Econometrics II - Problem Set 1

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Question 1

Item a. and b.

Below are the regression tables for each model:

Table 1:

	AR(1)	AR(2)	MA(1)	MA(2)
ar1	0.287	0.251		
	(0.091)	(0.094)		
	p = 0.002	p = 0.008		
ar2		0.122		
		(0.095)		
		p = 0.199		
ma1			0.238	0.222
			(0.086)	(0.094)
			p = 0.006	p = 0.019
ma2				0.159
				(0.103)
				p = 0.126
intercept	4.538	4.527	4.539	4.535
	(0.538)	(0.605)	(0.480)	(0.529)
	p = 0.000	p = 0.000	p = 0.000	p = 0.000
AIC	691.99	692.349	693.979	693.718
BIC	700.352	703.499	702.341	704.868
Observations	120	120	120	120
Log Likelihood	−342.995	−342.174	−343.989	−342.859
σ^2	17.778	17.533	18.080	17.738

Note: *p<0.1; **p<0.05; ***p<0.01

	ARMA(1),1	ARMA(2),1	ARMA(1),2	ARMA(2),2
ar1	0.740	1.104	0.944	1.290
	(0.284)	(0.142)	(0.070)	(0.483)
	p = 0.010	p = 0.000	p = 0.000	p = 0.008
ar2		−0.149		−0.324
		(0.110)		(0.453)
		p = 0.178		p = 0.475
ma1	−0.516	−0.870	−0.719	−1.059
	(0.375)	(0.102)	(0.119)	(0.495)
	p = 0.169	p = 0.000	p = 0.000	p = 0.033
ma2			−0.119	0.156
			(0.097)	(0.410)
			p = 0.220	p = 0.704
intercept	4.491	4.259	4.260	4.268
	(0.706)	(1.070)	(1.072)	(1.064)
	p = 0.000	p = 0.0001	p = 0.0001	p = 0.0001
AIC	691.99	692.349	693.979	693.718
BIC	700.352	703.499	702.341	704.868
Observations	120	120	120	120
Log Likelihood	−341.905	−341.274	−341.364	−341.212
σ^2	17.450	17.250	17.275	17.233

Note: *p<0.1; **p<0.05; ***p<0.01

Item c.

Below are the forecasts for each model:

Prediction of PIB
Model MA(1)

Prediction of PIB
Model MA(2)

Prediction of PIB
Model AR(1)

Prediction of PIB
Model AR(2)

Prediction of PIB
Model ARMA(1),1

Prediction of PIB
Model ARMA(2),1

Prediction of PIB
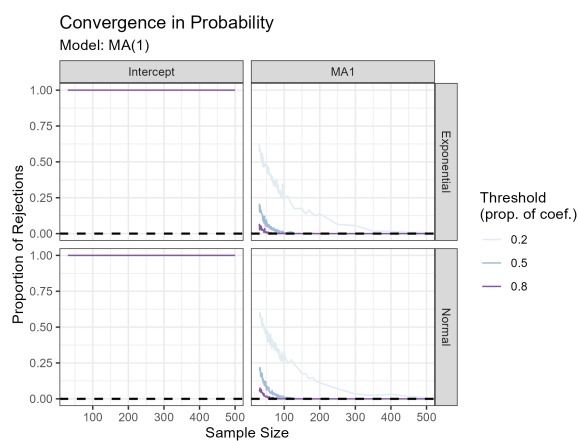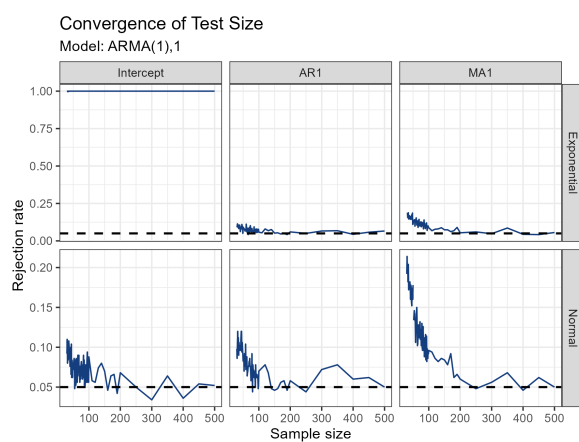Model ARMA(1),2

Prediction of PIB
Model ARMA(2),2
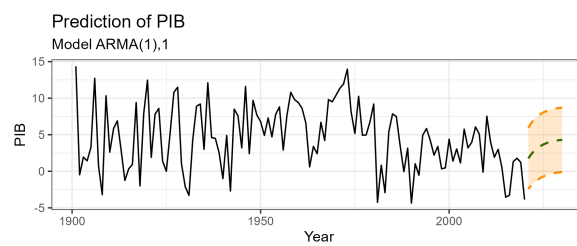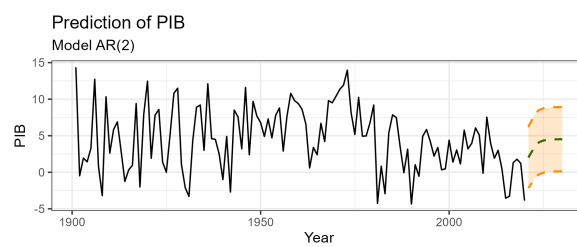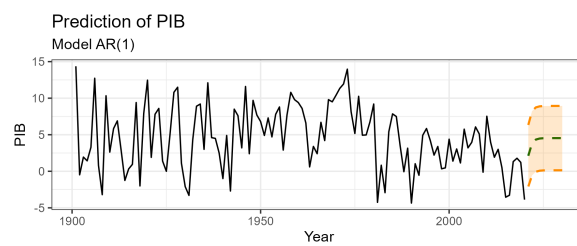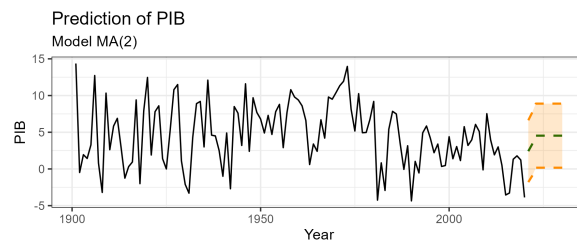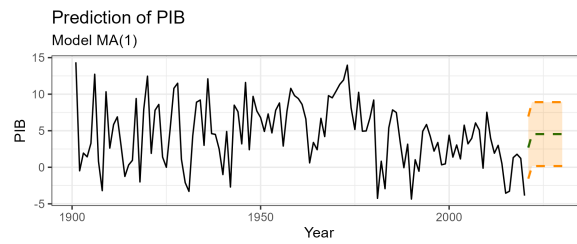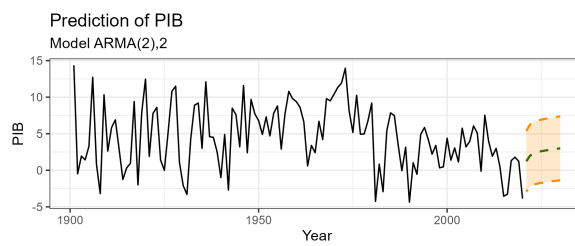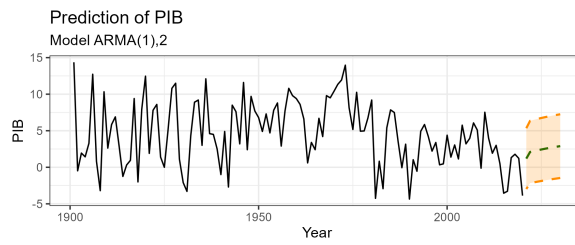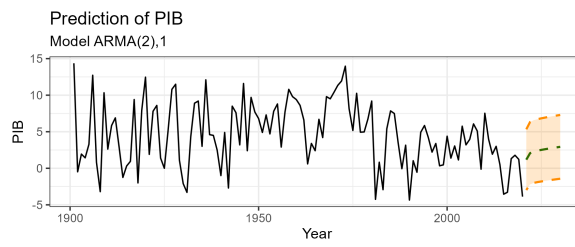
Item d.

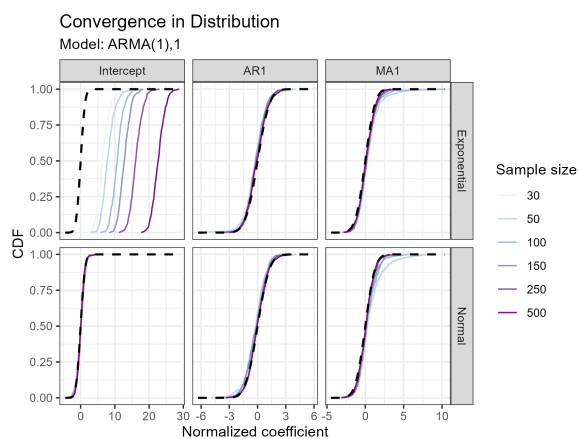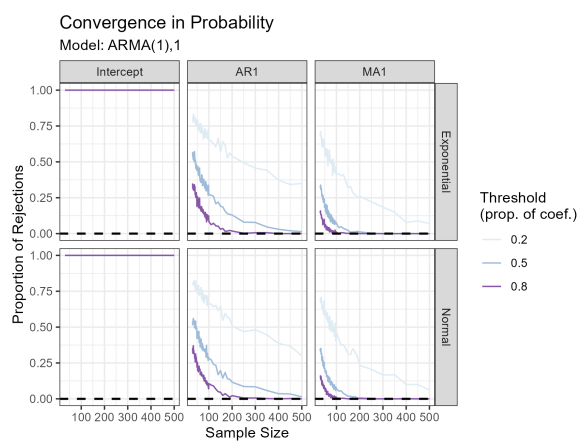# Question 2

Item a., b., and c.

Below there is, for each model, one plot for each topic.

Convergence in Probability
Model: AR(1)

Convergence in Distribution
Model: AR(1)

Convergence of Test Size
Model: AR(1)

Convergence in Probability
Model: MA(1)

Convergence in Distribution
Model: MA(1)

Convergence of Test Size
Model: MA(1)

Convergence in Probability
Model: ARMA(1),1

Convergence in Distribution
Model: ARMA(1),1

Convergence of Test Size
Model: ARMA(1),1
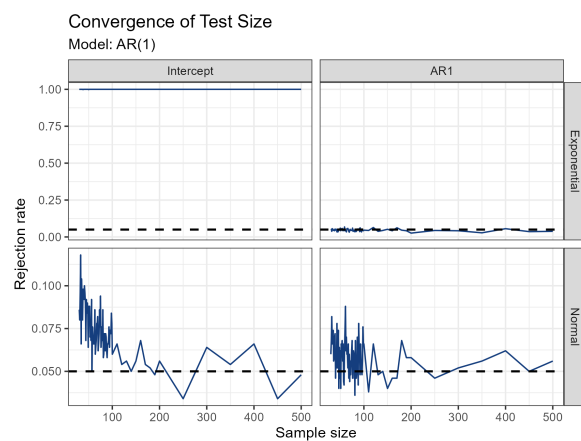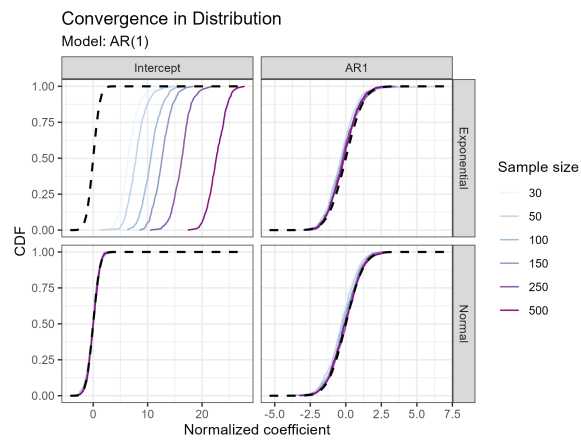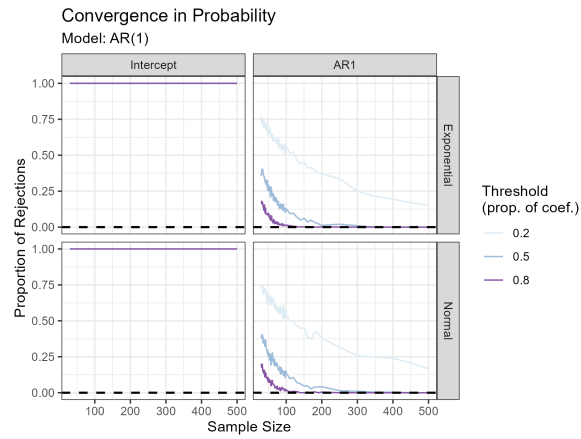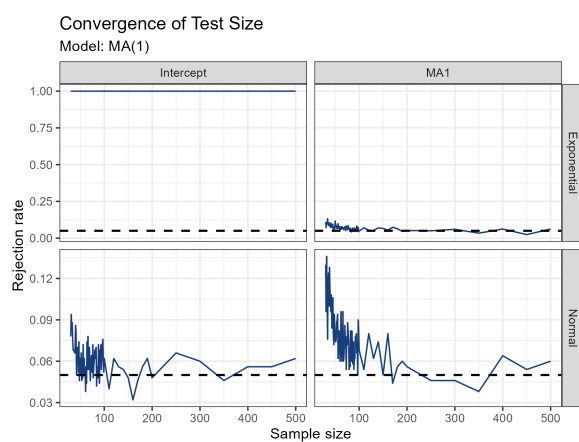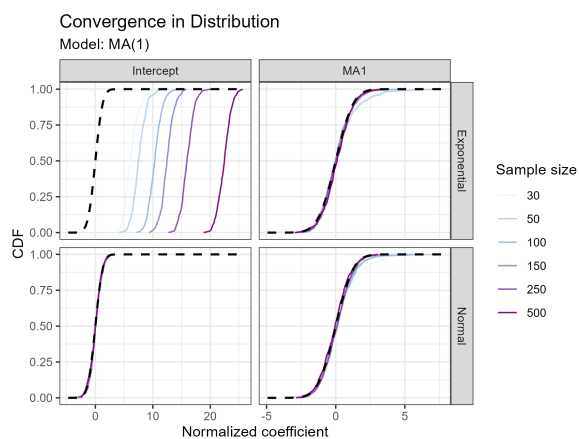
Item d.

Question 3

Question 4