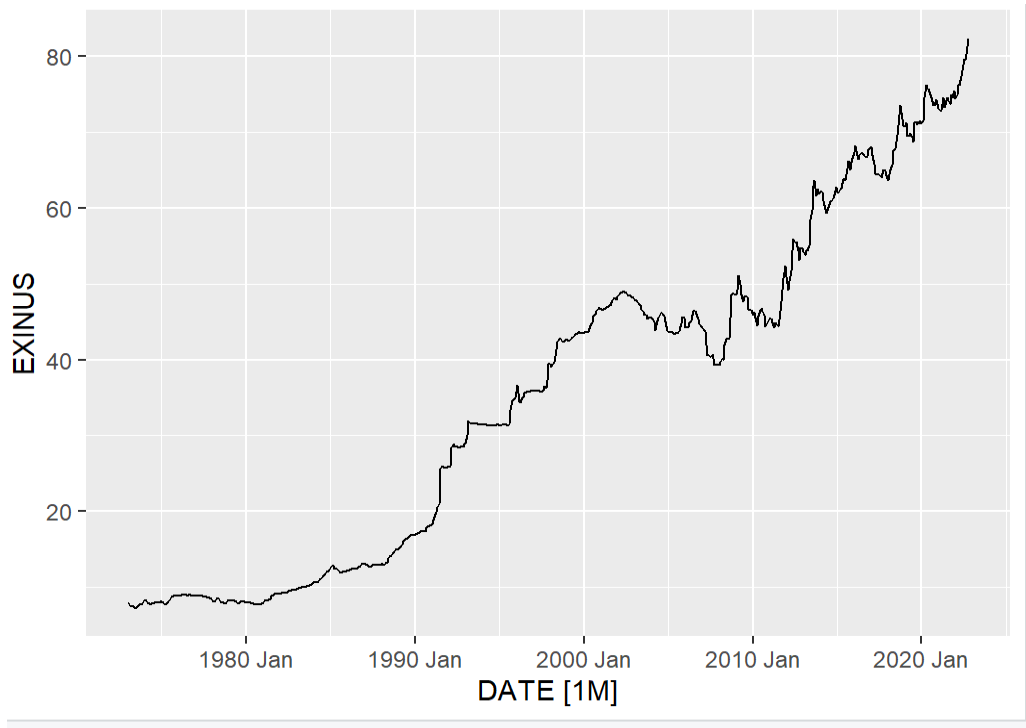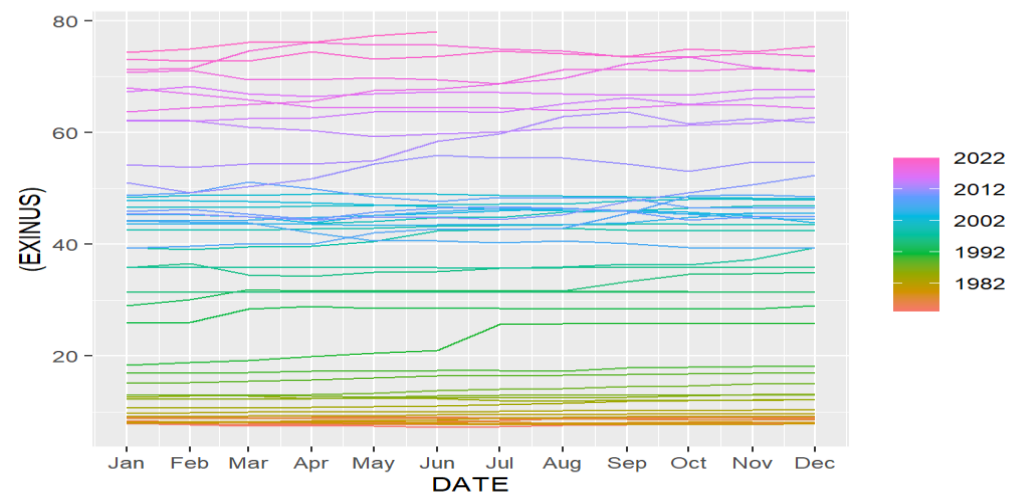# FORECASTING OF CURRENCY EXCHANGE RATE(USD & INR)
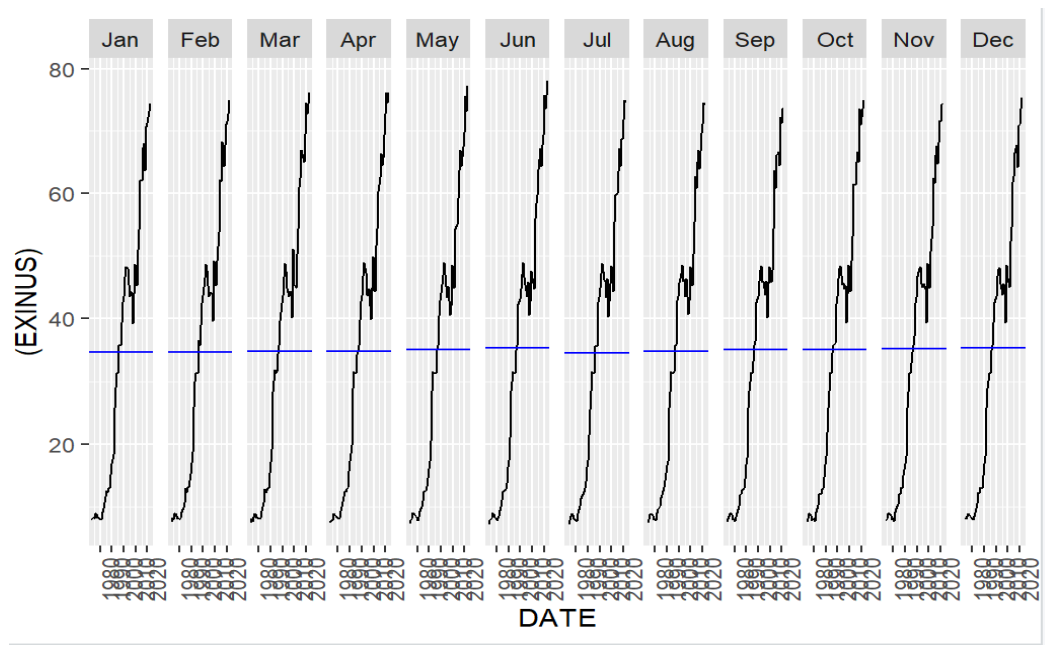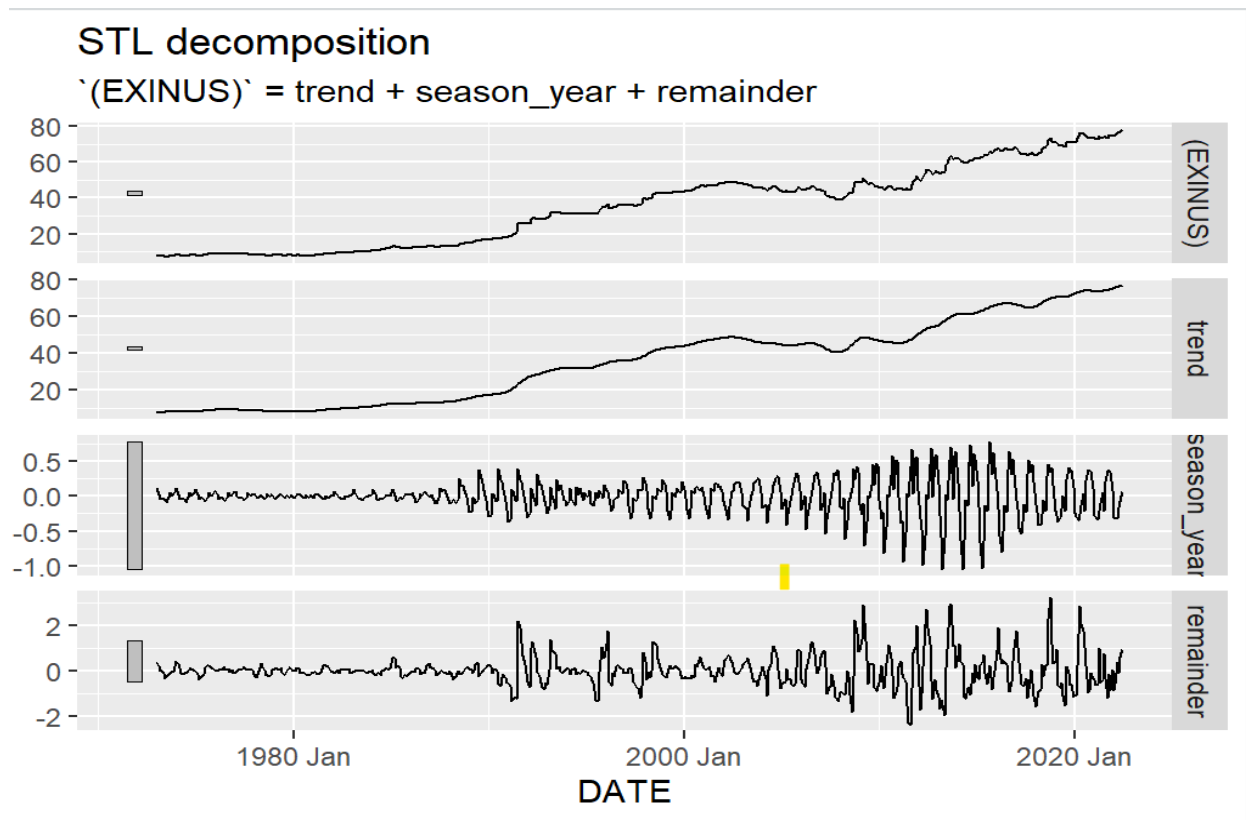
DATASET DESCRIPTION

**Monthly Data from January 1,1973 to October 1, 2022. No Missing values.
EXINUS is Dollar to INR monthly average price.**
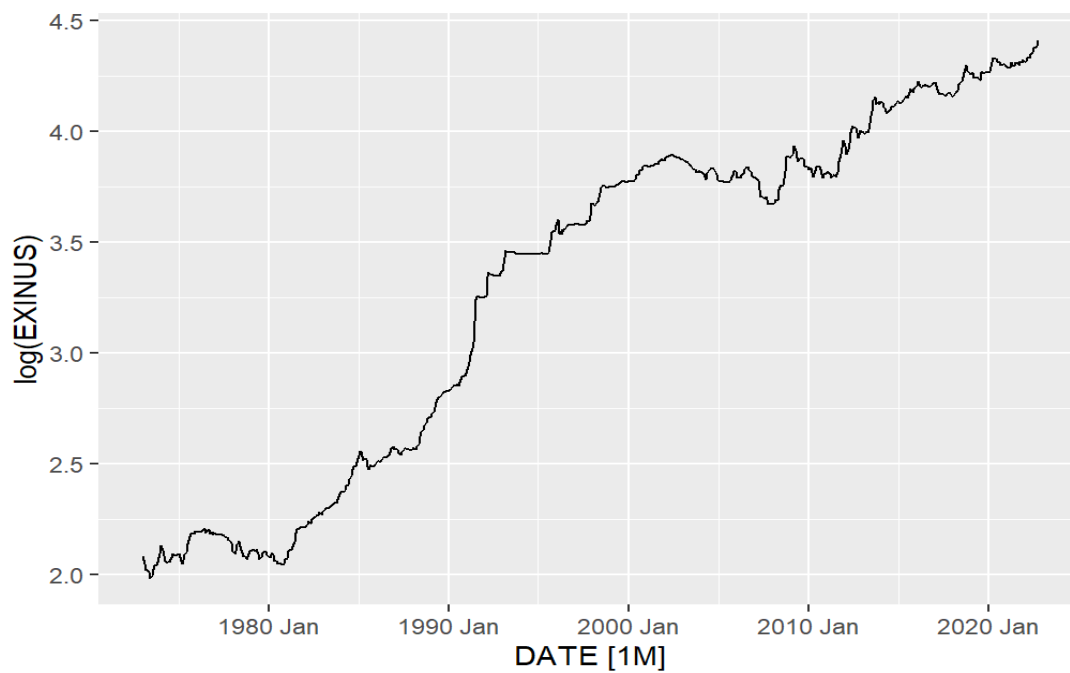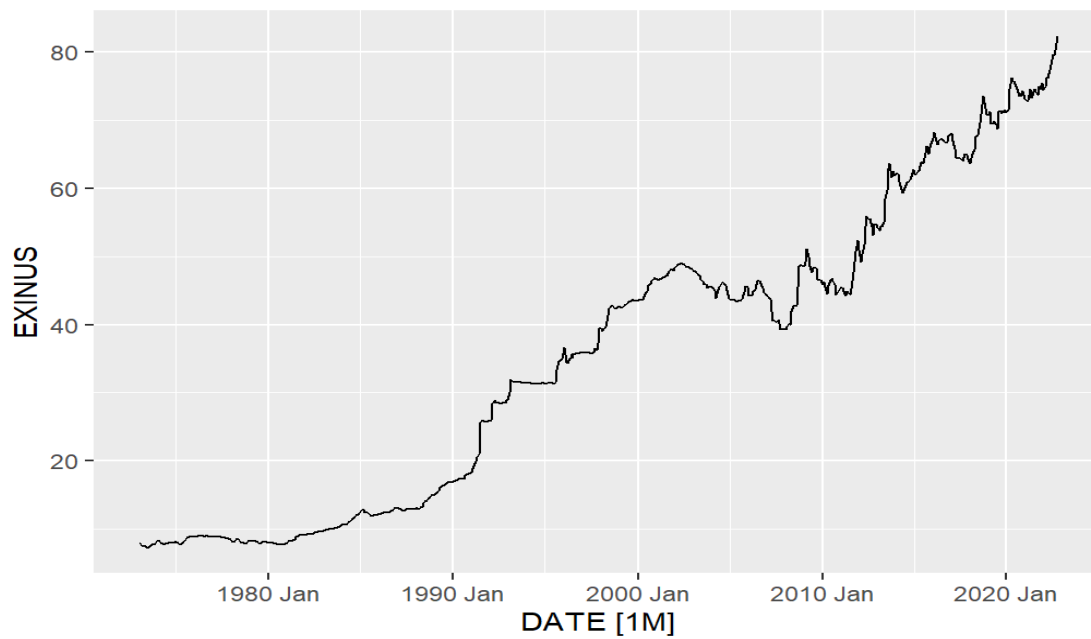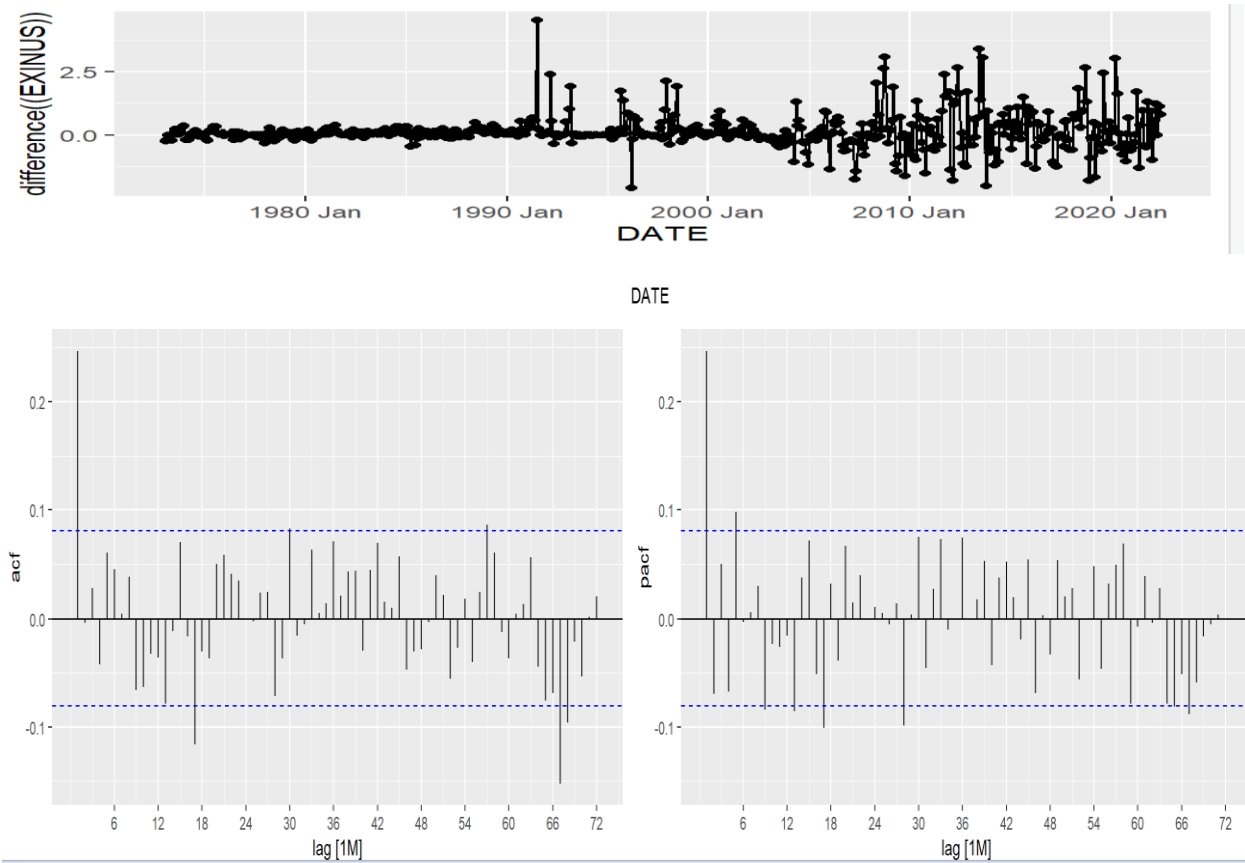
DATA SEASONALITY:

DATA SERIES DECOMPOSITION

STL decomposition
`(EXINUS)` = trend + season_year + remainder

DATA SERIES TRANSFORMATION

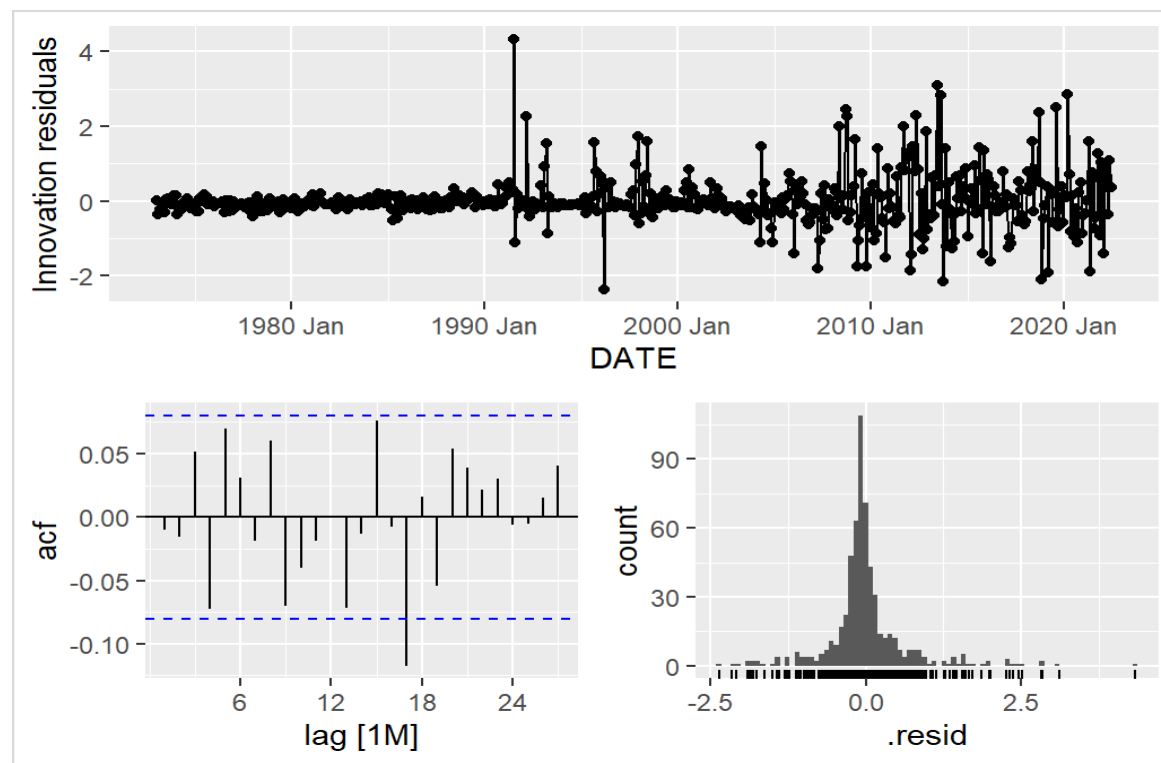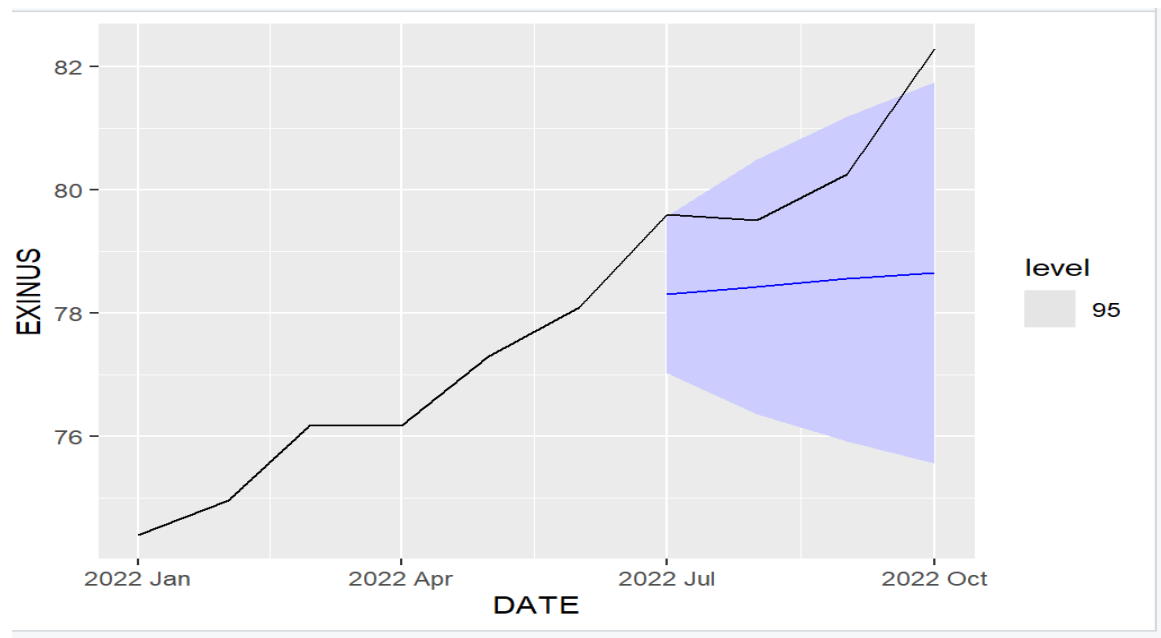# DATA SERIES STATIONARITY


```
                                                .model      BIC      AIC
1 ARIMA((EXINUS) ~ 1 + pdq(4, 1, 4) + PDQ(0, 0, 1)) 1214.847 1166.610
2 ARIMA((EXINUS) ~ 1 + pdq(2, 1, 4) + PDQ(0, 0, 1)) 1202.201 1162.735
3 ARIMA((EXINUS) ~ 1 + pdq(3, 1, 3) + PDQ(0, 0, 0)) 1208.415 1173.333
4 ARIMA((EXINUS) ~ 1 + pdq(1, 1, 1) + PDQ(0, 0, 1)) 1196.429 1174.504
5 ARIMA((EXINUS) ~ 1 + pdq(2, 1, 2) + PDQ(0, 0, 0)) 1200.975 1174.664
6 ARIMA((EXINUS) ~ 1 + pdq(0, 1, 2) + PDQ(0, 0, 1)) 1197.380 1175.454
>
```

FORECAST FOR TEST DATA

DIAGNOSTIC TEST

```
  .model                                             lb_stat lb_pvalue
  <chr>                                                <dbl>    <dbl>
1 ARIMA((EXINUS) ~ 1 + pdq(0, 1, 1) + PDQ(0, 0, 1))    70.6   0.0112
> |

# A tibble: 1 × 3
  .model                                             lb_stat lb_pvalue
  <chr>                                                <dbl>    <dbl>
