In [68]:

```
# i removed  all the NAN from the csv file

import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
exchange = pd.read_csv('exchange.csv')
print(exchange)
print(exchange.columns)
print(exchange[' Average '])
print(exchange['Title'])
aaa = pd.Series(exchange.to_numpy)
print(aaa)
```

```
        Title   Average
0        1997     2.2680
1        1998     2.4596
2        1999     2.4040
3        2000     2.2491
4        2001     2.2299
..        ...        ...
437  2022 AUG     1.5492
438  2022 SEP     1.5093
439  2022 OCT     1.5499
440  2022 NOV     1.5781
441  2022 DEC     1.6560

[442 rows x 2 columns]
Index(['Title', ' Average '], dtype='object')
0      2.2680
1      2.4596
2      2.4040
3      2.2491
4      2.2299
        ...
437    1.5492
438    1.5093
439    1.5499
440    1.5781
441    1.6560
Name:  Average , Length: 442, dtype: float64
0          1997
1          1998
2          1999
3          2000
4          2001
         ...
437    2022 AUG
438    2022 SEP
439    2022 OCT
440    2022 NOV
441    2022 DEC
Name: Title, Length: 442, dtype: object
0    <bound method DataFrame.to_numpy of         Ti...
dtype: object
```

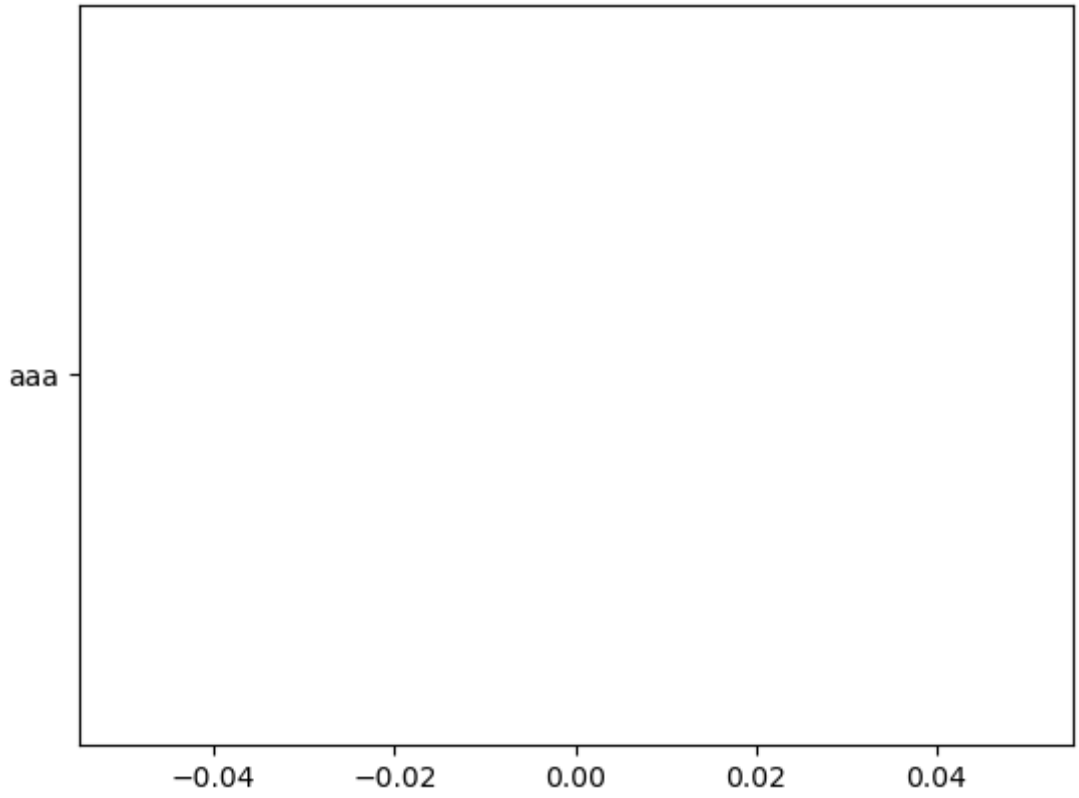
In [35]:

```
print(exchange.columns)
print(exchange[' Average '])
print(exchange['Title'])
aaa = pd.Series(exchange.to_numpy)
print(aaa)
```

```
Index(['Title', ' Average '], dtype='object')
0      2.2680
1      2.4596
2      2.4040
3      2.2491
4      2.2299
        ...
437    1.5492
438    1.5093
439    1.5499
440    1.5781
441    1.6560
Name:  Average , Length: 442, dtype: float64
0          1997
1          1998
2          1999
3          2000
4          2001
         ...
437    2022 AUG
438    2022 SEP
439    2022 OCT
440    2022 NOV
441    2022 DEC
Name: Title, Length: 442, dtype: object
0    <bound method DataFrame.to_numpy of         Ti...
dtype: object
```

In [140]:

```
import seaborn as sns
import matplotlib.pyplot as plt
plt.plot('aaa')
sns.scatterplot()
plt.show()
```



Type *Markdown* and LaTeX: α^2

In [71]:

```
exchange
```

Out[71]:

	Title	Average
0	1997	2.2680
1	1998	2.4596
2	1999	2.4040
3	2000	2.2491
4	2001	2.2299
...	...	...
437	2022 AUG	1.5492
438	2022 SEP	1.5093
439	2022 OCT	1.5499
440	2022 NOV	1.5781
441	2022 DEC	1.6560

442 rows × 2 columns

In [74]:

```
sss= exchange[['Title', ' Average ']]
print(sss)
```

```
        Title   Average
0        1997     2.2680
1        1998     2.4596
2        1999     2.4040
3        2000     2.2491
4        2001     2.2299
..        ...        ...
437  2022 AUG     1.5492
438  2022 SEP     1.5093
439  2022 OCT     1.5499
440  2022 NOV     1.5781
441  2022 DEC     1.6560

[442 rows x 2 columns]
```

In [79]:

```
sss= sss.drop_duplicates(subset='Title')
print(sss)
ccc= sss.drop_duplicates(subset=' Average ')
print(ccc)
```

```
        Title   Average
0        1997     2.2680
1        1998     2.4596
2        1999     2.4040
3        2000     2.2491
4        2001     2.2299
..        ...        ...
437  2022 AUG     1.5492
438  2022 SEP     1.5093
439  2022 OCT     1.5499
440  2022 NOV     1.5781
441  2022 DEC     1.6560

[434 rows x 2 columns]
        Title   Average
0        1997     2.2680
1        1998     2.4596
2        1999     2.4040
3        2000     2.2491
4        2001     2.2299
..        ...        ...
437  2022 AUG     1.5492
438  2022 SEP     1.5093
439  2022 OCT     1.5499
440  2022 NOV     1.5781
441  2022 DEC     1.6560

[434 rows x 2 columns]
```

In [76]:

```
sss.shape
```

Out[76]:

```
(442, 2)
```

In [ ]:

```
sss.set_index('Title',inplace=True)
```

In [89]:

```
sss.head()
```

Out[89]:

Title	Average
1997	2.2680
1998	2.4596
1999	2.4040
2000	2.2491
2001	2.2299

In [97]:

```
sss.iloc[10:400]
```

Out[97]:

Title	Average
2007	2.1467
2008	1.9621
2009	1.7800
2010	1.5925
2011	1.5862
...	...
2019 JUL	1.6340
2019 AUG	1.6133
2019 SEP	1.6363
2019 OCT	1.6683
2019 NOV	1.7053

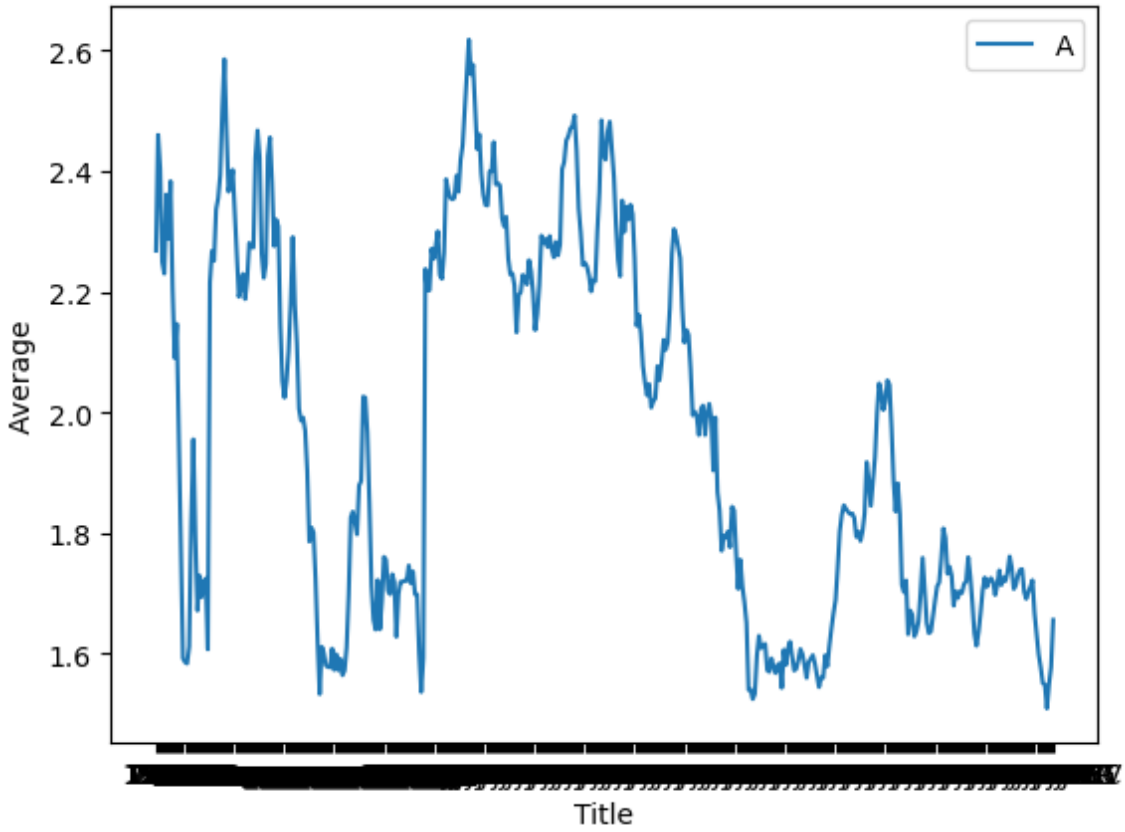
390 rows × 1 columns

In [143]:

```
import matplotlib.pyplot as plt
import seaborn as sns
plt.figure
plt.plot(sss)
plt.show
plt.xlabel('Title')
plt.ylabel(' Average ')
plt.legend('A')
sns.lineplot()
```

Out[143]:

```
<AxesSubplot:xlabel='Title', ylabel=' Average '>
```

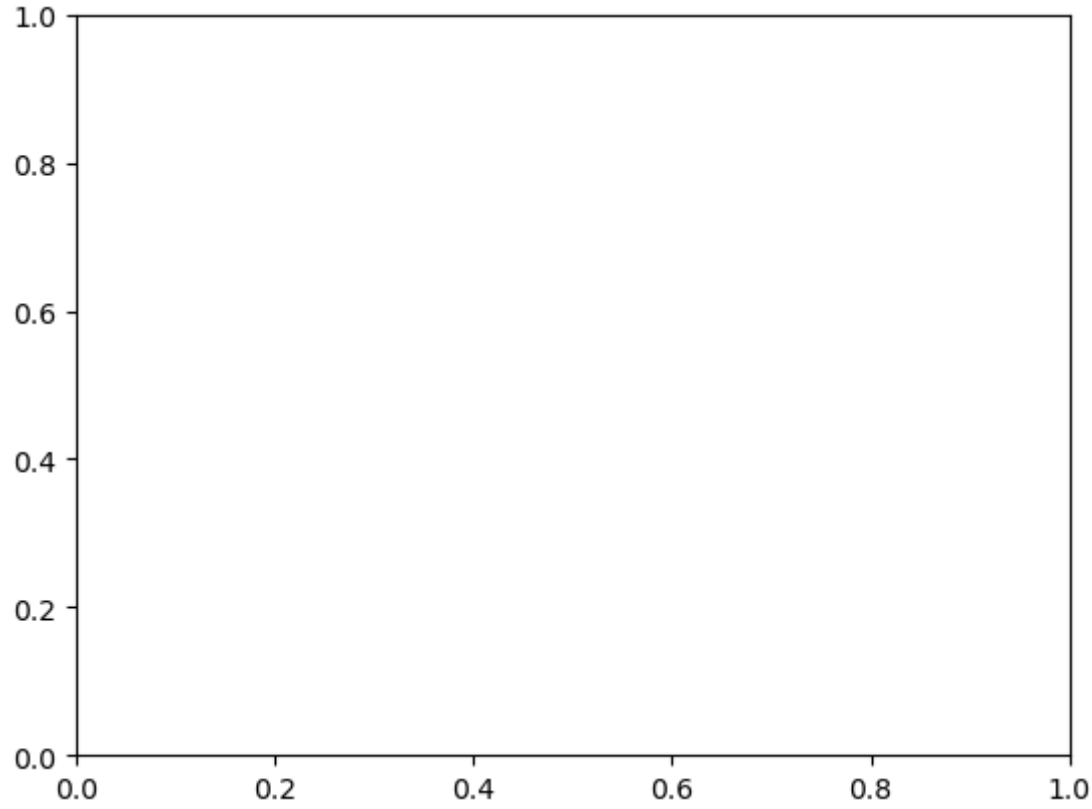


In [120]:

```
import seaborn as sns
sns.lineplot()
```

Out[120]:

```
<AxesSubplot:>
```



In [122]:

```
plt.figure()
```

Out[122]:

```
<Figure size 640x480 with 0 Axes>
```

```
<Figure size 640x480 with 0 Axes>
```

In [ ]: