

```
In [1]: import pandas as pd
import numpy as np
from statsmodels.tsa.api import SimpleExpSmoothing
import matplotlib.pyplot as plt
```

```
In [2]: draw=pd.read_csv('AlgeriaExport.txt',header=None)
```

```
In [3]: draw.head()
```

```
Out[3]:
```

	0
0	39.043173
1	46.244557
2	19.793873
3	24.684682
4	25.084059

```
In [4]: index=pd.date_range(start="1960", end="2018", freq="Y")
```

```
In [6]: index
```

```
Out[6]: DatetimeIndex(['1960-12-31', '1961-12-31', '1962-12-31', '1963-12-31',
                        '1964-12-31', '1965-12-31', '1966-12-31', '1967-12-31',
                        '1968-12-31', '1969-12-31', '1970-12-31', '1971-12-31',
                        '1972-12-31', '1973-12-31', '1974-12-31', '1975-12-31',
                        '1976-12-31', '1977-12-31', '1978-12-31', '1979-12-31',
                        '1980-12-31', '1981-12-31', '1982-12-31', '1983-12-31',
                        '1984-12-31', '1985-12-31', '1986-12-31', '1987-12-31',
                        '1988-12-31', '1989-12-31', '1990-12-31', '1991-12-31',
                        '1992-12-31', '1993-12-31', '1994-12-31', '1995-12-31',
                        '1996-12-31', '1997-12-31', '1998-12-31', '1999-12-31',
                        '2000-12-31', '2001-12-31', '2002-12-31', '2003-12-31',
                        '2004-12-31', '2005-12-31', '2006-12-31', '2007-12-31',
                        '2008-12-31', '2009-12-31', '2010-12-31', '2011-12-31',
                        '2012-12-31', '2013-12-31', '2014-12-31', '2015-12-31',
                        '2016-12-31', '2017-12-31'],
                        dtype='datetime64[ns]', freq='A-DEC')
```

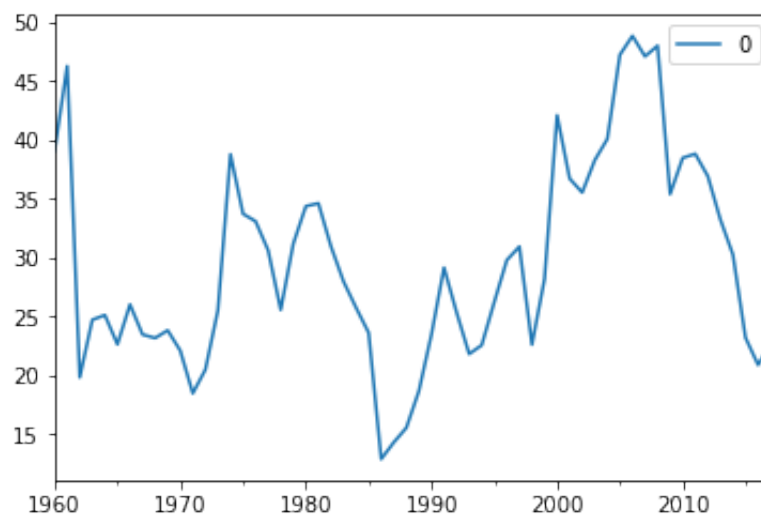
```
In [5]: df=draw.set_index(index)
df.head()
```

Out [5]: **0**

```
1960-12-31    39.043173
1961-12-31    46.244557
1962-12-31    19.793873
1963-12-31    24.684682
1964-12-31    25.084059
```

In [6]: `df.plot()`

Out [6]: <AxesSubplot:>



In [7]: `fit1=SimpleExpSmoothing(df,initialization_method="heuristic").fit(smoothing
fcast1=fit1.forecast(3).rename(r"$\alpha= 0.2 $")`

```
/Users/mirek/opt/anaconda3/lib/python3.8/site-packages/statsmodels/tsa/base  
/tsa_model.py:132: FutureWarning: The 'freq' argument in Timestamp is depre  
cated and will be removed in a future version.  
    date_key = Timestamp(key, freq=base_index.freq)
```

In [8]: `fit2=SimpleExpSmoothing(df,initialization_method="heuristic").fit(smoothing
fcast2=fit2.forecast(3).rename(r"$\alpha= 0.6 $")`

