Discovering the Top Investment Banks' Performance and the Factors that Could Affect It

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Introduction

Investment banks play a critical role in the financial world, facilitating corporate and government transactions, managing capital-raising activities, and providing strategic financial advice to their clients. The performance of investment banks is an important measurement of the health of financial markets, it also provides valuable insights into our society's economy.

Our project discovers the performance of investment banks and focus on the factors that could influence investment banks' performances. We divide it into 2 major parts: The viewpoint of investment banks and macroeconomic/market issues. Figure 1, a plot from Statista, shows the market share of various investment banks. We select the top market share investment banks J.P. Morgan & Co. (JPM), Bank of America (BAC), Citigroup (C), Morgan Stanley (MS), and Credit suisse Group (CS). We believe these banks are the most representative ones in the investment bank field, so we will focus on these banks in our project to explore the factors that could affect their performance.

In the first part, we visualized the trend of Return on Investment (ROI) and revenue to explore the investment bank performance. The results indicate a positive correlation between ROI and revenue, suggesting that higher ROI tends to lead to higher revenue.

The second part focus on macroeconomic and market issue factor. A higher GDP usually lead to higher revenue for investment banks. By visualizing the correlation between the interest rate and the five investment banks' profit (measured in millions), four of the five investment banks show a positive correlation to various extents.

Analysis

1. The Viewpoint of the Investment Banks

We first want to examine the performance of investment banks. The measurements we choose are the investment bank's revenue and return on investment (ROI). While revenue is a straightforward metric that measures the total amount of money a company generates from its operations, ROI measures the return on investment generated by a bank's trading and investment portfolios. We believe that higher revenue and ROI indicate better bank performance.

In Figure 2, we can see a clear divergence of different banks' revenue. JPMorgan, BOA, and Citigroup have constantly higher revenue than the other two, we may conclude that these three banks weigh more in the investment bank field. In addition, we can notice since 2013, all 5 banks' revenue are growing constantly until mid lare 2019, which is the period pandemic starts. In Figure 3, we can find although there is a divergence in these banks' revenue, their ROI is showing similar trends. Before the pandemic period, the ROI fluctuates in early 2010s, and it becomes constant. During the relatively constant period, the ROI for the 4 major banks is between 3% - 6%, which is a relatively high and healthy rate for ROI. However, for the less well performing bank Credit Issue, we can see its ROI fluctuate a lot and even drop below zero. It is noticeable that the ROI for the more well performed 4 banks first dropped at the beginning of the pandemic, then it rapidly grows during the mid-late period of the pandemic. We think this is a good point for future research.

In Figure 4, we examined the relationship between investment bank revenue and ROI. We found that for JP Morgan, Goldman Sachs, and Morgan Stanley, the ROI is positively related to the revenue, while the other two banks are weakly negatively correlated. This implies that higher revenue can lead to a better ROI, indicating better bank performance.

Overall, our analysis suggests that higher revenue and ROI are positively correlated with better investment bank performance. However, we must consider each bank's trading strategies and risk management practices while analyzing its performance.

2. Macroeconomic/Market Issue

2.1 GDP

GDP is a straightforward metric of the social economy, so we want to discover the relationship between it and investment bank performance. In Figure 5, 4 banks with larger market share show a positive correlation between these GDP and revenue, indicating that a strong economy is beneficial for investment banks. This relationship could be explained by the fact that a strong and growing economy provides more investment opportunities and financing needs, leading to increased business for investment banks.

However for the Credit Suisse Group there is a weakly negative relationship between the two metrics. We believe that this could be due to the fact that Credit Suisse Group are not US investment banks, so US GDP may not impact it the same way like to other banks. Therefore, we concluded that investment banks' performance is largely dependent on the overall health and growth of the economy. A higher revenue and GDP could indicate a better investment bank performance.

2.2 Interest Rate vs. Profit

The profitability of the investment banks is inseparable from the market. Some macroeconomic indicators such as GDP, can affect the performance of the investment banks. We would like to study the relationship between interest rates and investment banks' revenue. The two datasets we used are "Merged" which describes the seasonal revenue of each of the five investment banks from 2019 to 2023-3-31, and the annual U.S. real interest rate.

