```
predicted=28260.916732, expected=28942.449405
predicted=28796.231868, expected=28920.441468
predicted=28780.234626, expected=24575.104167
predicted=25451.298203, expected=26475.911706
predicted=26917.632532, expected=26767.878968
predicted=27133.710486, expected=26414.825397
predicted=26859.126036, expected=25571.035714
predicted=26198.739517, expected=26817.150794
predicted=27153.400781, expected=27304.528770
predicted=27522.654641, expected=26810.326389
predicted=27142.946601, expected=27041.809524
predicted=27316.555165, expected=27966.263889
predicted=28020.118334, expected=27833.969246
predicted=27918.909673, expected=27400.911706
predicted=27589.002470, expected=28688.248016
predicted=28566.230249, expected=30847.481151
predicted=30211.612993, expected=31655.984127
predicted=30860.457511, expected=31718.412698
predicted=30936.170287, expected=31728.132937
predicted=30969.016321, expected=30204.162698
predicted=29772.000952, expected=29414.763889
predicted=29159.806927, expected=27445.787698
predicted=27639.009956, expected=27200.794643
predicted=27448.656526, expected=28323.105159
predicted=28313.366694, expected=28089.897817
predicted=28133.852216, expected=26785.748016
predicted=27128.642414, expected=26815.500000
predicted=27146.961812, expected=26985.614087
predicted=27276.076929, expected=26806.673611
predicted=27134.033090, expected=26639.532738
predicted=27000.123682, expected=25925.440476
predicted=26436.931002, expected=26728.343254
predicted=27059.811414, expected=26829.972222
predicted=27135.960335, expected=26817.899802
predicted=27123.383427, expected=26883.019841
predicted=27171.387512, expected=27799.705357
predicted=27884.290567, expected=29504.049603
predicted=29207.216382, expected=29642.161706
predicted=29318.145929, expected=28158.699405
predicted=28167.471451, expected=29376.154762
predicted=29108.803933, expected=26226.971230
predicted=26687.942802, expected=25325.347222
predicted=25977.807777, expected=27625.514881
predicted=27755.932256, expected=30396.647817
predicted=29863.507521, expected=30609.138889
predicted=30034.856127, expected=29681.796627
predicted=29328.599063, expected=29525.022817
predicted=29211.893343, expected=29677.889881
predicted=29332.048551, expected=30826.362103
predicted=30220.107270, expected=30012.853175
predicted=29597.829658, expected=29739.671627
predicted=29391.486278, expected=30374.330357
predicted=29885.340720, expected=29722.643849
predicted=29385.376466, expected=26513.330357
predicted=26934.918974, expected=27477.591270
```

```
predicted=27667.423269, expected=28298.927579
predicted=28290.472930, expected=27993.474206
predicted=28059.092275, expected=27436.007937
predicted=27635.920105, expected=26718.946429
predicted=27088.225885, expected=26413.225198
predicted=26850.698454, expected=26823.868056
predicted=27161.821368, expected=26298.191468
predicted=26754.599976, expected=26673.007937
predicted=27038.420285, expected=26791.025794
predicted=27125.450982, expected=28174.665675
predicted=28182.543483, expected=27740.252976
predicted=27851.162343, expected=28000.196429
predicted=28048.572351, expected=29389.158730
predicted=29106.785394, expected=30206.535714
predicted=29734.934914, expected=29698.384921
predicted=29349.477323, expected=30209.261905
predicted=29744.602182, expected=30437.972222
predicted=29927.250008, expected=29534.845238
predicted=29234.755896, expected=27793.428571
predicted=27902.855356, expected=27704.926587
predicted=27834.684336, expected=29387.482143
predicted=29116.914710, expected=30495.243056
predicted=29967.913325, expected=31127.004960
predicted=30465.451050, expected=27964.310516
predicted=28041.035807, expected=27421.727183
predicted=27629.511707, expected=27507.818452
predicted=27693.989996, expected=27386.424603
predicted=27599.647278, expected=26010.014881
predicted=26550.424389, expected=27221.331349
predicted=27471.781271, expected=27091.276786
predicted=27370.862562, expected=26055.796627