1 ARIMA((EXINUS) ~ 1 + pdq(2, 1, 4) + PDQ(0, 0, 1))    47.1    0.427
> |
```
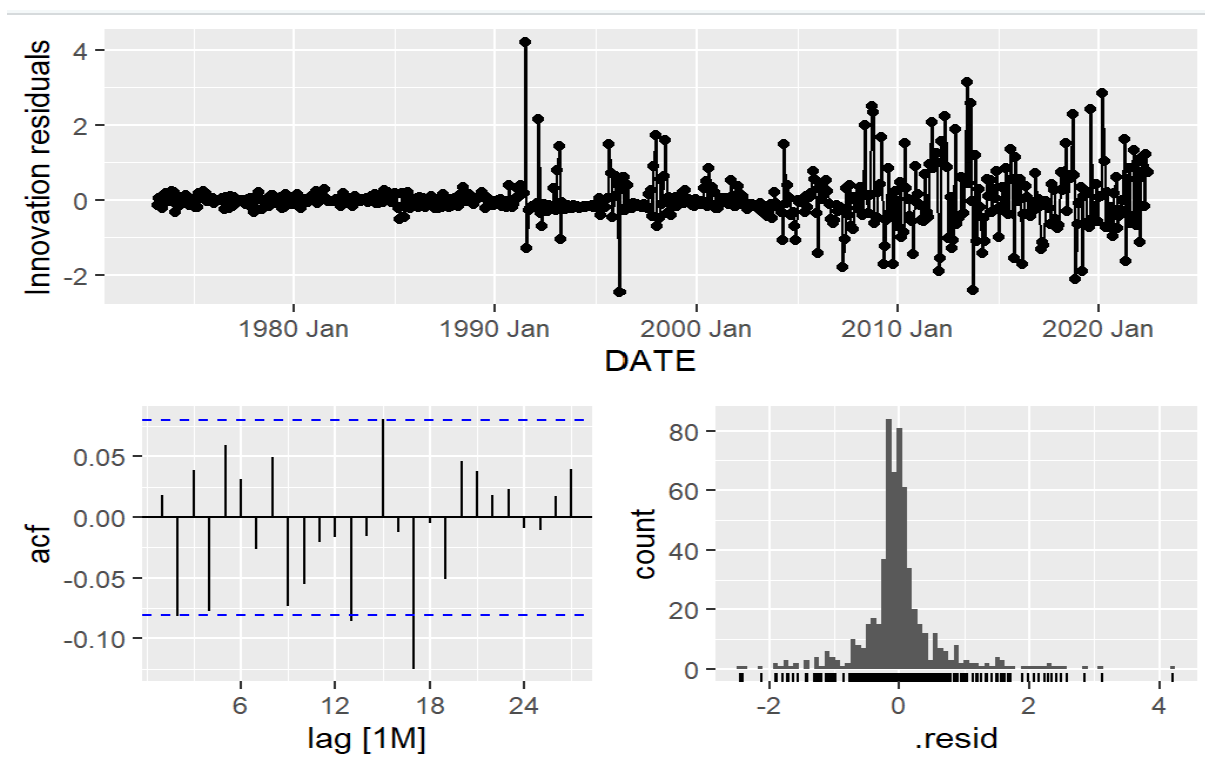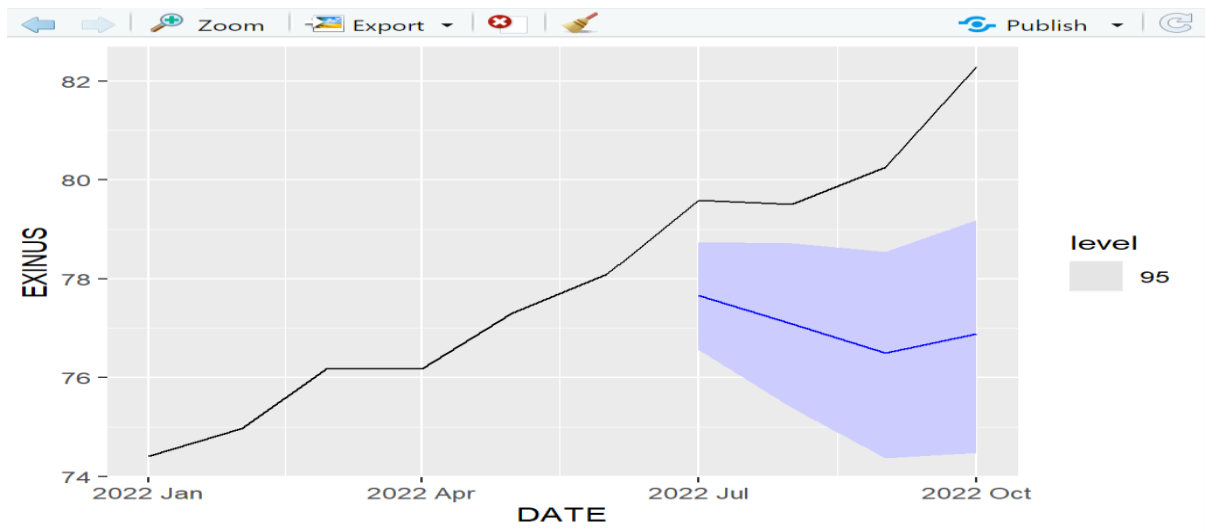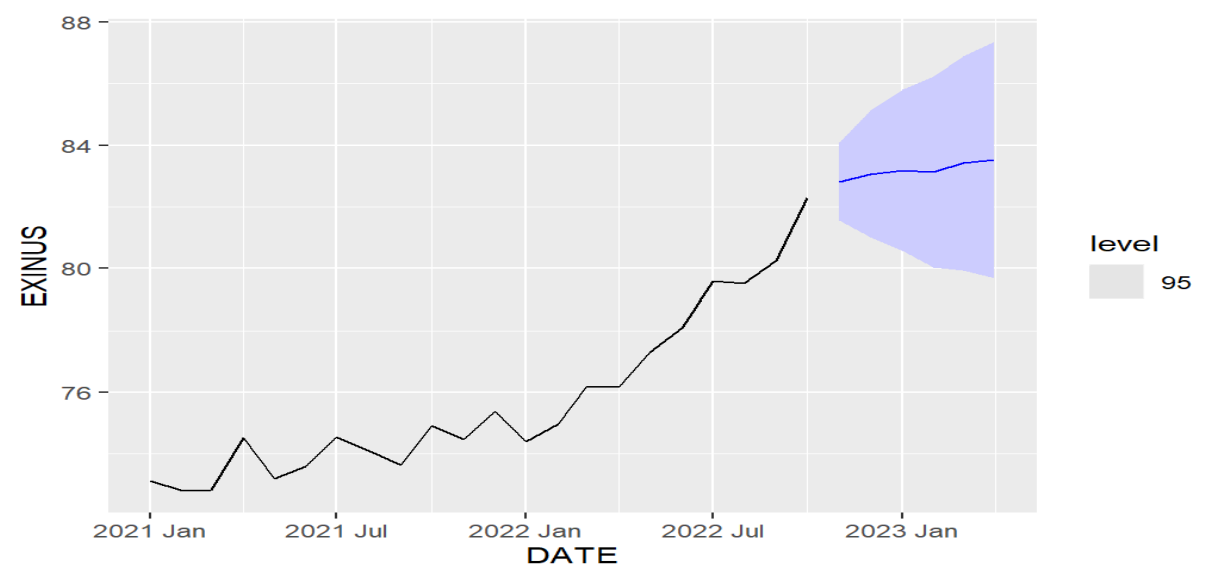
ALTERNATE MODEL

NNETAR((EXINUS)~AR(P=0,p=2)
sigma^2 estimated as = 0.4163

NNETAR((EXINUS)~AR(P=0,p=2)

sigma^2 estimated as = 0.4163

6 STEP FORECAST


```
         DATE      .mean
1  2022  Nov  82.81712
2  2022  Dec  83.06861
3  2023  Jan  83.18994
4  2023  Feb  83.13629
5  2023  Mar  83.42599
6  2023  Apr  83.52998
>  |
```