In cleaning the datasets, we reset the type of each revenue data to integer, set the column "Date" as the index, create and group by a new column "Year", and calculate the average annual revenue of each investment bank. Then, we merge the two datasets together using inner join by date (Table 1). Figure 6 displays the relationship between the interest rate and each investment's revenue. The equation of the five regression lines are:

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JPM/jpmorgan-chase: y = 13416.70x + 87482.11
BAC/bank-of-america: y = 4918.90x + 98284.47
C/citigroup: y = 2445.05x + 90340.75
MS/morgan-stanley: y = 4471.91x + 25535.84
CS/credit-suisse-group: y = -5307.52x + 48606.93
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Base on the plot and the calculation of the equation of each regression line, four of the five investment banks show a positive correlation between the two variables. This means that interest rate plays a role in investment banks' performance. Investment banks earn revenue by issuing bonds and other financial instruments, an increase in the interest rate can lead to an increase in bond issuance because cost of borrowing money on the demand side of the fund will also increase, they will tend to borrow money at a lower cost. Thus, increasing the issuance of bonds will meet their needs. For investment banks, the increase in bond issuance means that they earn more commissions. In addition, the increasing volume of transactions also leads to revenue growth.

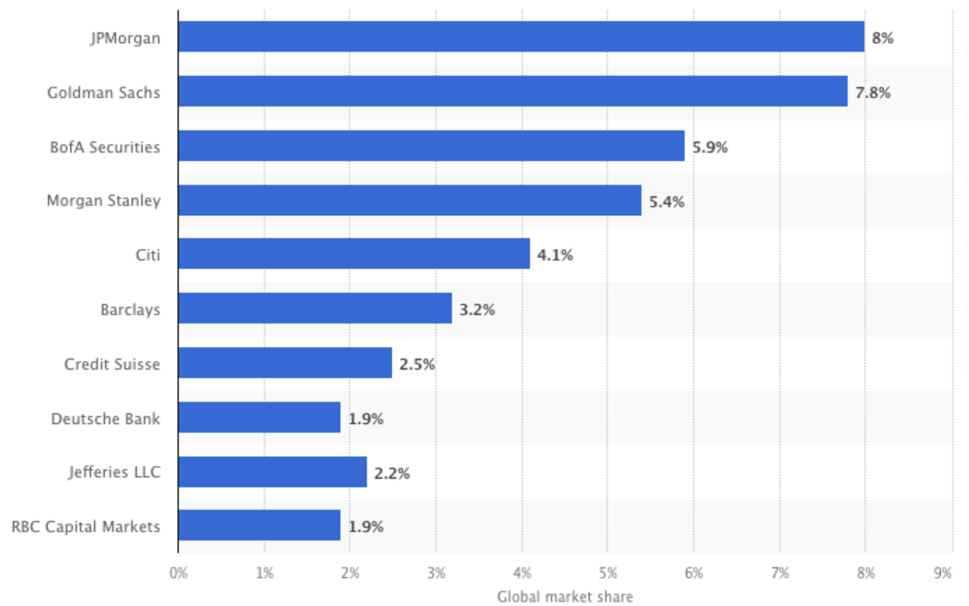
Conclusions and Directions for future research

From the analysis above, we conclude that ROI, GDP, and Interest Rate are the factors that can affect investment banks' performance.

In addition, future research is also needed to refine our conclusion. Firstly, the definition of "good investment bank performance" needs improvement. In this study, we choose profitability and revenue as the measurement of performance; however in the real world, the measurement tends to be more complex. Furthermore, other factors that can affect the performance also exist, such as the fluctuation of the market and Net Interest Margin (NIM). We need to further study and closely monitor the development of various tracks in the financial market, as well as the international economic situation.