predicted=26578.386616, expected=28465.311508
predicted=28408.784471, expected=28920.114087
predicted=28752.585727, expected=29753.233135
predicted=29383.202490, expected=29902.199405
predicted=29499.648560, expected=27430.395833
predicted=27634.723348, expected=30463.140873
predicted=29904.923128, expected=29215.953373
predicted=28972.721475, expected=26882.199405
predicted=27239.270049, expected=28758.959325
predicted=28629.054206, expected=31379.640873
predicted=30570.707531, expected=32847.825397
predicted=31710.903940, expected=32040.109127
predicted=31117.282392, expected=30164.936508
predicted=29698.482012, expected=30294.746032
predicted=29801.178735, expected=29579.065476
predicted=29265.821975, expected=29148.874008
predicted=28945.405359, expected=29011.028770
predicted=28842.465409, expected=27707.737103
predicted=27867.356023, expected=27695.804563
predicted=27857.776803, expected=28524.249008
predicted=28476.902010, expected=27837.237103
predicted=27963.271689, expected=27215.626984
predicted=27497.643461, expected=24464.105159
predicted=25419.082216, expected=26253.451389
```

```
predicted=26772.000423, expected=27095.767857
predicted=27401.557376, expected=26036.425595
predicted=26602.944872, expected=26893.187500
predicted=27243.952745, expected=26921.321429
predicted=27262.966924, expected=27935.081349
predicted=28021.112454, expected=27798.235119
predicted=27919.169845, expected=28352.766865
predicted=28333.686261, expected=31656.932540
predicted=30804.712871, expected=31924.457341
predicted=31026.240547, expected=28818.877976
predicted=28686.219834, expected=29212.104167
predicted=28979.740699, expected=31492.288690
predicted=30683.003458, expected=30964.198413
predicted=30295.917363, expected=30437.539683
predicted=29905.714739, expected=30963.245040
predicted=30308.584027, expected=28185.382937
predicted=28228.482695, expected=28109.313492
predicted=28171.688885, expected=30013.335317
predicted=29585.098634, expected=28463.628968
predicted=28436.093931, expected=28913.080357
predicted=28769.004902, expected=27898.738095
predicted=28019.016136, expected=27780.867063
predicted=27931.630134, expected=27909.272817
predicted=28025.806180, expected=28026.627976
predicted=28112.136422, expected=26473.335317
predicted=26961.509348, expected=27266.044643
predicted=27547.435255, expected=27167.701389
predicted=27473.058384, expected=26544.757937
predicted=27008.000746, expected=28370.022817
predicted=28359.915742, expected=29593.166667
predicted=29263.354906, expected=29829.181548
predicted=29439.060693, expected=31482.171627
predicted=30674.762200, expected=30330.126984
predicted=29819.376526, expected=31337.419643
predicted=30579.197300, expected=30937.231151
predicted=30286.782353, expected=26818.923611
predicted=27231.640294, expected=27350.639881
predicted=27621.797560, expected=32145.259921
predicted=31125.227624, expected=31231.711310
predicted=30464.179213, expected=30708.690476
predicted=30086.349468, expected=31508.441468
predicted=30684.869247, expected=33011.123016
predicted=31829.855544, expected=31358.222222
predicted=30599.131501, expected=30990.803571
predicted=30332.628169, expected=31452.471230
predicted=30686.359645, expected=30258.616071
predicted=29798.036744, expected=29947.182540
predicted=29568.071587, expected=30992.921627
predicted=30352.716945, expected=27015.069444
predicted=27401.327386, expected=27911.231151
predicted=28060.663098, expected=29277.797619
predicted=29065.429977, expected=27412.372024
predicted=27696.457769, expected=26960.291667
predicted=27361.877049, expected=26048.716270
predicted=26685.233790, expected=27110.698413
```

```
predicted=27467.641165, expected=27005.293651
predicted=27387.512328, expected=27020.163690
predicted=27395.595579, expected=26732.279762
predicted=27181.185011, expected=26885.078373
predicted=27291.490005, expected=27693.860119
predicted=27888.340147, expected=29520.685516
predicted=29234.319321, expected=29864.537698
predicted=29489.214966, expected=29609.409722
predicted=29302.638681, expected=30380.860119
predicted=29875.208720, expected=29959.209325
predicted=29565.543109, expected=30250.822421
predicted=29784.291542, expected=31418.558532
predicted=30658.658373, expected=30296.009921
predicted=29824.570443, expected=27315.342262
predicted=27621.093637, expected=29039.343254
predicted=28889.726210, expected=30932.329837
Test MSE: 1502374.715
Traceback (most recent call last):
  File "C:\Users\kelly\anaconda3\lib\site-packages\IPython\core\formatters.py", line 341,
    return printer(obj)
  File "C:\Users\kelly\anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 248,
    png_formatter.for_type(Figure, lambda fig: print_figure(fig, 'png', **kwargs))
  File "C:\Users\kelly\anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 132,
in print figure
    fig.canvas.print figure(bytes io, **kw)
  File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\backend bases.py", line
2100, in print figure
    self.figure.draw(renderer)
  File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\artist.py", line 38, in
draw wrapper
    return draw(artist, renderer, *args, **kwargs)
  File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\figure.py", line 1735, in
draw
    mimage._draw_list_compositing_images(
  File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\image.py", line 137, in
draw list compositing images
    a.draw(renderer)
  File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\artist.py", line 38, in
draw wrapper
    return draw(artist, renderer, *args, **kwargs)
  File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\axes\ base.py", line 2630,
in draw
    mimage. draw list compositing images(renderer, self, artists)
```

```
File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\image.py", line 137, in
draw list compositing images
   a.draw(renderer)
 File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\artist.py", line 38, in
draw wrapper
   return draw(artist, renderer, *args, **kwargs)
 File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\axis.py", line 1227, in draw
   ticks to draw = self. update ticks()
 File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\axis.py", line 1103, in
update ticks
   major locs = self.get majorticklocs()
 File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\axis.py", line 1348, in
get majorticklocs
   return self.major.locator()
 File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\dates.py", line 1338, in
   self.refresh()
 File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\dates.py", line 1364, in
   dmin, dmax = self.viewlim_to_dt()
  File "C:\Users\kelly\anaconda3\lib\site-packages\matplotlib\dates.py", line 1094, in
viewlim to dt
ValueError: view limit minimum -36846.950000000004 is less than 1 and is an invalid
Matplotlib date value. This often happens if you pass a non-datetime value to an axis that
has datetime units
<Figure size 1200x840 with 1 Axes>
               'D:/Documentos/Faculdade/Eletivas/Modelagem Analítica/
In [9]:
modelo_arima_previsao.py'
                             ='D:/Documentos/Faculdade/Eletivas/Modelagem Analítica'
                            ARMA Model Results
______
Dep. Variable:
                              value
                                     No. Observations:
                                                                      427
Model:
                                     Log Likelihood
                                                                 -3874.594
                         ARMA(1, 0)
Method:
                            css-mle
                                     S.D. of innovations
                                                                 2110.149
Date:
                   Tue, 03 Nov 2020
                                     AIC
                                                                  7755.188
Time:
                           21:25:37
                                     BIC
                                                                 7767.359
Sample:
                         09-01-2018
                                     HOIC
                                                                  7759.995
                       - 11-01-2019
______
                                               P> | z |
                 coef
                        std err
                                                         [0.025
                                                                    0.975]
                                                                    2.9e+04
const
             2.85e+04
                        259.059
                                  110.000
                                               0.000
                                                        2.8e+04
ar.L1.value
               0.6072
                          0.039
                                               0.000
                                                          0.531
                                                                     0.683
                                   15.713
```

Roots

| Re | eal | Imaginary | Modulus | Frequency |
|--|-----|-----------|---------|-----------|
| AR.1 1.64 | 170 | +0.0000j | 1.6470 | 0.0000 |
| 0 | | | | |
| count 427.000000 | | | | |
| mean 4.500224 | | | | |
| std 2115.336543 | | | | |
| min -4923.722602 | | | | |
| 25% -2046.032074 | | | | |
| 50% 289.104824 | | | | |
| 75% 1307.027564 | | | | |
| max 5365.950546 | | | | |
| predicted=25807.2766 | - | • | | |
| predicted=25429.4671 | - | • | | |
| predicted=28384.1535 | - | • | | |
| predicted=28484.3093 | - | • | | |
| predicted=27493.4190 | - | • | | |
| predicted=26548.6655 | - | • | | |
| predicted=25672.8280 | - | • | | |
| predicted=29365.2728 | - | • | | |
| predicted=29752.5763 | - | • | | |
| predicted=29949.0762 | - | • | | |
| predicted=29935.9988 | - | • | | |
| predicted=28069.5176 | - | • | | |
| predicted=26943.1424 | - | • | | |
| predicted=30148.6705 | - | • | | |
| predicted=30513.3269 | - | • | | |
| predicted=30373.0148 | - | • | | |
| predicted=30383.3466 | - | • | | |
| predicted=30280.1059 | - | • | | |
| predicted=28362.1931 | - | • | | |
| predicted=27259.5648 | - | • | | |
| predicted=30487.9155 | - | • | | |
| predicted=31007.9033 | - | • | | |
| predicted=30916.8209 | - | • | | |
| predicted=30617.1424 | | | | |
| predicted=30500.6611 | - | • | | |
| predicted=28171.1778 | - | • | | |
| predicted=26749.2407 predicted=29896.9619 | - | • | | |
| predicted=29896.9819 | - | • | | |
| predicted=30651.7000 | - | • | | |
| predicted=30728.4159 | - | • | | |
| predicted=30541.6378 | - | • | | |
| predicted=38341.6378 | - | • | | |
| predicted=27183.8421 | - | • | | |
| predicted=30888.7372 | - | • | | |
| predicted=30888.7372 | - | • | | |
| predicted=31138.0834 | - | • | | |
| predicted=30421.2315 | - | • | | |
| predicted=30306.7410 | - | • | | |
| predicted=28363.1416 | - | • | | |
| predicted=27246.2725 | - | • | | |
| predicted=30328.1220 | - | • | | |
| F. CO. LUCK 3032011220 | , , | | | |

```
predicted=31284.230856, expected=32540.180556
predicted=31009.264166, expected=31526.875000
predicted=30397.322942, expected=30560.875000
predicted=29811.831202, expected=27425.895833
predicted=27903.936769, expected=25724.694444
predicted=26865.754796, expected=30974.909722
predicted=30052.022022, expected=31547.472222
predicted=30403.987390, expected=31045.590278
predicted=30102.966029, expected=30989.534722
predicted=30073.655700, expected=30693.631944
predicted=29895.509186, expected=27394.520833
predicted=27893.360439, expected=25312.250000
predicted=26625.813917, expected=30730.701389
predicted=29907.339387, expected=31408.201389
predicted=30319.063619, expected=31133.784722
predicted=30157.683726, expected=31196.875000
predicted=30199.744878, expected=30496.909722
