List 04. AR with GARCH effects

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#**1**. Consider historical data on log-return of US GDP (quarterly data) from 1990 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

   and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**2**. Consider historical data on log-return of US M2 (monthly data) from 1995 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

   and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**3**. Consider historical data on log-return of US M2 (weekly data) from 2000 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

   and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**4**. Consider monthly data on first difference of 10-years rate from 1995 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

   and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**5**. Consider weekly data on first difference of 10-years rate from 1995 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**6**. Consider monthly data on first difference on 3-month treasury bill from 1995 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**7**. Consider weekly data on first difference on 3-month treasury bill from 1995 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**8**. Consider log-return of daily observations on S&P500 from 2010 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

   and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?

#**9**. Consider log-return of monthly data (end of month) on S&P500 from 2010 to nowadays.

1. Fit the following AR-GARCH(p,o,q) models

Model	λ
AR(1)-GARCH(1,0,1)	2
AR(1)-GARCH(1,0,1)	1
AR(2)-GARCH(1,0,1)	2
AR(2)-GARCH(1,0,1)	1

   and evaluate 10 periods forward forecasts for y and for its vocalitilies.

2. Which model is preferable due to information criterions?

3. Perform cross-validation for the models. Which one is preferable?