

2023MCM_QC

February 17, 2023

```
[233]: from statsmodels.tsa.stattools import adfuller #
from statsmodels.graphics.tsaplots import plot_acf, plot_pacf # acf, pacf
from statsmodels.tsa.arima_model import ARIMA # ARIMA
from statsmodels.graphics.api import qqplot # qq
from scipy.stats import shapiro #
import statsmodels.tsa.stattools as st
import statsmodels.api as sm
import statsmodels.formula.api as smf
import statsmodels.tsa.api as smt
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import matplotlib
import warnings
import statsmodels
import seaborn as sns
import matplotlib.pyplot as plt
from scipy import stats
```

```
[154]: #
data = pd.read_excel(r"C:\Users\Yupeng_\
↳Su\OneDrive\ \ \2023 \Problem_C_Data_Wordle.xlsx",header=1)
data.drop(['Unnamed: 0'],inplace=True,axis=1)
data.sort_values(by='Contest number',inplace=True,ascending=True)
data.head()
```

```
[154]:
```

	Date	Contest number	Word	Number of	reported results	\
358	2022-01-07	202	slump		80630	
357	2022-01-08	203	crank		101503	
356	2022-01-09	204	gorge		91477	
355	2022-01-10	205	query		107134	
354	2022-01-11	206	drink		153880	

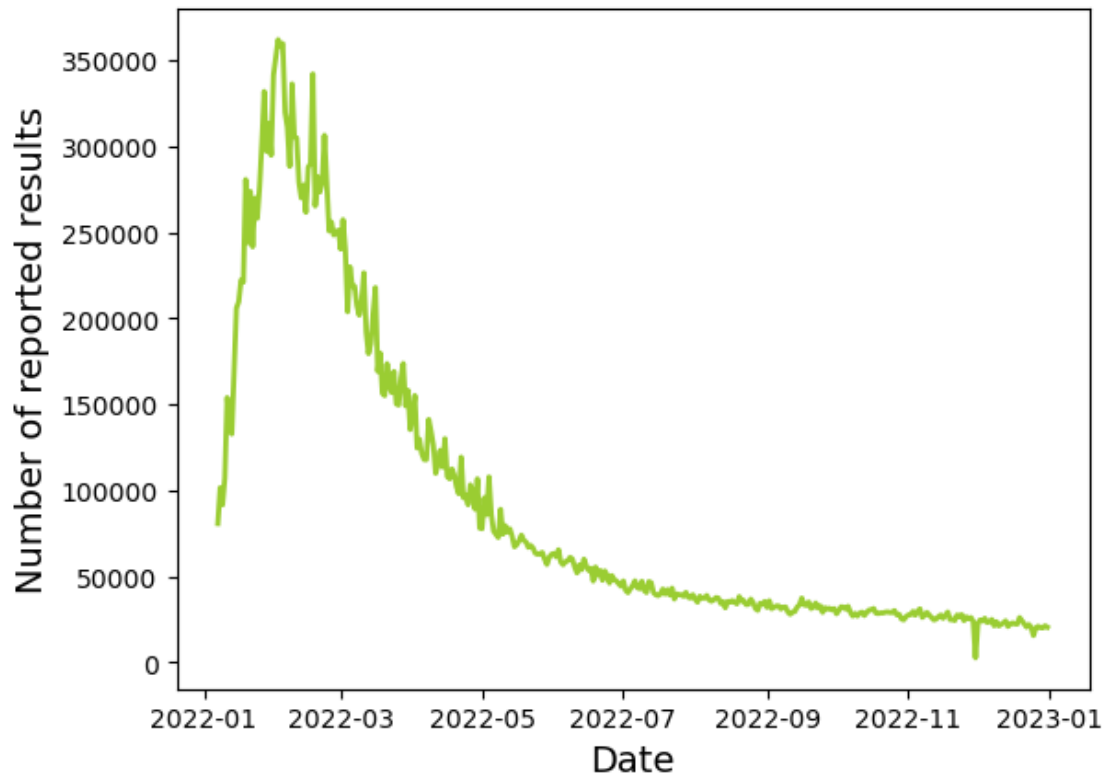
	Number in hard mode	1 try	2 tries	3 tries	4 tries	5 tries	6 tries	\
358	1362	1	3	23	39	24	9	
357	1763	1	5	23	31	24	14	
356	1913	1	3	13	27	30	22	

355	2242	1	4	16	30	30	17
354	3017	1	9	35	34	16	5

	7 or more tries (X)
358	1
357	2
356	4
355	2
354	1

```
[155]: #
n_sample = data.shape[0]
n_train = int(0.95 * n_sample)+1
n_forecast = n_sample - n_train
data_train = NORR[:n_train]
data_test = NORR[n_train:]
```

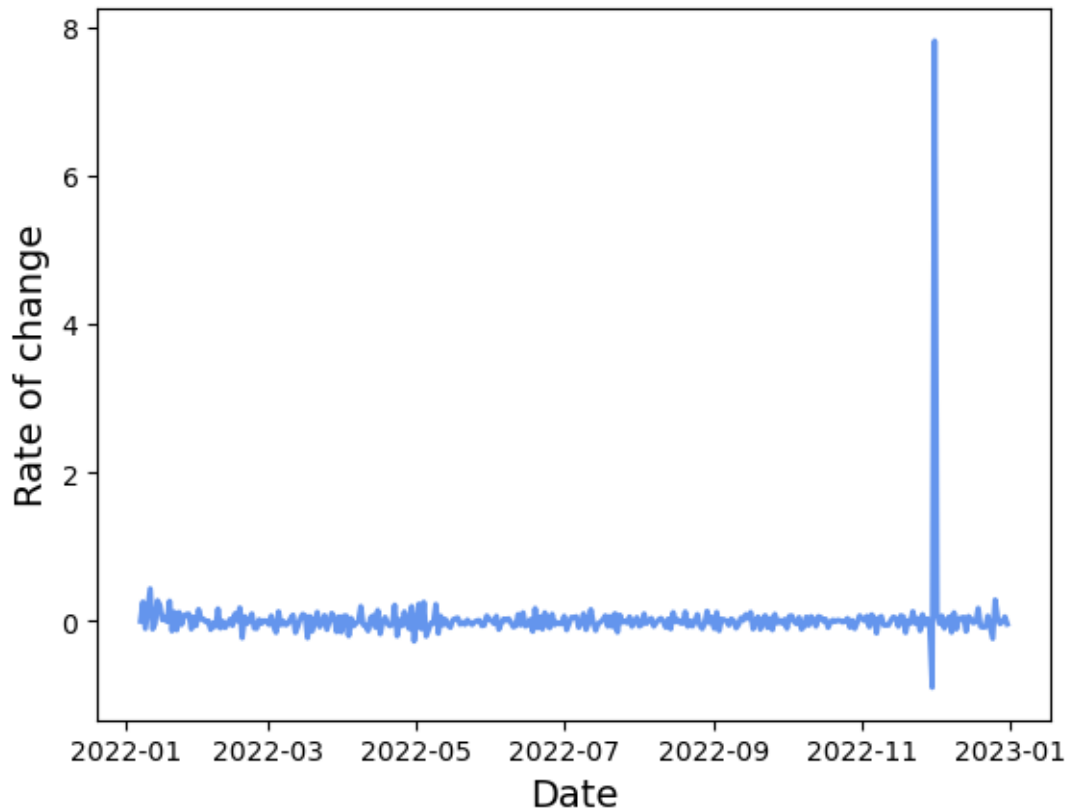
```
[156]: #
plt.figure()
Date = data.iloc[:,0]
NORR = data.iloc[:,3]
plt.plot(Date,NORR,color="yellowgreen",label="data",linewidth=2)
plt.xlabel('Date',fontsize=14,verticalalignment='top')
plt.ylabel('Number of reported_
↳results',fontsize=14,horizontalalignment='center')
plt.show()
```



```
[157]: NORR_diff = NORR.copy()
NORR_diff.index=data.index

#
NORR_diff = round(NORR_diff.pct_change(),4)
NORR_diff[358] = 0
```

```
[158]: plt.plot(Date,NORR_diff,color="cornflowerblue",label="data",linewidth=2)
plt.xlabel('Date',fontsize=14,verticalalignment='top')
plt.ylabel('Rate of change',fontsize=14,horizontalalignment='center')
plt.show()
```



```
[159]: #
for i in range(359):
    if abs(NORR_diff[i]) > 1:
        print(i)
```

