Salary Cap Trends

October 13, 2020

[1]:
```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

[112]:
```
#Only up until 2018 (basketball-reference.com)

salaryCapActual = pd.read_csv("salary_cap_85-18.csv", header = None)
salaryCapActual = salaryCapActual.drop(columns = [2])
salaryCapActual = salaryCapActual.set_index(0)
salaryCapActual.index.name = 'season'
salaryCapActual = salaryCapActual.rename(columns = {1 : 'Salary Cap'})
salaryCapActual
```

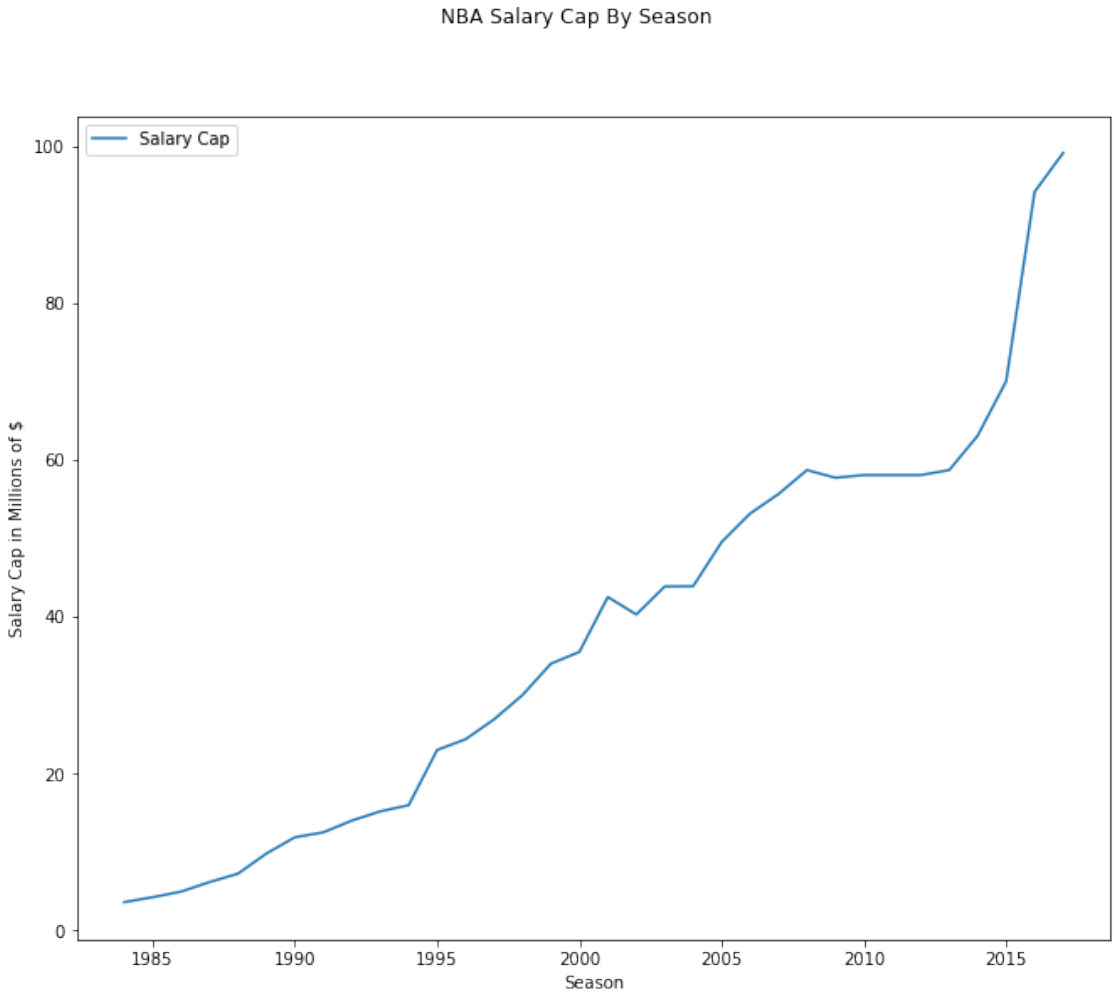
[112]:

season	Salary Cap
1984-85	$3,600,000
1985-86	$4,233,000
1986-87	$4,945,000
1987-88	$6,164,000
1988-89	$7,232,000
1989-90	$9,802,000
1990-91	$11,871,000
1991-92	$12,500,000
1992-93	$14,000,000
1993-94	$15,175,000
1994-95	$15,964,000
1995-96	$23,000,000
1996-97	$24,363,000
1997-98	$26,900,000
1998-99	$30,000,000
1999-00	$34,000,000
2000-01	$35,500,000
2001-02	$42,500,000
2002-03	$40,271,000
2003-04	$43,840,000
2004-05	$43,870,000

```
2005-06  $49,500,000
2006-07  $53,135,000
2007-08  $55,630,000
2008-09  $58,680,000
2009-10  $57,700,000
2010-11  $58,044,000
2011-12  $58,044,000
2012-13  $58,044,000
2013-14  $58,679,000
2014-15  $63,065,000
2015-16  $70,000,000
2016-17  $94,143,000
2017-18  $99,093,000
```

[186]:
```
salaryPlot = salaryCapActual.reset_index()


salaryPlot['Salary Cap'] = salaryPlot['Salary Cap'].str.replace('$', '').str.
↪replace(',', '').astype(int)
salaryPlot['Salary Cap'] = salaryPlot['Salary Cap'] / 1000000


salaryPlot['season'] = salaryPlot['season'].str.replace('-\d+', '')
salaryPlot['season'] = salaryPlot['season'].astype(int)

sPyear = salaryPlot['season']
sPcap = salaryPlot['Salary Cap']


salaryPlot.plot.line(x = 'season', y = 'Salary Cap', figsize = (11,9))


plt.xlabel('Season')
plt.ylabel('Salary Cap in Millions of $')
plt.suptitle('NBA Salary Cap By Season')
```

[186]:
```
Text(0.5, 0.98, 'NBA Salary Cap By Season')
```

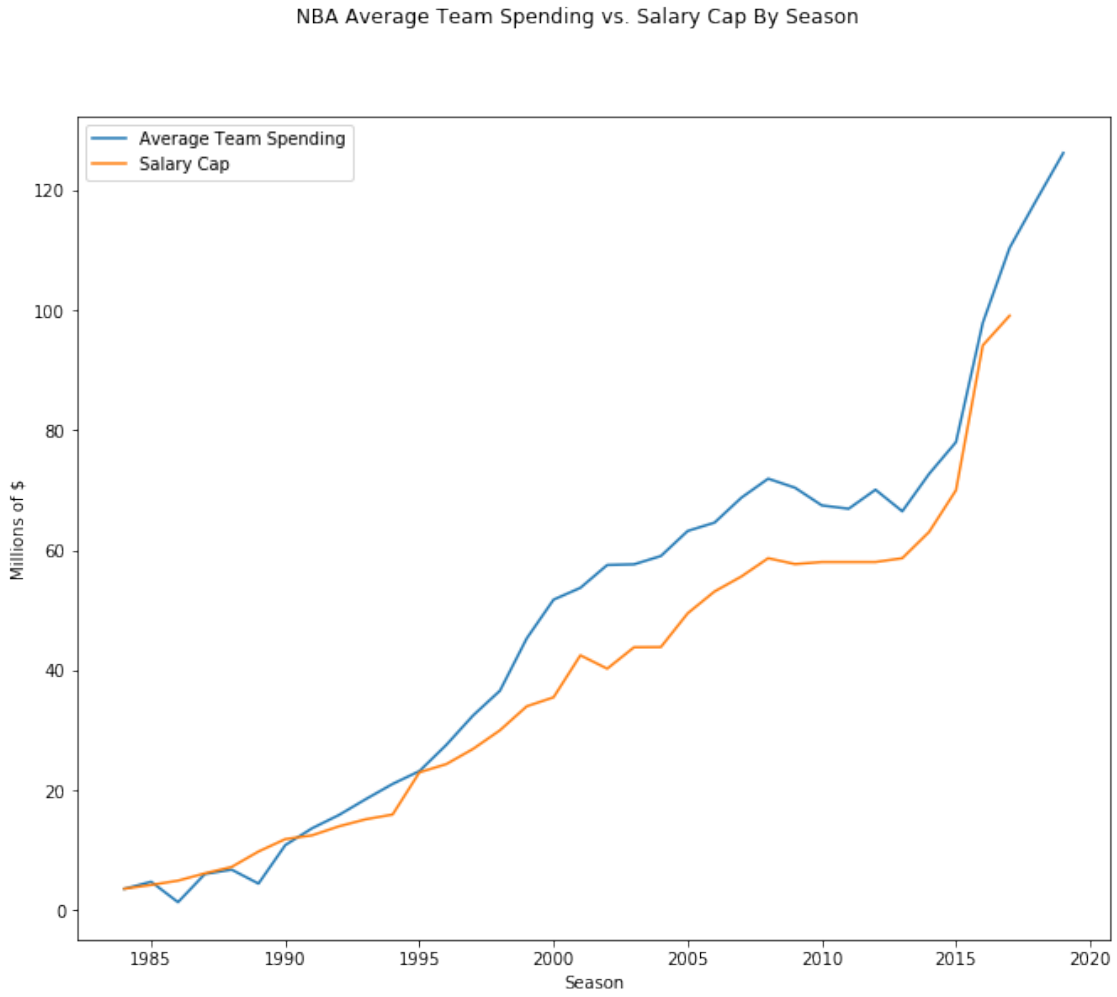


[232]:
```
#Used the salary data collected by our team