Appendix A: Figures and Tables

Figure 1: Market share of global investment banks (2022)



Source: https://www.statista.com/statistics/271008/global-market-share-of-investment-banks/

Figure 2: Investment bank revenue over time

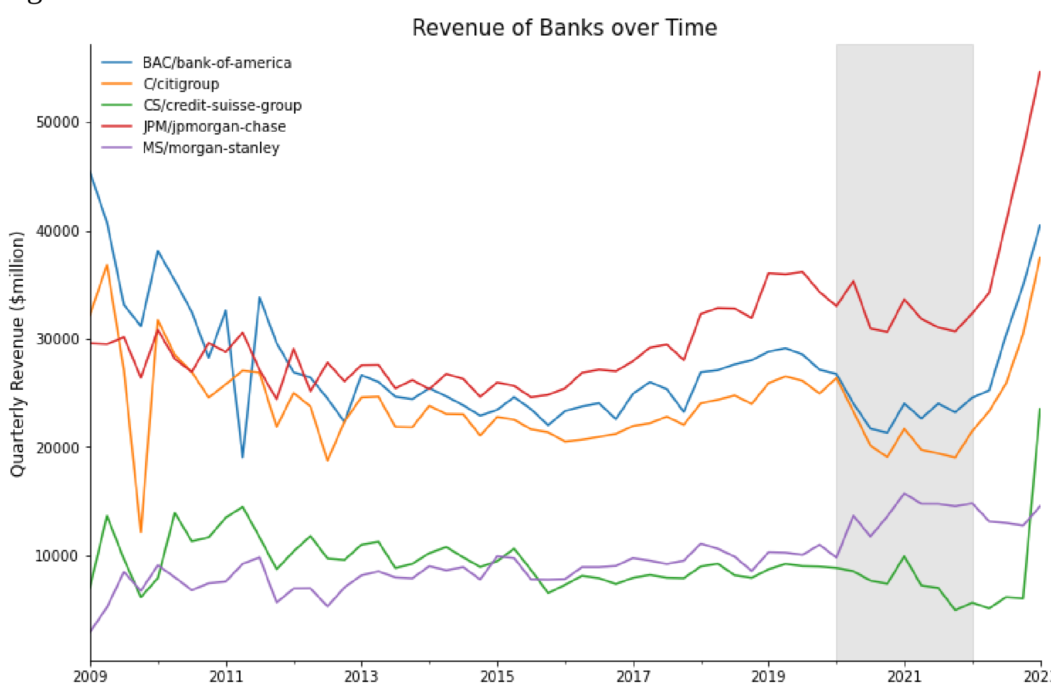


Figure 3: Return on investment over time

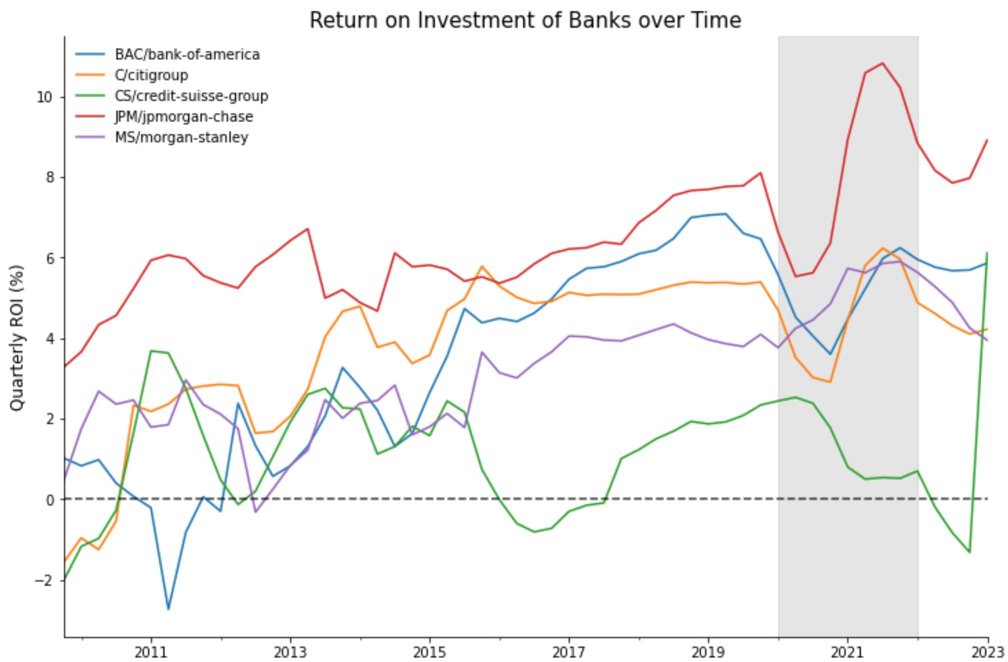


Figure 4: Relationship between Revenue and ROI for 5 investment banks

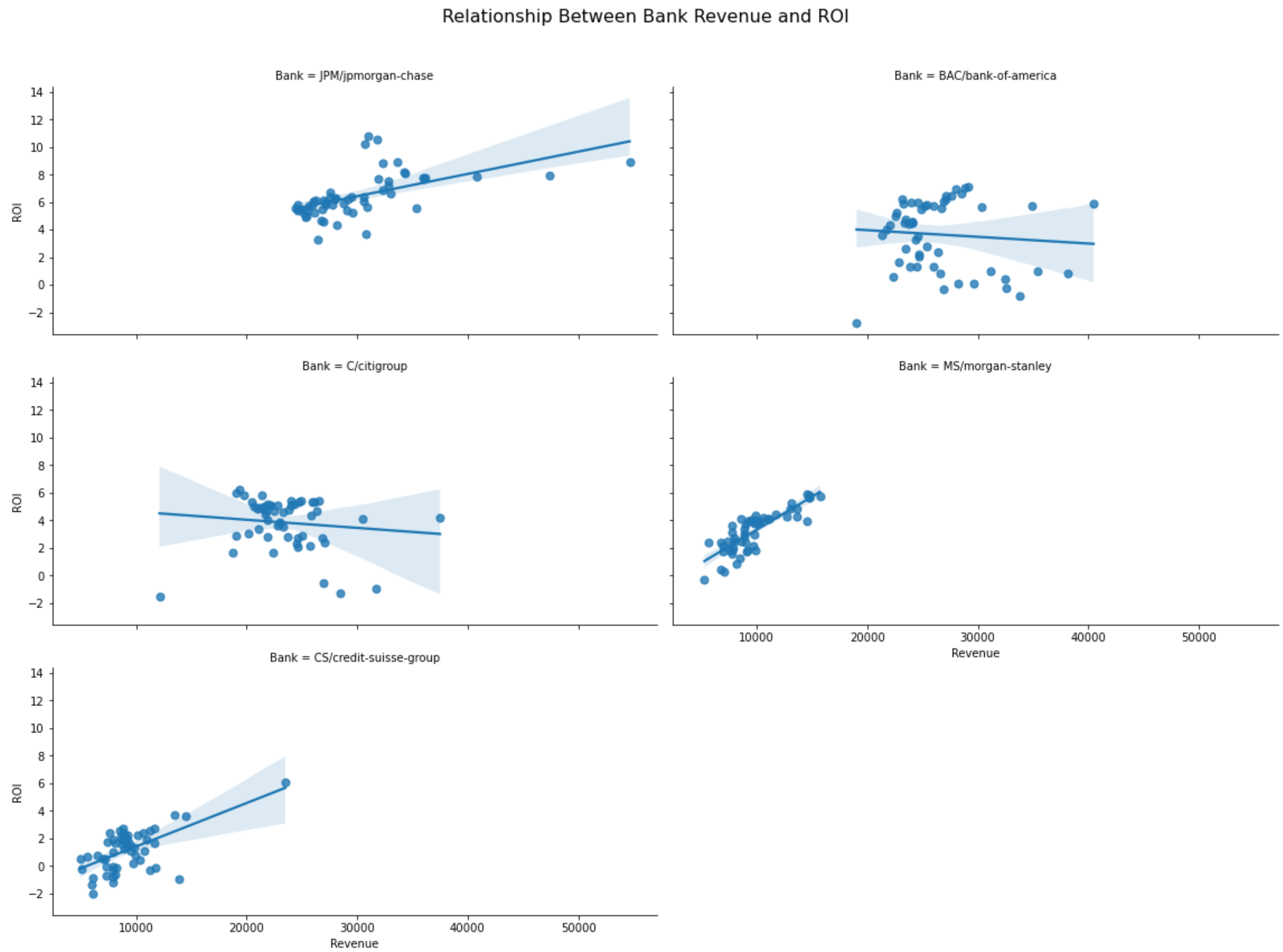


Figure 5: Relationship between real GDP and Investment bank revenue

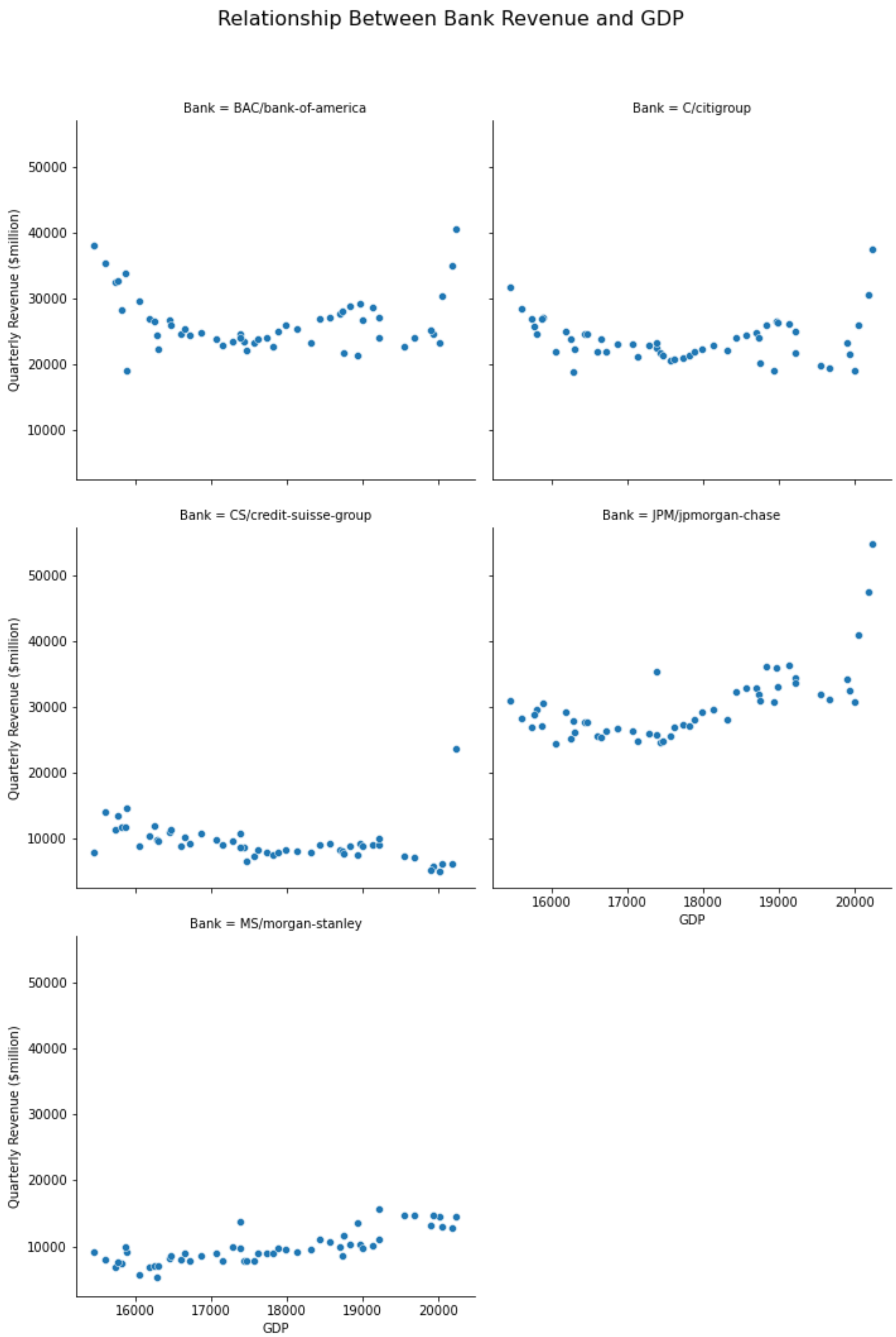


Figure 6: Relationship between Real Interest Rate and Investment Banks' Profit

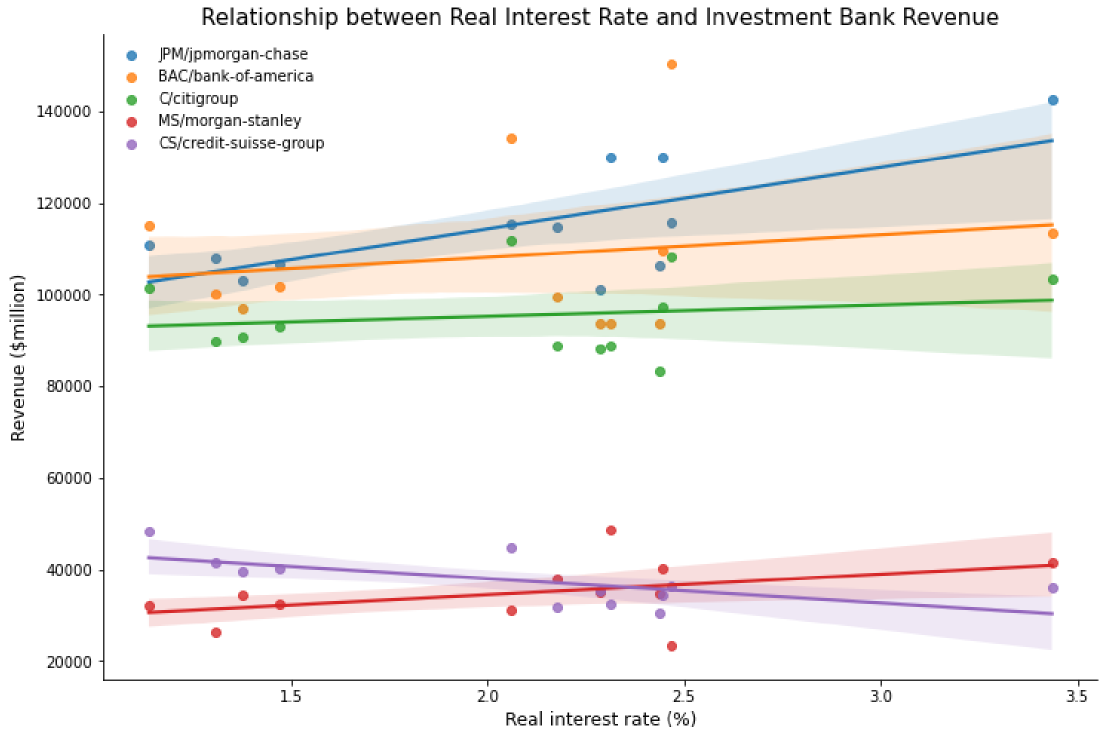


Table 1: Combined Datasets of Investment Bank Revenue and Real Interest Rate

	Real interest rate (%)	BAC/bank-of-america	C/citigroup	CS/credit-suisse-group	JPM/jpmorgan-chase	MS/morgan-stanley
2009-12-31	2.468829	150450.0	108187.0	36414.0	115632.0	23280.0
2010-12-31	2.060737	134194.0	111697.0	44751.0	115475.0	31230.0
2011-12-31	1.137338	115074.0	101540.0	48302.0	110838.0	32227.0
2012-12-31	1.307083	100078.0	89802.0	41402.0	108074.0	26178.0
2013-12-31	1.469299	101697.0	92901.0	40263.0	106717.0	32493.0
2014-12-31	1.374742	96829.0	90909.0	39689.0	103009.0	34275.0
2015-12-31	2.285696	93514.0	88275.0	35216.0	101006.0	35155.0
2016-12-31	2.436851	93662.0	83309.0	30596.0	106387.0	34631.0
2017-12-31	2.175694	99466.0	88962.0	31912.0	114579.0	37945.0
2018-12-31	2.444494	109627.0	97120.0	34274.0	129824.0	40107.0
2019-12-31	3.436010	113589.0	103449.0	35883.0	142515.0	41538.0
2020-12-31	2.311111	93753.0	88839.0	32382.0	129911.0	48757.0