predicted=29777.803113, expected=28098.048611
predicted=28326.559543, expected=25104.486111
predicted=26513.269057, expected=30212.125000
predicted=29597.569205, expected=31150.930556
predicted=30165.416458, expected=30430.381944
predicted=29732.874662, expected=29850.645833
predicted=29384.912211, expected=29488.236111
predicted=29168.818948, expected=26022.715278
predicted=27081.940452, expected=23901.486111
predicted=25791.028215, expected=28908.166667
predicted=28814.082887, expected=29425.527778
predicted=29123.750127, expected=29439.555556
predicted=29131.990171, expected=29389.402778
predicted=29102.814058, expected=29434.020833
predicted=29131.555054, expected=26009.381944
predicted=27076.397390, expected=23591.319444
predicted=25610.905028, expected=27874.965278
predicted=28190.151155, expected=28328.472222
predicted=28459.841493, expected=27415.333333
predicted=27913.134218, expected=27870.263889
predicted=28185.729822, expected=28017.340278
predicted=28273.115784, expected=25387.868056
predicted=26694.749993, expected=23699.277778
predicted=25665.474418, expected=29046.722222
predicted=28881.749401, expected=29879.423611
predicted=29379.666260, expected=30152.819444
predicted=29543.844550, expected=29082.027778
predicted=28904.785827, expected=29600.062500
predicted=29215.028344, expected=26914.680556
predicted=27611.238295, expected=24463.111111
predicted=26138.691840, expected=28898.680556
predicted=28791.590814, expected=29105.923611
predicted=28916.383301, expected=29355.687500
predicted=29064.519511, expected=29373.923611
predicted=29075.509563, expected=29025.388889
predicted=28869.273040, expected=25531.298611
predicted=26788.933429, expected=23105.965278
predicted=25323.958024, expected=27435.194444
```

```
predicted=27915.587608, expected=27733.930556
predicted=28092.850998, expected=27779.256944
predicted=28117.939897, expected=27467.236111
predicted=27931.208572, expected=27685.701389
predicted=28061.160928, expected=24720.270833
predicted=26289.862296, expected=22399.791667
predicted=24877.257006, expected=26579.777778
predicted=27389.892463, expected=26848.743056
predicted=27548.098026, expected=26406.493056
predicted=27282.454471, expected=23225.041667
predicted=25361.008049, expected=21173.798611
predicted=24079.137052, expected=22321.368056
predicted=24749.229293, expected=21149.618056
predicted=23986.439135, expected=23571.520833
predicted=25471.029273, expected=26469.666667
predicted=27257.898313, expected=26324.750000
predicted=27166.222065, expected=27257.701389
predicted=27740.640085, expected=27516.451389
predicted=27898.976701, expected=24846.229167
predicted=26249.249194, expected=22440.923611
predicted=24740.490239, expected=26705.319444
predicted=27388.822538, expected=27226.694444
predicted=27710.064172, expected=27246.625000
predicted=27721.794267, expected=22275.354167
predicted=24638.437163, expected=24358.993056
predicted=25922.272910, expected=23600.277778
predicted=25437.510224, expected=21959.187500
predicted=24386.069855, expected=26724.187500
predicted=27373.599388, expected=27352.770833
predicted=27764.297343, expected=27593.465278
predicted=27913.414003, expected=27606.145833
predicted=27922.359897, expected=27504.465278
predicted=27856.479474, expected=24779.902778
predicted=26155.478427, expected=22962.986111
predicted=25003.873684, expected=27384.673611
predicted=27774.184441, expected=27863.229167
predicted=28071.709520, expected=27899.944444
predicted=28094.973002, expected=27142.354167
predicted=27621.088346, expected=27212.652778
predicted=27664.162500, expected=24150.944444
predicted=25749.503373, expected=22244.395833
predicted=24533.734843, expected=27019.777778
predicted=27535.348972, expected=27559.548611
predicted=27871.058506, expected=27789.562500
predicted=28019.394576, expected=27519.256944
predicted=27845.422600, expected=27358.062500
predicted=27744.099969, expected=24428.145833
predicted=25909.687619, expected=22119.118056
predicted=24440.987046, expected=26888.548611
predicted=27442.098171, expected=27431.291667
predicted=27781.272145, expected=27787.277778
predicted=28003.422820, expected=27670.833333
predicted=27930.342278, expected=27237.055556
predicted=27657.435336, expected=24276.229167
predicted=25800.358915, expected=22234.638889
```

```
predicted=24499.206555, expected=26788.965278
predicted=27370.130500, expected=27650.798611
predicted=27910.182896, expected=27921.916667
predicted=28076.961372, expected=27998.902778
predicted=28126.190891, expected=28367.416667
predicted=28356.553016, expected=25281.180556
predicted=26421.732486, expected=23149.847222
predicted=25071.613340, expected=27315.791667
predicted=27692.453515, expected=28391.090278
predicted=28364.610050, expected=28937.722222
predicted=28706.690481, expected=29507.298611
predicted=29063.679716, expected=29816.708333
predicted=29258.694695, expected=26717.333333
predicted=27320.736137, expected=23963.229167
predicted=25589.992445, expected=28350.500000
predicted=28341.343262, expected=28916.201389
predicted=28689.651672, expected=28850.229167
predicted=28649.847758, expected=28084.465278
predicted=28172.686219, expected=28523.923611
predicted=28446.740381, expected=25810.159722
predicted=26753.841707, expected=23638.951389
predicted=25389.352632, expected=27694.611111
predicted=27926.395743, expected=26447.222222
predicted=27146.956867, expected=27928.930556
predicted=28070.223073, expected=28508.506944
predicted=28431.413437, expected=28784.597222
predicted=28603.407005, expected=26233.347222
predicted=27015.465165, expected=23481.493056
predicted=25290.075628, expected=27984.520833
predicted=28100.821613, expected=29089.944444
predicted=28788.519896, expected=28753.381944
predicted=28579.954603, expected=28327.923611
predicted=28315.723544, expected=28239.972222
predicted=28261.111847, expected=25909.375000
predicted=26811.503214, expected=23822.284722
predicted=25505.494267, expected=27826.951389
predicted=28001.497207, expected=28714.236111
predicted=28553.124146, expected=29087.270833
predicted=28781.925477, expected=29073.409722
predicted=28774.254873, expected=28932.284722
predicted=28689.364485, expected=25657.451389
predicted=26654.954197, expected=23584.854167
predicted=25359.152810, expected=29374.750000
predicted=28955.073172, expected=30631.847222
predicted=29733.233111, expected=31214.618056
predicted=30096.612666, expected=31636.527778
predicted=30364.641182, expected=31024.534722
predicted=29987.169456, expected=26692.180556
predicted=27304.240482, expected=23947.180556
predicted=25599.600481, expected=29036.243056
predicted=28748.219289, expected=29951.277778
predicted=29314.743069, expected=30590.125000
predicted=29708.885514, expected=30625.083333
predicted=29732.763337, expected=29529.062500
predicted=29058.344753, expected=26951.534722
```

```
predicted=27468.518563, expected=24745.958333
predicted=26101.929801, expected=29586.069444
predicted=29086.901999, expected=29150.826389
predicted=28822.938494, expected=29036.930556
predicted=28750.851061, expected=28880.652778
predicted=28655.358220, expected=28889.868056
predicted=28661.111620, expected=25353.236111
predicted=26487.978906, expected=23424.583333
predicted=25289.765666, expected=27885.340278
predicted=28039.738636, expected=28471.097222
predicted=28400.441955, expected=28863.861111
predicted=28639.980807, expected=29260.638889
predicted=28884.603595, expected=29154.375000
predicted=28819.243454, expected=26273.159722
predicted=27053.247496, expected=24213.472222
predicted=25780.817899, expected=28187.243056
predicted=28223.830582, expected=28505.493056
predicted=28417.586041, expected=28073.152778
predicted=28152.759195, expected=26981.201389
predicted=27483.502080, expected=23989.131944
predicted=25643.343629, expected=24129.541667
predicted=25722.300098, expected=22902.111111
predicted=24951.877418, expected=27450.347222
```