Assignment: Graphics Lies, Misleading Visuals

While making a small search in online newspapers, I saw a chart in today's print (13.09.2019) of "Sabah (http://egazete.sabah.com.tr/eGazete/www_sabah_com_tr/1/2019/09/13)",which is one of the bestseller newspaper in Turkey. The chart is related to the decision of the Republic of Turkey's Central Bank's (TCMB) 'Policy Interest Rates'. We learned from the news that TCMB decreased the interest rates from 19.65% to 16.50%. But the chart doesn't show this news exactly.

Libraries and Dataframe

In [113]:
```python
import pandas as pd
import requests
from bs4 import BeautifulSoup
import matplotlib.pyplot as plt

#Scraping the data from tcmb.gov.tr
url = "https://www.tcmb.gov.tr/wps/wcm/connect/TR/TCMB+TR/Main+Menu/Temel+Faaliye
response = requests.get(url)
data = response.text
soup = BeautifulSoup(data,'lxml')
table = soup.find_all('table')[0]

#Creating DataFrame
df_tcmb = pd.read_html(str(table))[0]
df_tcmb.columns = df_tcmb.iloc[0] #set first row as columns name
df_tcmb = df_tcmb[1:] #drop first row
df_tcmb=df_tcmb.reset_index(drop=True) #reset index
df_tcmb['Tarih']= pd.to_datetime(df_tcmb['Tarih']) #Set column type
df_tcmb['Borç Verme']= df_tcmb['Borç Verme'].astype('float64')  #Set column type
df_tcmb.head()
```

Out[113]:

	Tarih	Borç Alma	Borç Verme
0	2010-05-20	-	7.00
1	2010-12-17	-	6.50
2	2011-01-21	-	6.25
3	2011-05-08	-	5.75
4	2012-12-19	-	5.50

Data Visualization

After visualizing the data, differences between the chart of the news and chart of the real-data is seen clearly.

In [114]:
```python
#visualization with matplotlib
fig, axs = plt.subplots(1,1, figsize=(18,5))
x = df_tcmb['Tarih']
y = df_tcmb['Borç Verme']
plt.plot(x, y,linestyle="solid", linewidth=8, color='orange', marker='o',markerfa

#Add Text to markers
for n in range(df_tcmb.shape[0]):
    plt.annotate(s=df_tcmb['Borç Verme'][n], xy=(df_tcmb['Tarih'][n], df_tcmb['Bc

#Labels
plt.xlabel("Date")
plt.ylabel("Interest Ratio")

#title
plt.title("Republic of Turkey's Central Bank (TCMB) 'Policy Interest Rates'")

fig.show()
```
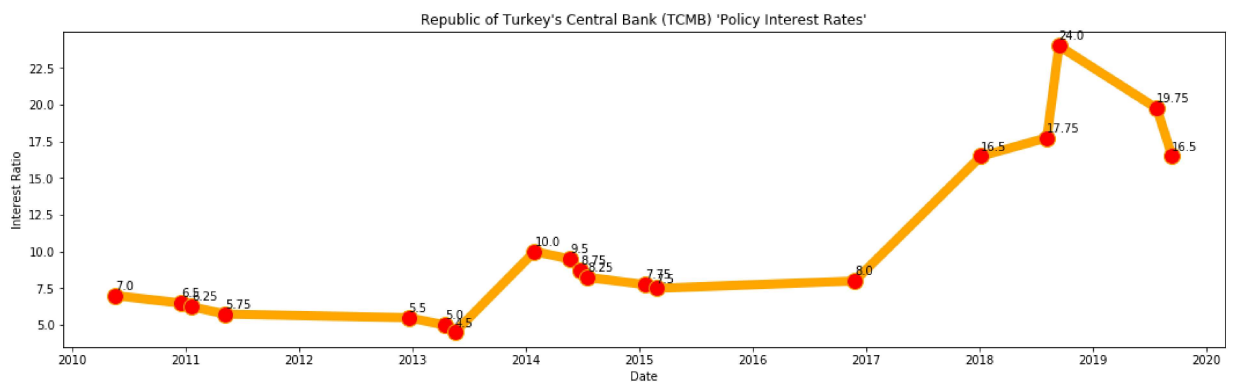
```
C:\Users\WIN\Anaconda3\lib\site-packages\ipykernel_launcher.py:18: UserWarning:
Matplotlib is currently using module://ipykernel.pylab.backend_inline, which is
a non-GUI backend, so cannot show the figure.
```


We can mechanize the misleadings;

- In x-axis of the chart does not compatible with the real-time. The time period of 24%-19.75% is more than 3 times longer than the time period of 17.75%-24%. But the reality of the "living with high-interest rates" is hidden in the chart.
- Also because of the manipulating in the x-axis, as if understood that the peak of the interest rate (24%) continues a small time period. But in real-time, "living with high-interest rates" continued nearly a year and this period should be shown in chart clearly.
- In chart, it is shown that there is a point (value) exist between the time period of 17.75%-24%. But in real data, there isn't any value exists between this period. With the chart, as if understood that reached the peak of the interest rates (24%) slowly. The reality of sharp increase is hidden with unreal data in the chart.
- Lastly, while looking at the chart it is understood that with the TCMB' decrease decision the interest rates come back the normal level. Because the chart contains the last 2 years period. If looking at the timeline more widely, it is understood that the interest rates are still high.

Visualization tells us much more information quickly than text in addition to permanent. It is an easy way to explain the long texts, numbers, correlations. But like this example, sometimes it can be used for misleading the public.