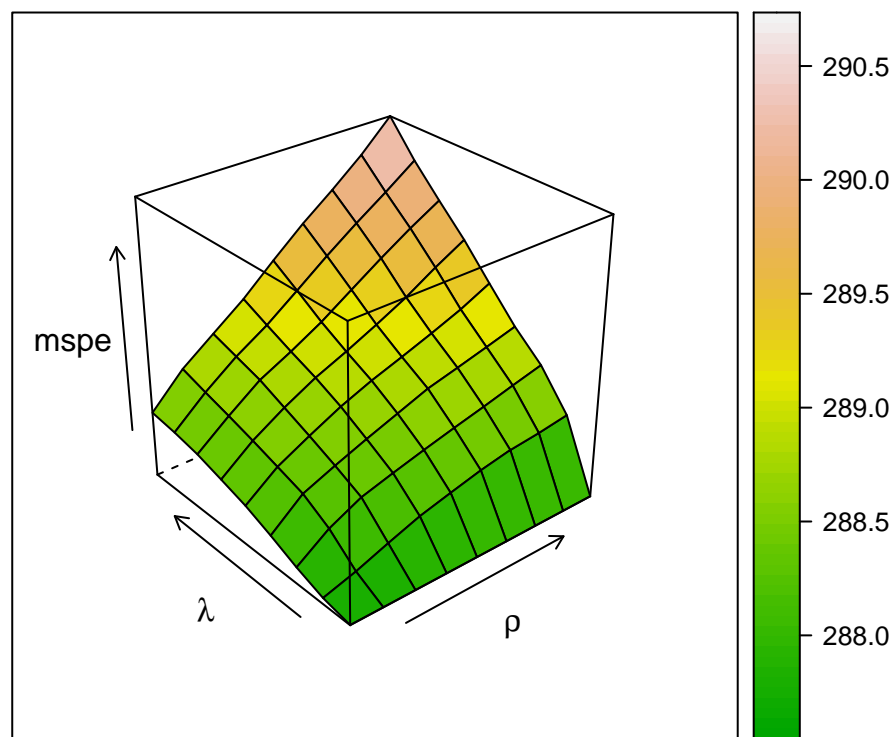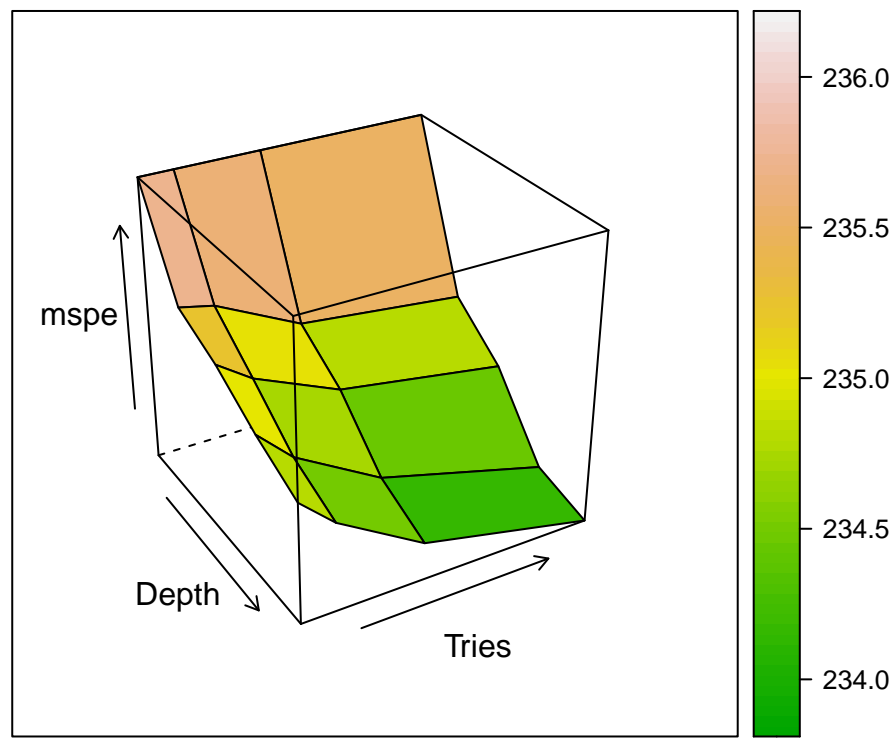**Figure 4: MSPE for traning data in RF model**

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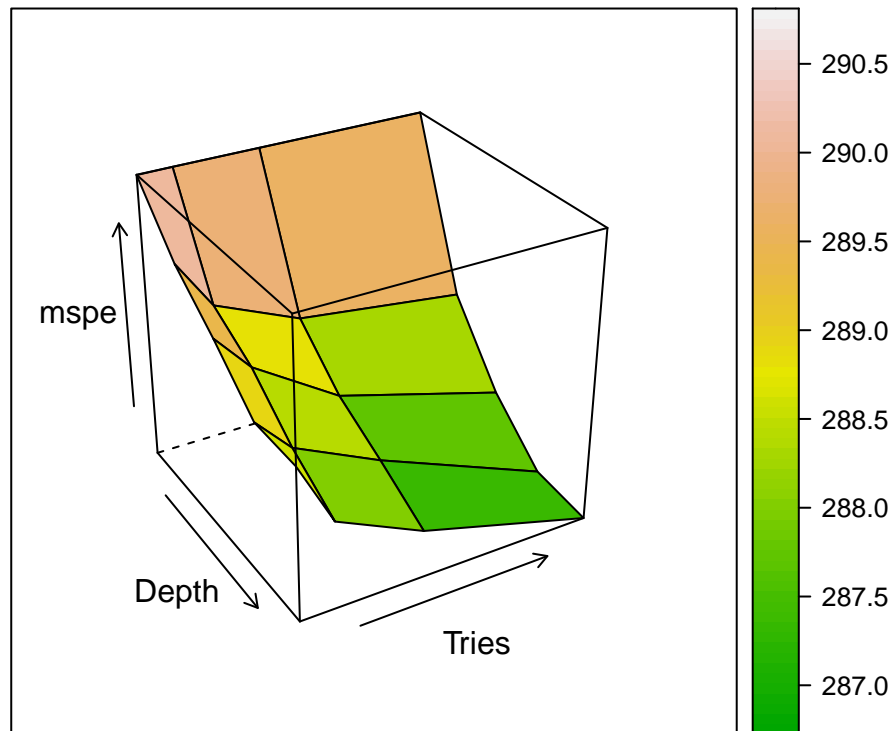
Figure 4: MSPE for traning data in RRF model
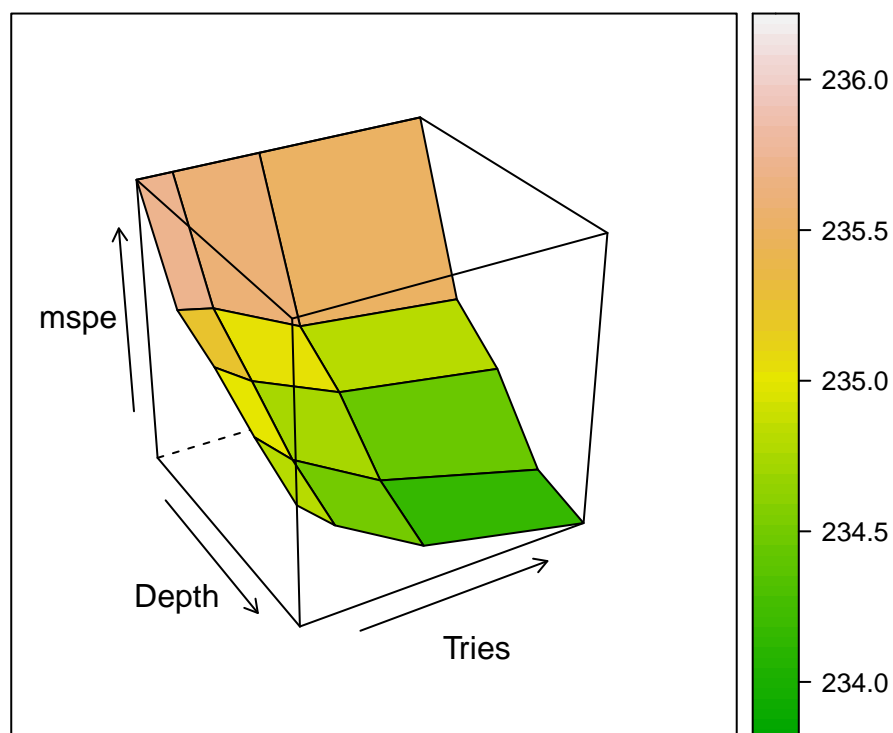
Figure 4: MSPE for traning data in RF model
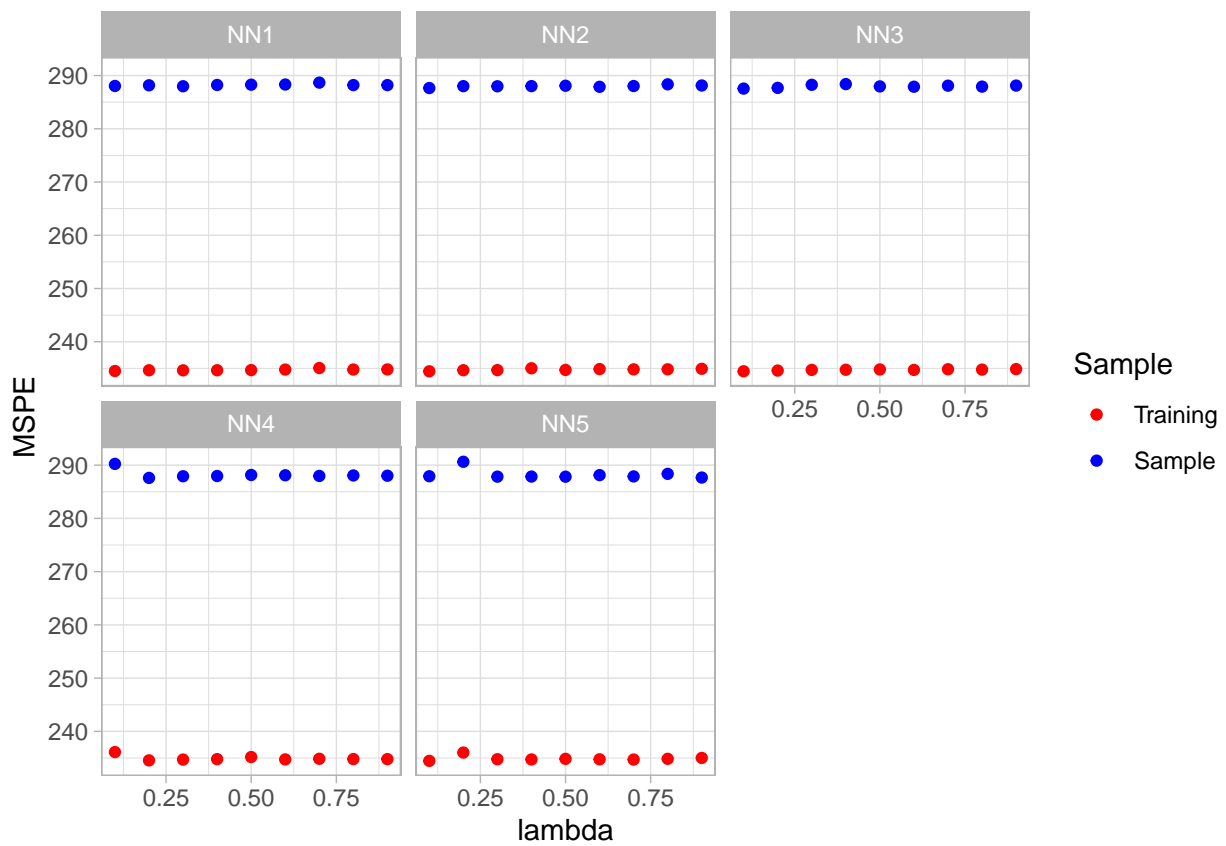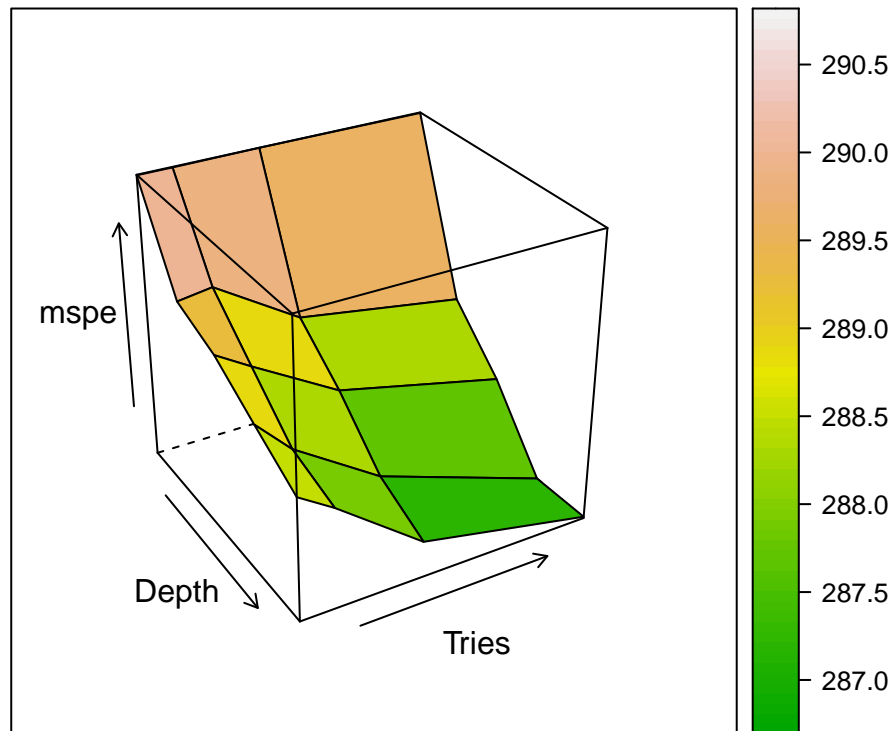
Exercise 5

	1	2	3	4	5	6	7	8	9	10
Elastic net	0.21	0.47	0.48	1.40	1.22	1.41	1.43	1.14	0.99	1.05
t-Stat	0.23	0.57	0.75	3.29	2.71	3.68	4.34	3.20	3.76	4.79

	1	2	3	4	5	6	7	8	9	10
Elastic net capm alpha	-1.60	-1.19	-1.04	-0.06	-0.07	0.17	0.25	0.04	-0.03	0.06
t-Stat	-2.66	-2.23	-2.74	-0.45	-0.46	1.03	1.31	0.21	-0.54	0.54
Random forest	-0.39	0.13	1.27	0.68	0.79	1.05	0.92	1.17	1.32	1.36
t-Stat	-0.47	0.12	2.12	1.79	2.41	3.66	2.63	3.79	4.63	2.90
Random forest capm alpha	-2.25	-2.01	-0.32	-0.37	-0.10	-0.02	-0.14	0.01	0.14	-0.09
t-Stat	-3.16	-3.22	-0.95	-1.25	-0.41	-0.15	-1.19	0.09	1.35	-0.43
NN1	-0.37	0.65	0.68	0.48	1.05	1.38	1.14	1.12	1.25	1.00
t-Stat	-0.37	0.73	0.86	0.74	2.34	2.96	4.36	4.08	5.10	4.04
NN1 capm alpha	-2.47	-1.32	-1.03	-1.04	-0.22	0.11	0.00	0.07	0.21	0.05
t-Stat	-4.49	-2.31	-2.24	-3.16	-0.95	0.43	0.04	0.80	1.59	0.37
NN2	-0.24	0.47	0.69	0.61	1.36	1.23	1.13	1.27	0.96	1.10
t-Stat	-0.25	0.50	0.90	1.13	3.13	3.25	4.13	5.49	3.17	5.01
NN2 capm alpha	-2.38	-1.46	-0.96	-0.74	0.11	-0.03	0.00	0.22	-0.10	0.20
t-Stat	-3.90	-2.54	-2.11	-2.32	0.64	-0.12	0.02	2.01	-1.26	1.36
NN3	0.31	0.75	0.53	0.66	1.04	1.47	1.03	1.28	1.09	1.04
t-Stat	0.37	0.77	0.75	1.21	2.03	4.14	3.53	4.88	4.44	3.90
NN3 capm alpha	-1.97	-1.07	-1.16	-0.74	-0.25	0.26	-0.09	0.19	0.03	0.08
t-Stat	-3.71	-1.69	-2.67	-2.16	-1.17	1.11	-0.84	2.35	0.25	0.74
NN4	-0.56	0.52	0.71	0.47	1.13	1.31	1.14	1.11	1.21	1.06
t-Stat	-0.58	0.64	0.84	0.73	2.23	3.46	2.96	4.84	4.62	4.19
NN4 capm alpha	-2.69	-1.48	-0.96	-1.14	-0.15	0.05	-0.05	0.10	0.14	0.10
t-Stat	-5.00	-2.68	-1.96	-4.04	-0.47	0.25	-0.23	0.94	1.61	0.85
NN5	-0.35	0.31	0.90	0.84	1.14	1.17	1.28	1.15	1.20	1.03
t-Stat	-0.36	0.36	1.11	1.34	2.28	2.57	3.13	3.88	3.57	4.86
NN5 capm alpha	-2.40	-1.54	-0.92	-0.74	-0.31	-0.21	-0.03	0.01	0.14	0.10
t-Stat	-4.39	-2.69	-2.14	-2.02	-1.52	-1.01	-0.14	0.12	1.19	0.80