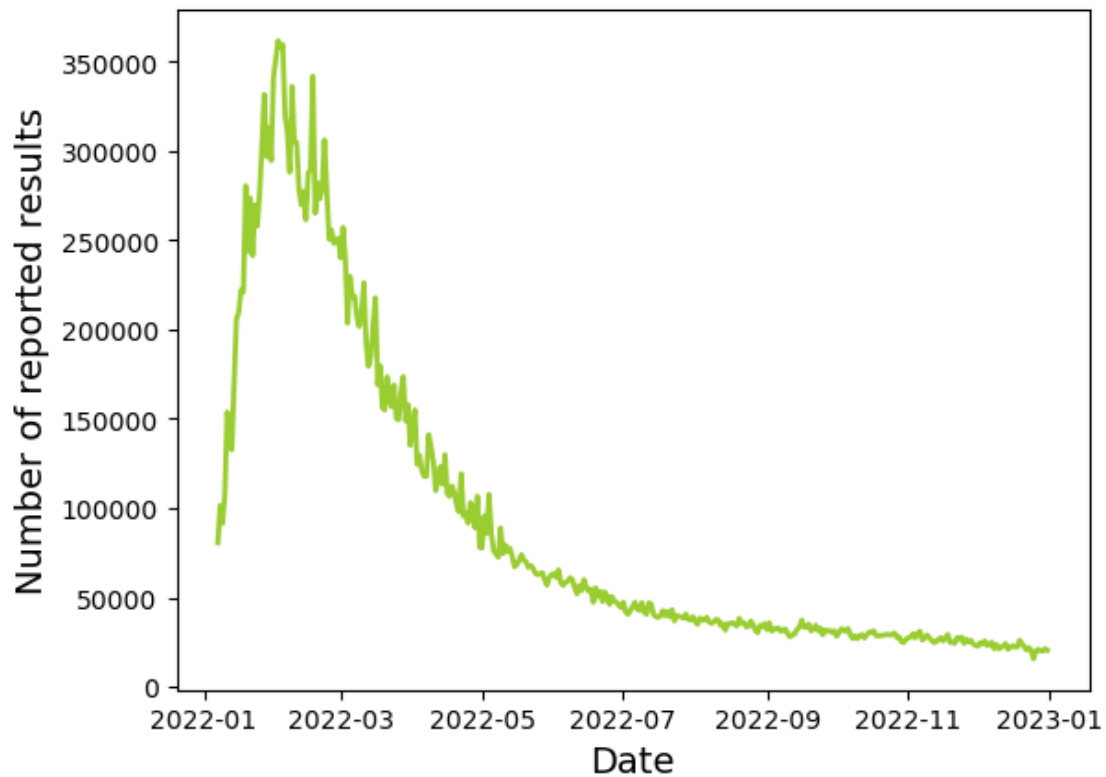
30

```
[160]: NORR[31] = (NORR[30]+NORR[32])/2
#
plt.figure()
Date = data.iloc[:,0]
NORR = data.iloc[:,3]
plt.plot(Date,NORR,color="yellowgreen",label="data",linewidth=2)
plt.xlabel('Date',fontsize=14,verticalalignment='top')
plt.ylabel('Number of reported_
↳results',fontsize=14,horizontalalignment='center')
plt.show()
```

C:\Windows\Temp\ipykernel_3632\2383391356.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

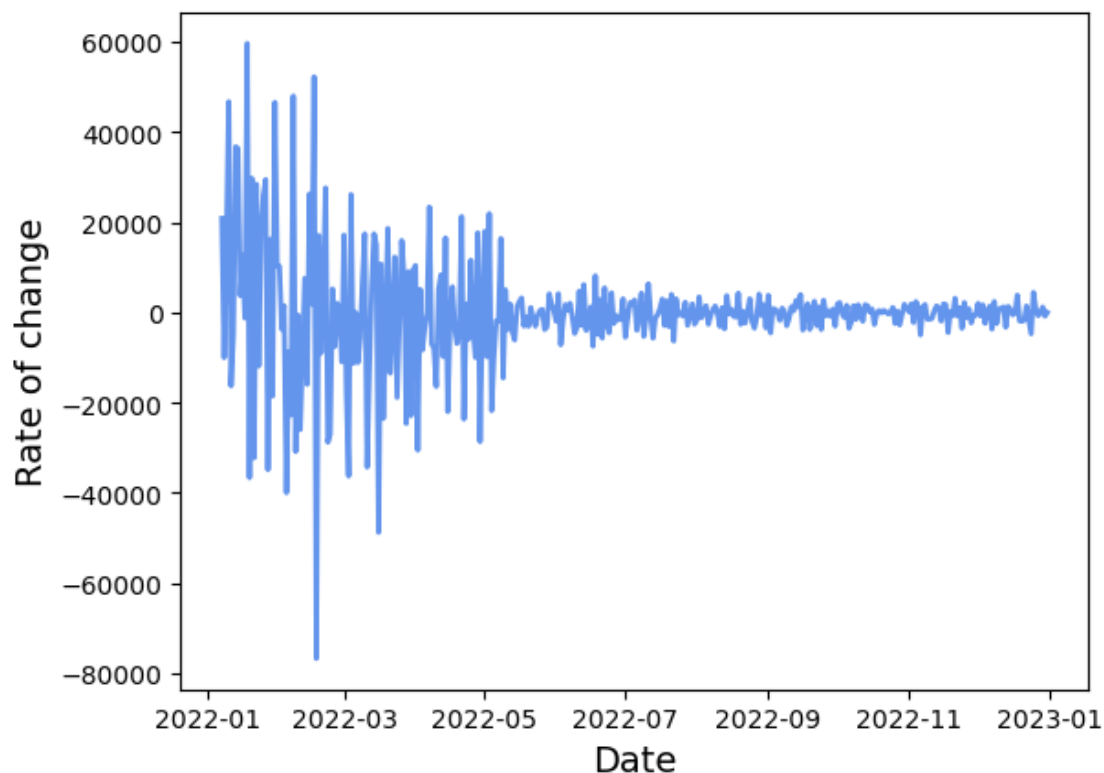
```
NORR[31] = (NORR[30]+NORR[32])/2
```



```
[202]: NORR_diff = NORR.copy()
NORR_diff.index=data.index

#
NORR_diff = round(NORR_diff.diff(1).dropna(),4)
NORR_diff[358] = 0
```

```
[203]: plt.plot(Date,NORR_diff,color="cornflowerblue",label="data",linewidth=2)
plt.xlabel('Date',fontsize=14,verticalalignment='top')
plt.ylabel('Rate of change',fontsize=14,horizontalalignment='center')
plt.show()
```



```
[204]: # adfuller
from statsmodels.tsa.stattools import adfuller
print(adfuller(NORR)) #
print(adfuller(NORR_diff)) #
```

```
#      adt      T      t
#      p      t
#
#
#      99% 95% 90%      ADF
```

```
(-3.919300718985013, 0.0018973077704593695, 17, 341, {'1%': -3.449673193310592,
'5%': -2.8700533746644323, '10%': -2.5713055939491403}, 7191.9995105043645)
(-4.244289552499513, 0.0005539412555936658, 17, 341, {'1%': -3.449673193310592,
'5%': -2.8700533746644323, '10%': -2.5713055939491403}, 7204.522223903331)
```

```
[205]: #
from statsmodels.stats.diagnostic import acorr_ljungbox
acorr_ljungbox(NORR_diff, lags = 20)
```

```
[205]:      lb_stat      lb_pvalue
1      46.993279  7.123054e-12
```

2	54.900432	1.198182e-12
3	62.428562	1.779256e-13
4	65.328186	2.194479e-13
5	67.688269	3.100062e-13
6	70.601884	3.077024e-13
7	70.729400	1.052085e-12
8	81.496476	2.442232e-14
9	81.760359	7.218672e-14
10	83.982023	8.284896e-14
11	84.803752	1.725499e-13
12	87.341066	1.611855e-13
13	90.277584	1.236712e-13
14	95.103614	4.086289e-14
15	101.337900	7.272666e-15
16	106.846600	1.777833e-15
17	106.928141	4.552991e-15
18	106.981586	1.144762e-14
19	107.009347	2.827065e-14
20	107.035557	6.797326e-14

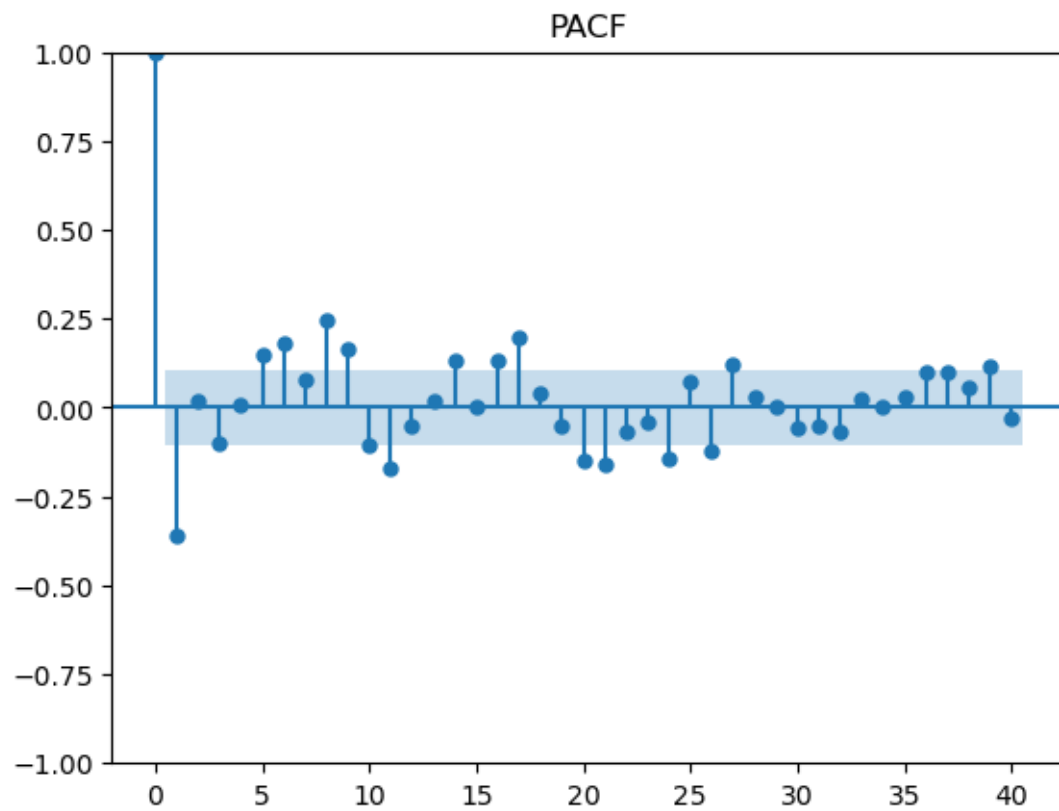
```
[206]: # pacf acf
from statsmodels.graphics.tsaplots import plot_acf, plot_pacf
pacf = plot_pacf(NORR_diff, lags=40)
plt.title('PACF')
pacf.show()
acf = plot_acf(NORR_diff, lags=40)
plt.title('ACF')
acf.show()
```

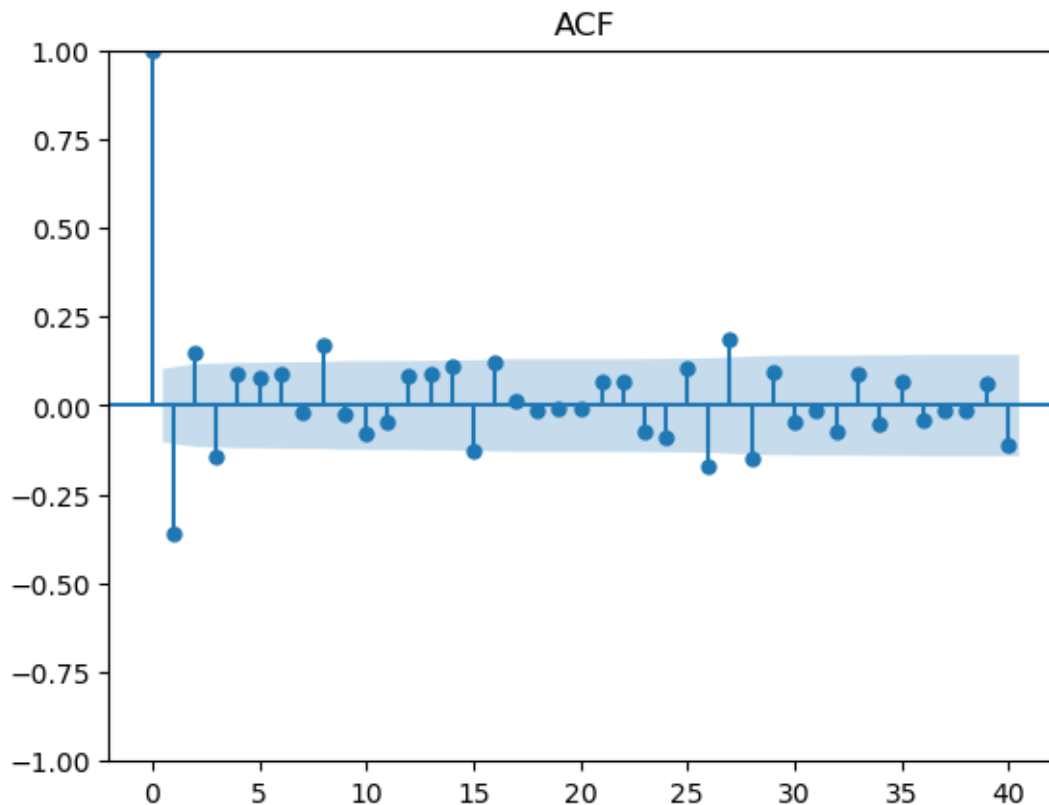
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\graphics\tsaplots.py:348: FutureWarning: The default method 'yw' can produce PACF values outside of the [-1,1] interval. After 0.13, the default will change to unadjusted Yule-Walker ('ywm'). You can use this method now by setting method='ywm'.

warnings.warn(
C:\Windows\Temp\ipykernel_3632\891864220.py:5: UserWarning: Matplotlib is currently using module://matplotlib_inline.backend_inline, which is a non-GUI backend, so cannot show the figure.

pacf.show()
C:\Windows\Temp\ipykernel_3632\891864220.py:8: UserWarning: Matplotlib is currently using module://matplotlib_inline.backend_inline, which is a non-GUI backend, so cannot show the figure.