In [9]: `fit3=SimpleExpSmoothing(df,initialization_method="estimated").fit()
a=fit3.model.params["smoothing_level"]
print(a)
fcast3=fit3.forecast(3).rename(r"$\alpha= %s $" % a)`

0.8397833659100093

In [10]:

```
plt.figure(figsize=(12,8))
plt.plot(df,marker="o", color="black")
plt.plot(fit1.fittedvalues, marker="o", color="blue")
(line1, )=plt.plot(fcast1,marker="o", color="blue")

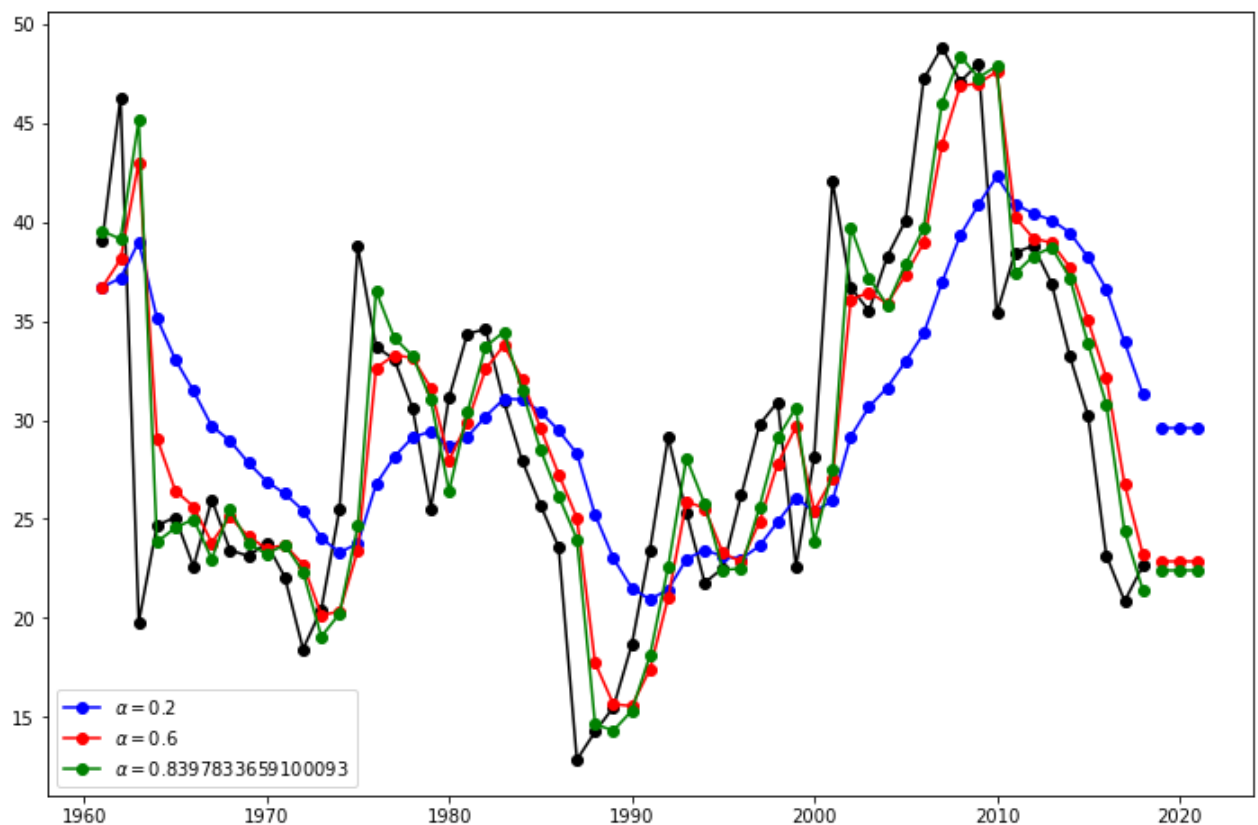
plt.plot(fit2.fittedvalues, marker="o", color="red")
(line2, )=plt.plot(fcast2,marker="o", color="red")

plt.plot(fit3.fittedvalues, marker="o", color="green")
(line3, )=plt.plot(fcast3,marker="o", color="green")

plt.legend([line1,line2,line3],[fcast1.name, fcast2.name,fcast3.name])
```

Out[10]:

<matplotlib.legend.Legend at 0x7fe758091100>



In []: