ASSIGNMENT 3

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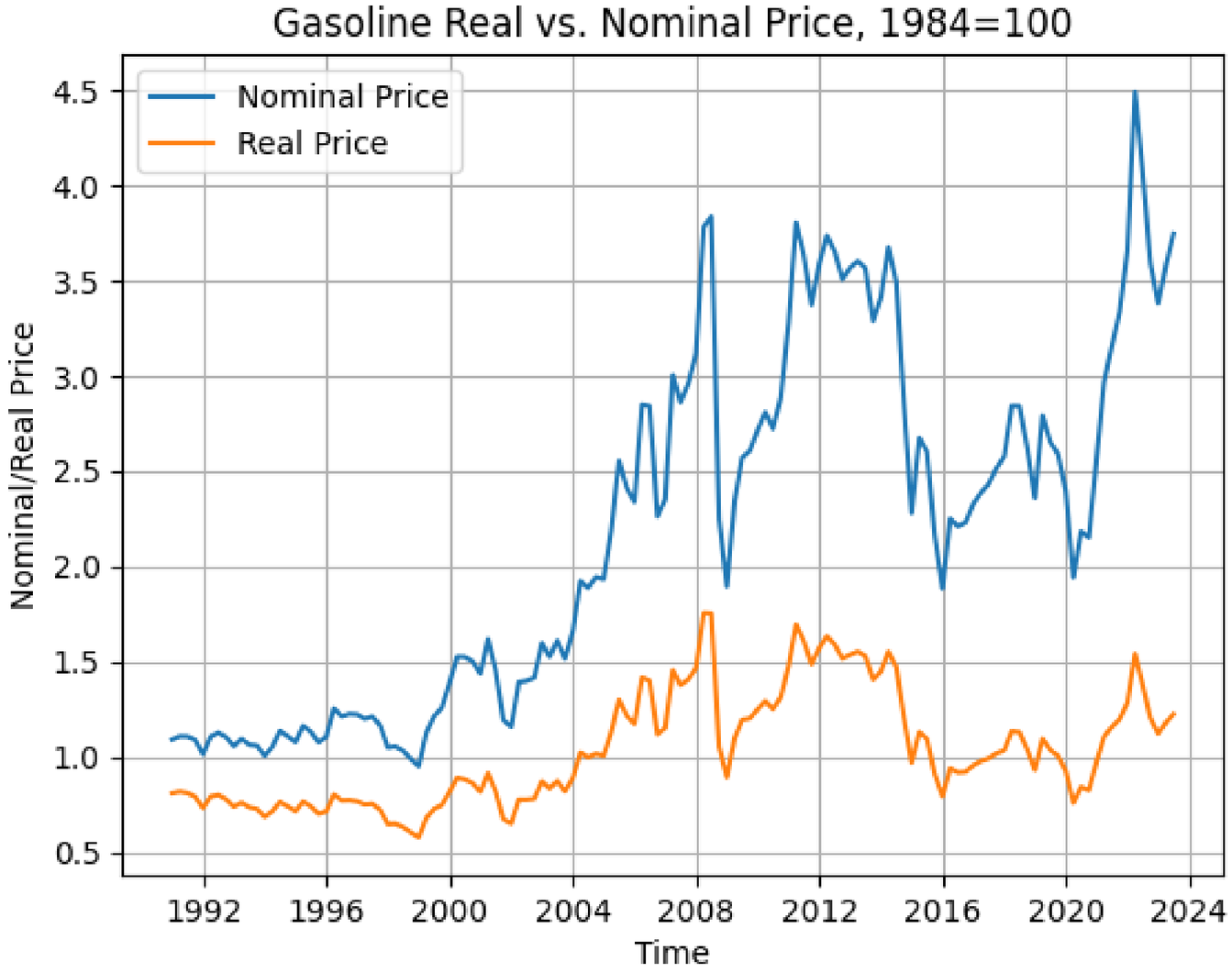
https://github.com/giordanovitale/Time-Series-Assignments/blob/main/Assignment%203/Assignment3.ipynb