acf.show()





```
[210]: # import itertools

p_min = 0
d_min = 0
q_min = 0
p_max = 8
d_max = 1
q_max = 8

# Initialize a DataFrame to store the results, BIC
results_bic = pd.DataFrame(index=['AR{}'.format(i) for i in
    ↪range(p_min,p_max+1)],
                           columns=['MA{}'.format(i) for i in
    ↪range(q_min,q_max+1)])

for p,d,q in itertools.product(range(p_min,p_max+1),
                               range(d_min,d_max+1),
                               range(q_min,q_max+1)):
    if p==0 and d==0 and q==0:
        results_bic.loc['AR{}'.format(p), 'MA{}'.format(q)] = np.nan
        continue
```

```

try:
    model = sm.tsa.ARIMA(NORR, order=(p, d, q),
                        #enforce_stationarity=False,
                        #enforce_invertibility=False,
                        )
    results = model.fit()
    results_bic.loc['AR{}'.format(p), 'MA{}'.format(q)] = results.bic
except:
    continue
results_bic = results_bic[results_bic.columns].astype(float)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```



```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```



```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")

```



```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters'
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.'
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters'
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.'

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```



```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```



```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")

```



```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
    warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
    warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
    self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
    warnings.warn("Maximum Likelihood optimization failed to ")

```

```

[211]: import seaborn as sns
fig, ax = plt.subplots(figsize=(10, 8))
ax = sns.heatmap(results_bic,
                  mask=results_bic.isnull(),
                  ax=ax,
                  annot=True,
                  fmt='.2f',
                  )
ax.set_title('BIC')
plt.show()

```



```
[212]: # max_      8    13m 13s
train_results = sm.tsa.arma_order_select_ic(NORR, ic=['aic', 'bic'], max_ar=10,
max_ma=10)

print('AIC', train_results.aic_min_order)
print('BIC', train_results.bic_min_order)
```

```
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
  warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
  warnings.warn("Maximum Likelihood optimization failed to ")
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
```



```

mle_retvals
  warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
  warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
  warnings.warn("Maximum Likelihood optimization failed to "
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
  warnings.warn("Maximum Likelihood optimization failed to "

AIC (8, 6)
BIC (1, 5)

C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:
ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check
mle_retvals
  warnings.warn("Maximum Likelihood optimization failed to "

```

```

[224]: from statsmodels.tsa.arima.model import ARIMA
model = ARIMA(data_train, order=(4,1,3))
result = model.fit()
result.summary()

```

```

C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
  self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
  self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\base\tsa_model.py:471: ValueWarning: An unsupported
index was provided and will be ignored when e.g. forecasting.
  self._init_dates(dates, freq)
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:966: UserWarning: Non-stationary
starting autoregressive parameters found. Using zeros as starting parameters.
  warn('Non-stationary starting autoregressive parameters')
C:\Users\Yupeng Su\anaconda3\lib\site-
packages\statsmodels\tsa\statespace\sarimax.py:978: UserWarning: Non-invertible
starting MA parameters found. Using zeros as starting parameters.
  warn('Non-invertible starting MA parameters found.')
C:\Users\Yupeng Su\anaconda3\lib\site-packages\statsmodels\base\model.py:604:

```

ConvergenceWarning: Maximum Likelihood optimization failed to converge. Check mle_retvals

warnings.warn("Maximum Likelihood optimization failed to "

