import pandas as pd

import numpy as np

columns = ['公司名称','报告期年份','营业收入（万元）','营业支出（万元）',]

data=pd.DataFrame(data=[

['公司 A','2016','330000','250000'],

['公司 A','2018','350000','260000'],

['公司 A','2019','410000','290000'],

['公司 A','2020','330000','330000'],

['公司 B','2022','250000','290000'],

['公司 A','2021','290000','300000'],

['公司 B','2020','210000','250000'],

['公司 B','2022','250000','290000'],

['公司 B','2021','240000','230000'],

],columns=columns,index=None)

def calc(x):

df = x.sort\_values(by = '报告期年份',ascending=True)

profit=[]

last = None

for index, row in df.iterrows():

if last is None:

profit.append(np.nan)

else:

r =float(row['营业收入（万元）'])-float(last['营业支出（万元）'])

p = float(last['营业收入（万元）'])-float(last['营业支出（万元）'])

profit.append((r-p)/r)

last = row

df['利润']=profit

return df

result = data.groupby(['公司名称']).apply(calc)

print(result)