salaries = pd.read_csv("salaries_85.csv")
salDrop = salaries[['team', 'season', 'salary']]

#salDrop.groupby(['team', 'season']).agg(len)
# ^ Is this normal or could our salary data be limited for this graph?

salDrop['salary'] = salDrop['salary'].str.replace('$', '').str.replace('\.00',␣
↪'').str.replace('\,', '')
salDrop['salary'] = salDrop['salary'].astype(int)

salTeamSums = salDrop.groupby(['team','season']).agg(sum)
salTeamSums = salTeamSums.reset_index()

salSeasonAvgs = salTeamSums.drop(columns = ['team']).groupby('season').mean()
```

```
salSeasonAvgs['salary'] = salSeasonAvgs['salary'] / 1000000

salSeasonAvgs = salSeasonAvgs.reset_index()
salSeasonAvgs['season'] = salSeasonAvgs['season'].str.replace('-\d+', '')
salSeasonAvgs['season'] = salSeasonAvgs['season'].astype(int)

salAvgAndCap = salSeasonAvgs.merge(salaryPlot, on = 'season', how = 'left')
salAvgAndCap = salAvgAndCap.set_index('season')
salAvgAndCap = salAvgAndCap.rename(columns = {'salary' : 'Average Team␣
↪Spending'})
salAvgAndCap.plot.line(figsize = (11,9))

plt.xlabel('Season')
plt.ylabel('Millions of $')
plt.suptitle('NBA Average Team Spending vs. Salary Cap By Season')
```

```
<ipython-input-232-65387f19d3a4>:7: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  salDrop['salary'] = salDrop['salary'].str.replace('$', '').str.replace('\.00',
'').str.replace('\,', '')
<ipython-input-232-65387f19d3a4>:8: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  salDrop['salary'] = salDrop['salary'].astype(int)
```

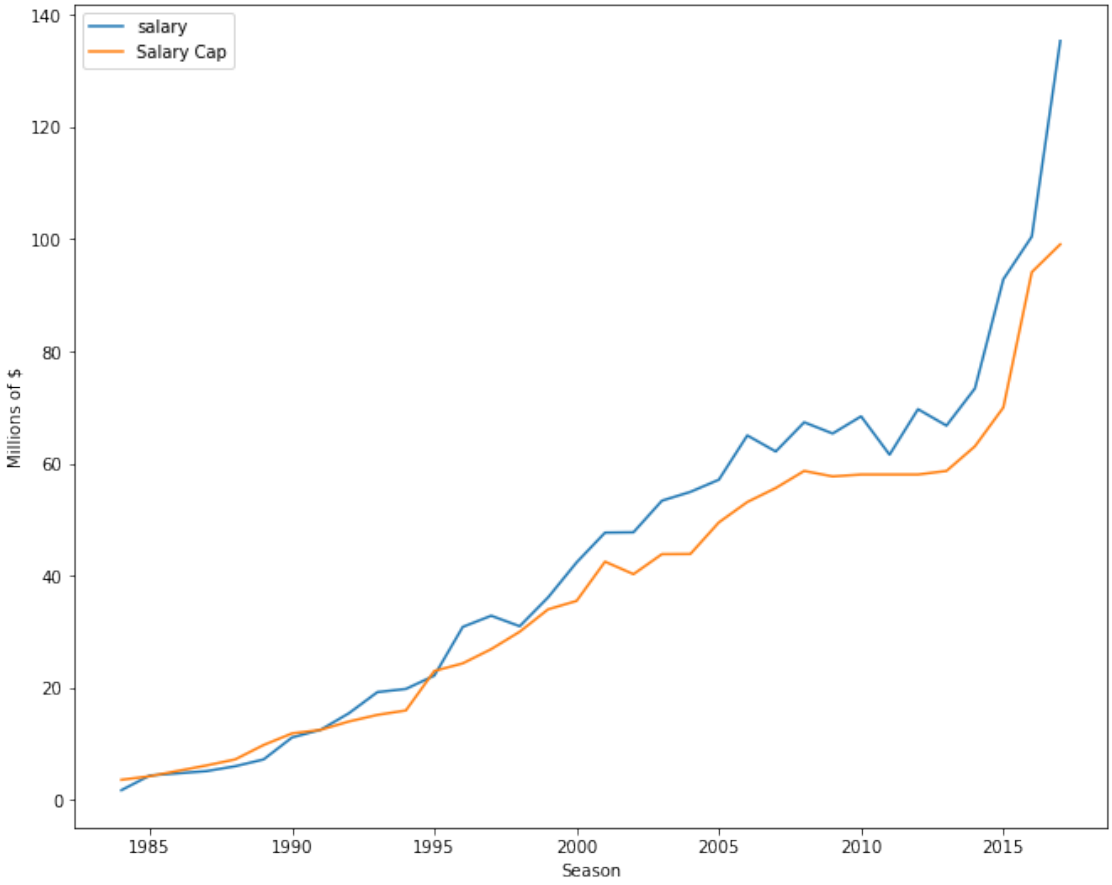
[232]: Text(0.5, 0.98, 'NBA Average Team Spending vs. Salary Cap By Season')



[231]:
```
salGSW = salGroup[salGroup['team'] == 'Golden State Warriors']
salaryCapReset = salaryCapActual.reset_index()
salGSW['salary'] = salGSW['salary']/1000000

salGSW['season'] = salGSW['season'].str.replace('-\d+', '')
salGSW['season'] = salGSW['season'].astype(int)


salGSW = salGSW.merge(salaryPlot, on = 'season', how = 'left').dropna()
salGSW = salGSW.drop(columns = ['team']).set_index('season')
salGSW = salGSW.rename({'salary' : 'Total Salary'})
salGSW.plot.line(figsize = (11,9))

plt.xlabel('Season')
plt.ylabel('Millions of $')
plt.suptitle('Golden State Warriors Team Spending vs. Salary Cap By Season')
```

```
<ipython-input-231-cd7d939a5de5>:3: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  salGSW['salary'] = salGSW['salary']/1000000
<ipython-input-231-cd7d939a5de5>:5: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  salGSW['season'] = salGSW['season'].str.replace('-\d+', '')
<ipython-input-231-cd7d939a5de5>:6: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  salGSW['season'] = salGSW['season'].astype(int)
```

[231]: `Text(0.5, 0.98, 'Golden State Warriors Team Spending vs. Salary Cap By Season')`


Golden State Warriors Team Spending vs. Salary Cap By Season
salary
Salary Cap
Millions of $
Season
0
20
40
60
80
100
120
140
1985
1990
1995
2000
2005
2010
2015