[224]: <class 'statsmodels.iolib.summary.Summary'>

```

"""
                                SARIMAX Results
=====
=====
Dep. Variable:      Number of reported results  No. Observations:
342
Model:              ARIMA(4, 1, 3)  Log Likelihood
-3664.356
Date:               Fri, 17 Feb 2023  AIC
7344.713
Time:               13:51:35  BIC
7375.368
Sample:              0  HQIC
7356.926
                                - 342
Covariance Type:      opg
=====
              coef      std err          z      P>|z|      [0.025      0.975]
-----
ar.L1          1.8582      0.036     51.174      0.000        1.787        1.929
ar.L2         -1.2344      0.065    -19.071      0.000       -1.361       -1.108
ar.L3          0.0580      0.067      0.872      0.383       -0.072         0.188
ar.L4          0.2994      0.035      8.617      0.000         0.231         0.368
ma.L1         -2.3622      0.040    -59.111      0.000       -2.441       -2.284
ma.L2          2.2276      0.069     32.461      0.000         2.093         2.362
ma.L3         -0.8029      0.037    -21.862      0.000       -0.875       -0.731
sigma2       1.053e+08   8.48e-10   1.24e+17      0.000       1.05e+08       1.05e+08
=====
===
Ljung-Box (L1) (Q):              0.56  Jarque-Bera (JB):
612.72
Prob(Q):              0.46  Prob(JB):
0.00
Heteroskedasticity (H):          0.02  Skew:
0.16
Prob(H) (two-sided):          0.00  Kurtosis:
9.56
=====
===

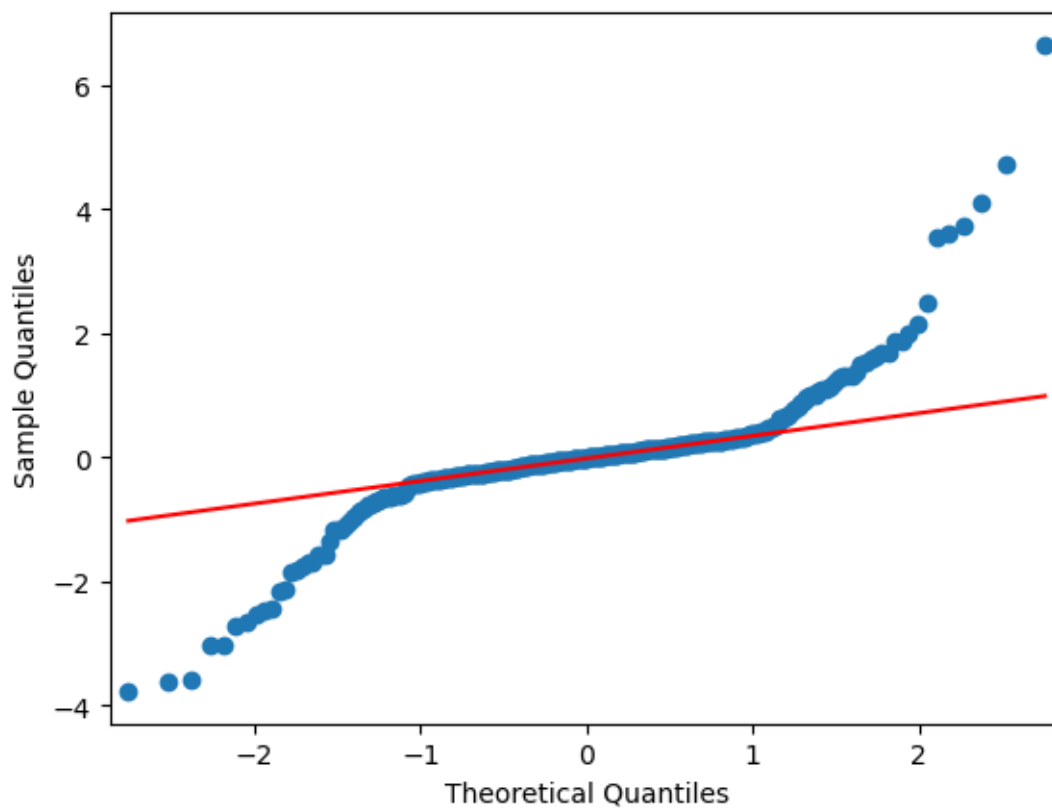
```

Warnings:

[1] Covariance matrix calculated using the outer product of gradients (complex-

```
step).  
[2] Covariance matrix is singular or near-singular, with condition number  
8.35e+31. Standard errors may be unstable.  
"""
```

```
[225]: #  
resid = result.resid  
  
# qq  
from statsmodels.graphics.api import qqplot  
qqplot(resid, line='q', fit=True)  
plt.show()
```



```
[226]: from scipy.stats import shapiro  
shapiro(resid)
```

```
[226]: ShapiroResult(statistic=0.7872570157051086, pvalue=8.19499868980432e-21)
```

```
[227]: import statsmodels.api as sm  
print(sm.stats.durbin_watson(resid.values))
```

1.8023111370390197

```
[228]: r,q,p = sm.tsa.acf(resid.values.squeeze(), qstat=True)
data = np.c_[range(1,21), r[1:], q, p]
table = pd.DataFrame(data, columns=['lag', "AC", "Q", "Prob(>Q)"])
print(table.set_index('lag'))
```

```
-----
ValueError                                Traceback (most recent call last)
C:\Windows\Temp\ipykernel_3632\3892986783.py in <module>
      1 r,q,p = sm.tsa.acf(resid.values.squeeze(), qstat=True)
----> 2 data = np.c_[range(1,21), r[1:], q, p]
      3 table = pd.DataFrame(data, columns=['lag', "AC", "Q", "Prob(>Q)"])
      4 print(table.set_index('lag'))

~\anaconda3\lib\site-packages\numpy\lib\index_tricks.py in __getitem__(self, key)
    411         objs[k] = objs[k].astype(final_dtype)
    412
--> 413         res = self.concatenate(tuple(objs), axis=axis)
    414
    415         if matrix:

<__array_function__ internals> in concatenate(*args, **kwargs)

ValueError: all the input array dimensions for the concatenation axis must match
  exactly, but along dimension 0, the array at index 0 has size 20 and the array
  at index 1 has size 25
```

```
[232]: #
# predict(      )
predict = result.predict('2022/1/7', '2022/12/31')
plt.figure(figsize=(12, 8))
plt.plot(ts_diff)
plt.plot(predict)
```

```
-----
KeyError                                Traceback (most recent call last)
~\anaconda3\lib\site-packages\pandas\core\indexes\base.py in get_loc(self, key,
  method, tolerance)
    3628         try:
-> 3629             return self._engine.get_loc(casted_key)
    3630         except KeyError as err:

~\anaconda3\lib\site-packages\pandas\_libs\index.pyx in pandas._libs.index.
  IndexEngine.get_loc()
```

```
~\anaconda3\lib\site-packages\pandas\_libs\index.pyx in pandas._libs.index.  
↳ IndexEngine.get_loc()
```

```
pandas\_libs\index_class_helper.pxi in pandas._libs.index.Int64Engine.  
↳ _check_type()
```