ID: 14310A

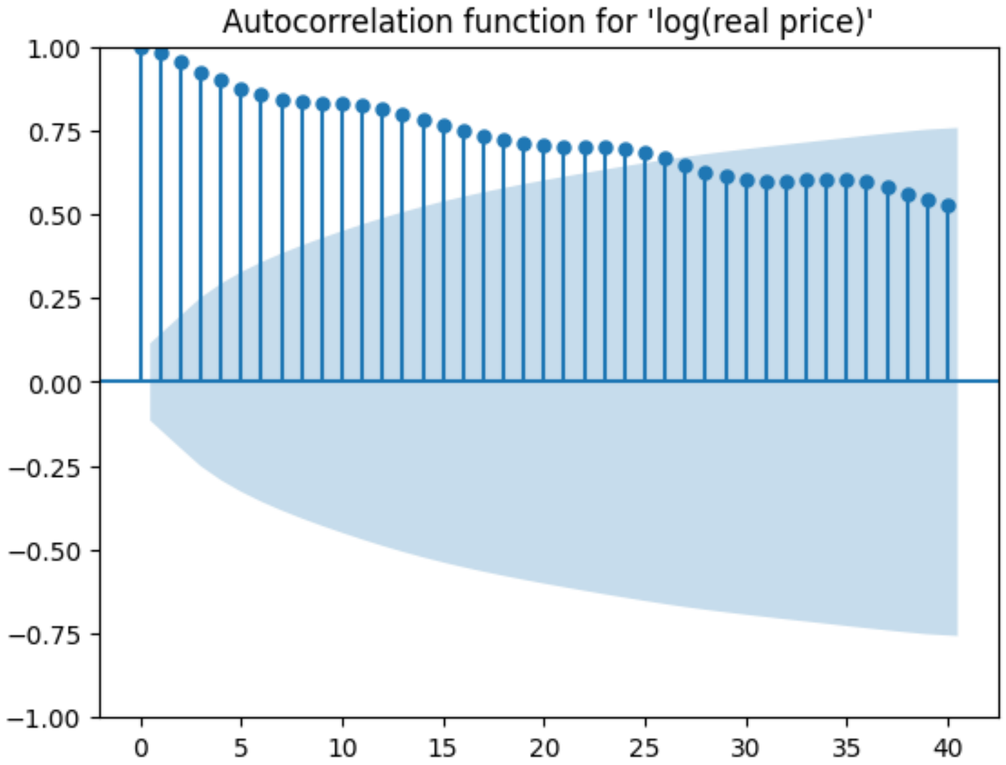
SLIDE 2

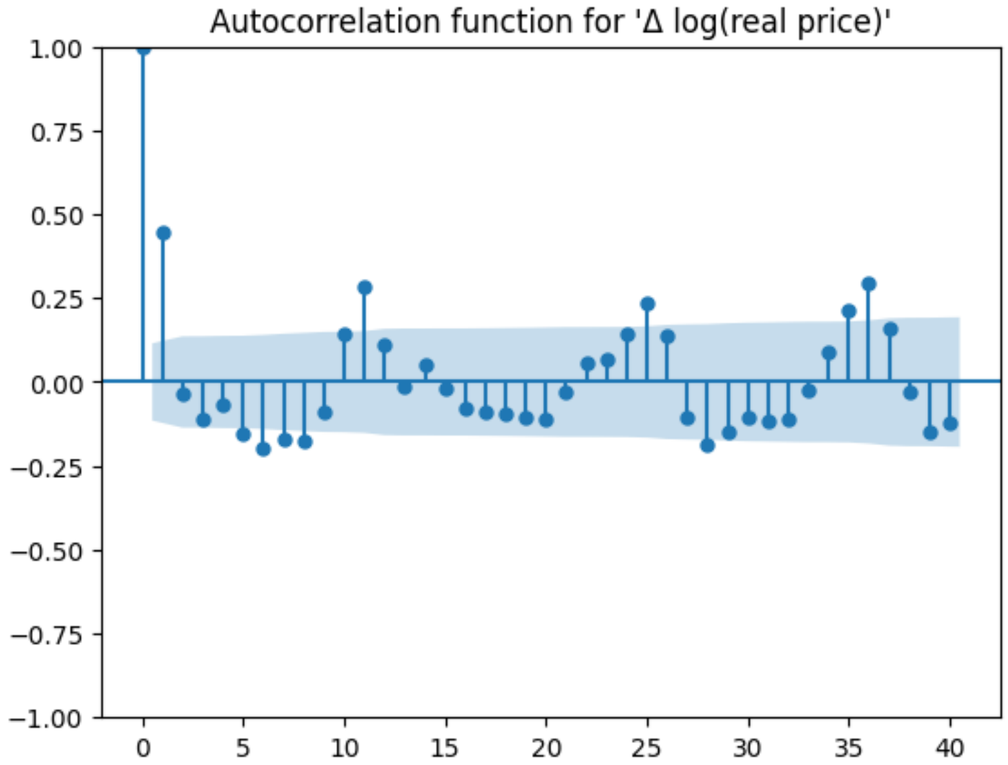
Plot the real and nominal price over time:



SLIDE 3

Plot the sample ACF for y_t = log(RealPrice) and for Δy_t





SLIDE 4

Fit two AR(1) models, one for y_t and another for Δy_t and report the coefficient associated with the lagged dependent variable

	coef	std err	z	P>|z|	[0.025	0.975]
const	-0.0271	0.231	-0.117	0.907	-0.480	0.426
ar.L1	0.9845	0.011	88.841	0.000	0.963	1.006
sigma2	0.0030	0.000	20.508	0.000	0.003	0.003

Ljung-Box (L1) (Q):	59.47	Jarque-Bera (JB):	395.91
Prob(Q):	0.00	Prob(JB):	0.00
Heteroskedasticity (H):	4.95	Skew:	-1.00
Prob(H) (two-sided):	0.00	Kurtosis:	8.37

Log(Real_Price)

Coefficient associated with lagged dependent variable is: **0.9845**

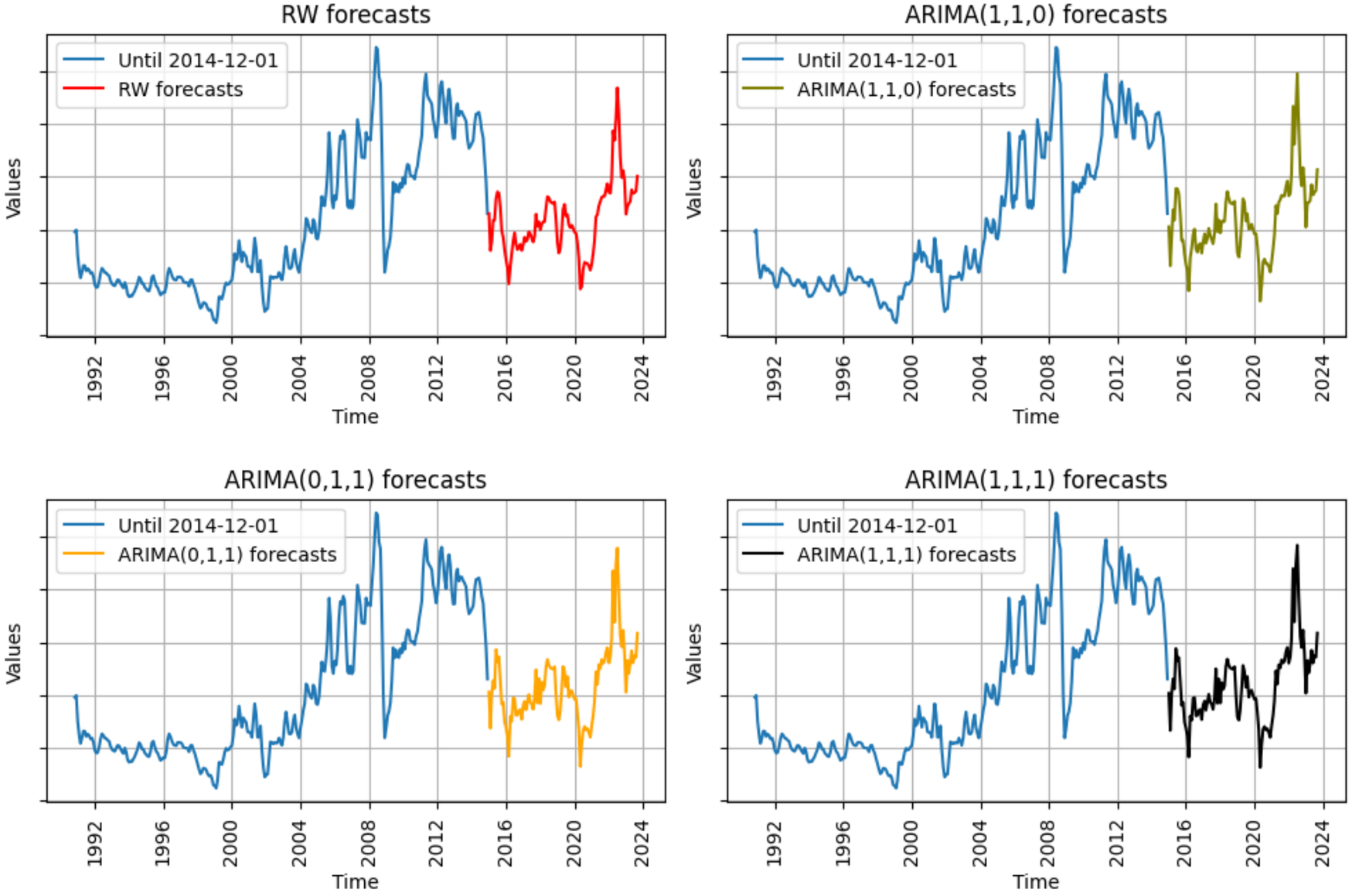
	coef	std err	z	P>|z|	[0.025	0.975]
const	-9.58e-05	0.006	-0.017	0.986	-0.011	0.011
ar.L1	0.4535	0.031	14.708	0.000	0.393	0.514
sigma2	0.0024	0.000	17.901	0.000	0.002	0.003

Ljung-Box (L1) (Q):	5.22	Jarque-Bera (JB):	139.21
Prob(Q):	0.02	Prob(JB):	0.00
Heteroskedasticity (H):	4.70	Skew:	-0.71
Prob(H) (two-sided):	0.00	Kurtosis:	6.09

ΔLog(Real_Price)

Coefficient associated with lagged dependent variable is: **0.4535**

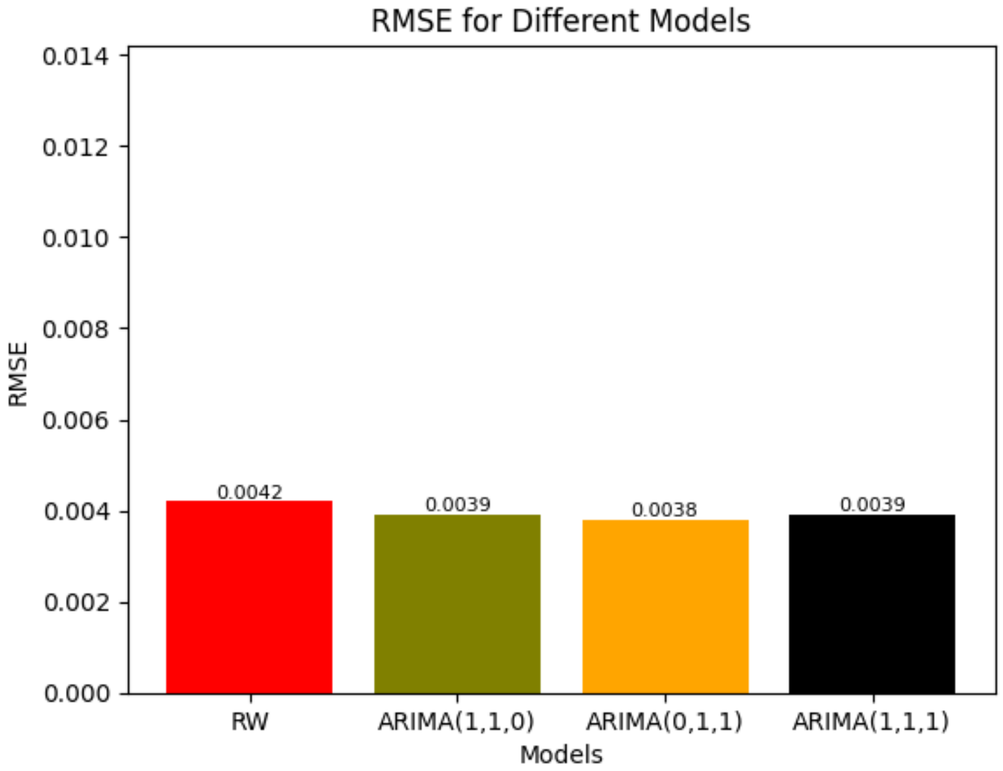
Produce a series of 1-step-ahead forecasts for the 4 models



SLIDE 6

Compute the MSFE and comment

Look at the y-axis!



ARIMA(0,1,1) model performed better than the other Arima models it competed with, and even better with respect to the RW model, reporting the minimum MSFE among them.

It is necessary though to note that the differences are negligible.