KeyError: '2022/1/7'

The above exception was the direct cause of the following exception:

```
KeyError                                Traceback (most recent call last)  
~\anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py in  
↳ get_index_label_loc(key, index, row_labels)  
    246         if not isinstance(key, (int, np.integer)):  
--> 247             loc = row_labels.get_loc(key)  
    248         else:  
  
~\anaconda3\lib\site-packages\pandas\core\indexes\base.py in get_loc(self, key,  
↳ method, tolerance)  
    3630         except KeyError as err:  
-> 3631             raise KeyError(key) from err  
    3632         except TypeError:
```

KeyError: '2022/1/7'

During handling of the above exception, another exception occurred:

```
KeyError                                Traceback (most recent call last)  
~\anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py in  
↳ get_prediction_index(start, end, nobis, base_index, index, silent, index_none,  
↳ index_generated, data)  
    355     try:  
--> 356         start, _, start_oos = get_index_label_loc(  
    357             start, base_index, data.row_labels  
  
~\anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py in  
↳ get_index_label_loc(key, index, row_labels)  
    278     except:  
--> 279         raise e  
    280     return loc, index, index_was_expanded  
  
~\anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py in  
↳ get_index_label_loc(key, index, row_labels)  
    242     try:  
--> 243         loc, index, index_was_expanded = get_index_loc(key, index)  
    244     except KeyError as e:
```

```

~\anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py in
↳get_index_loc(key, index)
    192         except (IndexError, ValueError) as e:
--> 193             raise KeyError(str(e))
    194         loc = key

KeyError: 'only integers, slices (`:`), ellipsis (`...`), numpy.newaxis (`None`)
↳and integer or boolean arrays are valid indices'

During handling of the above exception, another exception occurred:

KeyError                                Traceback (most recent call last)
C:\Windows\Temp\ipykernel_3632\3212372631.py in <module>
      1 #
      2 # predict(      )
----> 3 predict = result.predict('2022/1/7', '2022/12/31')
      4 plt.figure(figsize=(12, 8))
      5 plt.plot(ts_diff)

~\anaconda3\lib\site-packages\statsmodels\base\wrapper.py in wrapper(self,
↳*args, **kwargs)
    111         obj = data.wrap_output(func(results, *args, **kwargs),
↳how[0], how[1:])
    112         elif how:
--> 113             obj = data.wrap_output(func(results, *args, **kwargs), how)
    114         return obj
    115

~\anaconda3\lib\site-packages\statsmodels\tsa\statespace\mlemodel.py in
↳predict(self, start, end, dynamic, **kwargs)
    3401         """
    3402         # Perform the prediction
-> 3403         prediction_results = self.get_prediction(start, end, dynamic,
↳**kwargs)
    3404         return prediction_results.predicted_mean
    3405

~\anaconda3\lib\site-packages\statsmodels\tsa\statespace\mlemodel.py in
↳get_prediction(self, start, end, dynamic, index, exog, extend_model,
↳extend_kwargs, **kwargs)
    3285         # Handle start, end, dynamic
    3286         start, end, out_of_sample, prediction_index = (
-> 3287             self.model._get_prediction_index(start, end, index))
    3288
    3289         # Handle `dynamic`

```



```

~\anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py in
↳_get_prediction_index(self, start, end, index, silent)
    832         """
    833         nobs = len(self.endog)
--> 834         return get_prediction_index(
    835             start,
    836             end,

~\anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py in
↳get_prediction_index(start, end, nobs, base_index, index, silent, index_none,
↳index_generated, data)
    358         )
    359     except KeyError:
--> 360         raise KeyError(
    361             "The `start` argument could not be matched to a"
    362             " location related to the index of the data."

KeyError: 'The `start` argument could not be matched to a location related to
↳the index of the data.'

```

[]: