

Business Management HL Internal Assessment

***What are the positive and negative effects of Caterpillar Inc.
relocating their headquarters and how can the problems be resolved?***

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Executive Summary

The growth potential of Caterpillar was always debated before relocation. Thus, it led to the question: “What are the positive and negative effects of Caterpillar Inc. relocating their headquarters and how can the problems be resolved?”.

Following this, primary research was conducted through an interview and discussion with senior engineers and the focus group of Caterpillar pointing out the potential powers and perils after headquarter relocation. This information was utilized in STEEPLE analysis to evaluate each factor. Secondary data was gathered from Caterpillar’s income statement to calculate the profit margins and economies of scale to assess its current performance and accessibility to its objective.

After research, a conclusion was reached: when analyzing factors of locations, the company’s weak yet positive profit margins, and the economies of scale’s saturation yet optimization over the recent years, relocation is justified and can lead to improvements for the future.

However, in order to make a breakthrough, the problem of flat total revenues can be resolved by recruiting new talents in Chicago while maintaining the efficiency brought by the infrastructure of Chicago. Furthermore, the problem of a weak improved margin of a saturated product can be resolved by transferring concentration to other products’ improvements.

Introduction

Caterpillar was officially founded in Peoria in 1925 by merging with a manufacturing company in California. Today, Caterpillar is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines, and diesel-electric locomotives. By the end of 2017, Caterpillar officially relocated its headquarters to Deerfield, Illinois (suburb of Chicago). In 2020, Caterpillar operates across 6 continents with over 500 dealer locations in the world.

The Chicago area was selected to be the location of the new headquarters because Chicago presents the global access desired but allows the history of Caterpillar to remain in the midwest. Although Caterpillar announced the relocation to the Chicago area would cost less than previous with an existing office space and fewer people¹ regardless of the operation in the major city, their total expense increased by 12% in 2018. However, The purpose of this important relocating decision was to prioritize Caterpillar's resources to focus on profitable growth². Due to the perspectives of success in relocation, the comparison and analysis of Caterpillar are vital; hence the research question: What are the positive and negative effects by Caterpillar Inc. relocating their headquarters and how can the problems be resolved?

¹ Appendix A

² Appendix A

Methodology

This investigation combined two primary and two secondary resources to provide a well-advised conclusion. For the primary research, an interview with a Caterpillar engineer and a discussion with a focus group in Caterpillar was conducted. The Caterpillar engineer provided detailed responses for the analysis of STEEPLE factors and current company performance. The focus group discussion resolved concerns and fulfilled expectations of relocation.

Then, secondary research was conducted by analyzing the company's financial statements. These statements reflected the circumstances using statistical comparison and predicted the potential predicatments. Lastly, the use of economies of scale ascertained the progress rate of Caterpillar in prioritizing profit growth by measuring quantity of output and cost.

Main Results and Findings

- The engineer interviewee was confident in Caterpillar's relocation. The information he provided was positive of current and future company's performance³.
- The focus group discussion was positive of Caterpillar's performance⁴ too; it addressed all the concerns before relocation.
- Both gross and net profit margins were positive over the recent four years. Gross profit margins⁵ increased from 25% to 31%, and net profit margins⁶ increased from 3% to 15%, indicating significant efficiency improvements in figure 1:

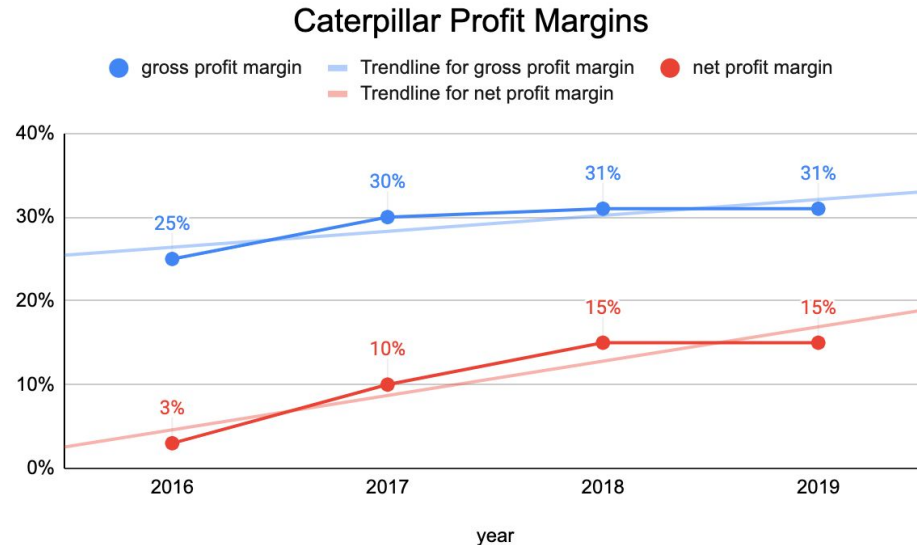


Figure 1. Caterpillar profit margins before and after relocation

³ Appendix B

⁴ Appendix A

⁵ Appendix C

⁶ Appendix C

- According to the engineer, the economies of scale of Caterpillar 797⁷ (figure 2) was optimized at an average cost of \$3.4M with an annual output of 3,854 in 2018, then the output was slightly decreased due to market saturation and petroleum/ore prices⁸, as seen in figure 3 below.



Figure 2. Image of Caterpillar 797

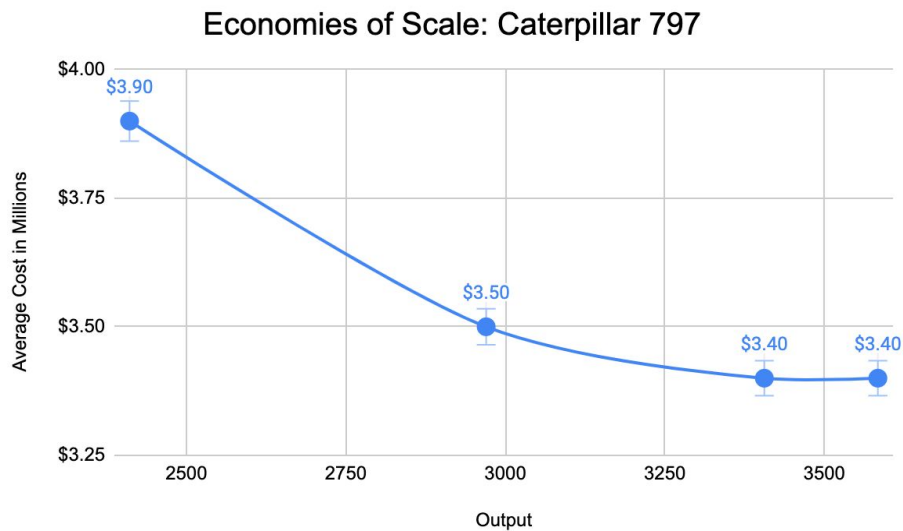


Figure 3. Caterpillar's Economies of Scale before and after relocation

⁷ Appendix B4

⁸ Appendix B5

Analysis and Evaluation

The focus group discussion took place before the relocation. The discussion showed that Caterpillar had an emphasis on the implementation of the Operation & Executive Model to allocate resources to areas with the greatest potential for profitable growth⁹. During the discussion, the Strategic Planning Committee (SPC) announced that the ultimate objective of relocation is to keep the company stable and strong by reviewing other growth objectives while strengthening the core. To specify, Caterpillar would not only maintain the profitable level of the core business but also review the geographical expansion, technology extension, and upstream and downstream opportunities. In the discussion, a comprehensive analysis of the relocating decision was conducted by the Board of Directors. Concluding that the relocation would improve access to customers, dealers, and employees and prioritize the company's profitable growth, the directors finalized the resettlement at Chicago¹⁰.

The interview with the senior engineer detailed the STEEPLE factors (social, technical, economic, environmental, political, legal, and ethical) that were assessed to thoroughly examine the results of relocation. The engineer mainly explained how the relocation affected the first four factors and contributed to the company's gross profit.

Caterpillar's relocation to Chicago led to a change in the first STEEPLE factor, social, which has allowed Caterpillar easier access to a larger customer base and improvement

⁹ Appendix A

¹⁰ Appendix A

in company structure¹¹. Chicago's population is not only larger than Peoria by twentyfold but it also has a 7% larger percentage of potential customers. Therefore, by relocating to Chicago, which allows for direct communication with a larger customer base, Caterpillar can increase customer demand for its products and therefore contribute to an improvement in the company's gross profit.

The engineer also revealed that Chicago's social demographics have also improved company structure by attracting more young talented people in Chicago with AI knowledge, allowing an improvement in the second STEEPLE factor, technical. This increase in quantity and quality of AI knowledge has led to improvements in the company's automation driving truck technology¹². In fact, automation truck operations is a significant factor that allows Caterpillar to remain a leader in the industries they serve. In addition, the strong technology team contributed to an increase in demand for Caterpillar's trucks by devising and implementing strong abrasion resistance. Therefore, the company's relocation to Chicago allowed a growth in profit along with a decrease in production costs due to the efficient hiring of Chicago's young and technologically advanced engineers.

For the third STEEPLE factor, economic, the engineer acknowledges that Caterpillar is facing economic recession but argues that the relocation itself did not affect the company's economy. Instead, the global economy, especially in petroleum and ore¹³,

¹¹ Appendix B1

¹² Appendix B2

¹³ Appendix B5

affects Caterpillar's particular product demand and regular internal operations. Moreover, although the unemployment rate has always been high in Chicago, the engineer claimed that Caterpillar has continued to have a normal recruitment and retirement cycle¹⁴.

The fourth STEEPLE factor, environmental, was improved due to the existence of O'Hare Airport in the Chicago area. With an influential airport in its environment, Caterpillar has easier access to international transportation, which increases transaction efficiency while reducing transaction costs¹⁵.

According to the reference of the interview, Caterpillar and its employees tend to be benefitted from relocation. Through the improvement of four different STEEPLE factors, Caterpillar's relocation has led to profitable growth, which is the company's focus.

In order to obtain a more objective reflection on the performance and the profitability of the company since relocation, Caterpillar's financial statements were analyzed. The range to compare and calculate is the four years before and after relocation (2016-2019).

Because Caterpillar prioritizes their growth profitability, both gross and net profit margins would be calculated. According to Yahoo Finance, the total revenues (in

¹⁴ Appendix B6

¹⁵ Appendix B8

millions) from year 2016 to 2019 are \$38537, \$45462, \$54722, and \$53800. The gross profit margins to years are 25%, 30%, 31%, and 31% based on the formula:

$$\frac{\text{gross profit}}{\text{sales revenue}} \times 100$$

According to Yahoo Finance, the total expenses¹⁶ with respect to years (in millions) are \$37444, \$41056, \$46429, and \$45510. The net profits¹⁷ (in millions) are obtained as follows: \$1093, \$4406, \$8293, and \$8290; the net profit margins to years are 3%, 10%, 15%, and 15% based on the formula:

$$\frac{\text{net profit}}{\text{sales revenue}} \times 100$$

As seen in figure 1, the trendlines represent positive gross and net profit margins in the two years before and after the relocation. Within these four years, the profitability of the company exceeds the COGS followed by the corresponding percentage, so Caterpillar has achieved its objective to obtain profitable and stable growth. The increased inclination of its net profit margin demonstrates that Caterpillar has become more efficient at converting sales into net profits with less administrative costs in between. By comparing net profit margins, the efficiency was increased by 21% after relocation because of the reduced administrative costs, which were saved on existing office

¹⁶ Appendix C

¹⁷ Appendix C

buildings and transportation. According to the financial statements, expenses of rent and transportation are other operational expenses¹⁸ (in millions), which were decreased from approximately \$2,000 to \$1,300 after relocation.

The profit margins in 2019 remained as those of 2018 did not demonstrate overall profitability; however, it was likely caused by the global petroleum and ore prices according to the interview. As the suppliers of the equipment for petroleum/ore exploitation, the increased prices of which would decrease the customer demand for purchasing equipment, so the total revenues would not increase. This global situation would not only prevent Caterpillar from obtaining high profitability but also affect the precision when evaluating its overall performance¹⁹ in 2019.

According to the engineer, the outputs of Caterpillar 797 (shown in figure 2), one of the automatic driving trucks, were 2,411, 2,970, 3,854, 3,406, and the average costs²⁰ have slightly varied at \$3.90, \$3.50, \$3.40 from the year 2016 to 2019. Using this data from the interview, the figure 3 below, which displays the economies of scale of Caterpillar before and after relocation, was created.

As seen in figure 3, Caterpillar's relocation lowered the average cost of Caterpillar 797 by \$0.5 million due to savings on transportation and improvements in technology. The graph of economies of scale demonstrates that the relocation enables the production

¹⁸ Appendix C

¹⁹ Appendix C

²⁰ Appendix B4

and cost advantage to be more efficient. Reclaimed by the engineer, the slight decrease in output from 2018 to 2019 was resulting from the recession in the global economy. Overall the revenues of Caterpillar 797 have increased compared to before relocation.

Conclusion

Both positive and negative effects are pointed out with relocation, mainly concluding on infrastructure, technology, and social structure.

The focus group's goals and expectations of gaining profit in relocating to Chicago were mainly supported by gross profit margin analysis and STEEPLE analysis.

The gross profit margin only increased by 6%, while the net profit margin increased by 12%, 4 times as it was in 2016. The comparison of profit margins over the four years clearly reveals the soaring efficiency of production through converting sales into net profits. The soaring efficiency could only be achieved by relocation to Chicago, which is shown by the STEEPLE analysis of four essential factors of social, technical, economic, and environmental. Social was improved due to a larger customer base in Chicago. Technical was improved by efficient hiring of abundant young talents in Chicago, whose technical knowledge optimized the Caterpillar 797's economies of scale, environmental was improved by O'Hare Airport easing access to international travel, and economic was not harmed due to the relocation.

However, according to the graph of economies of scale, there is no room to prompt the efficiency of production as the scale reached its optimum production quantity by relocation. The demand has been fully satisfied and the market of Caterpillar 797 has become saturated. Meanwhile, less percentage of the aging population is distributed in

Chicago than in Peoria, IL. Since more young talents have been recruited from Chicago, senior employees are facing higher risks of unpleasant treatment.

Due to constraints in time, the last three STEEPLE factors, political, legal, and ethical, were not examined but were still very crucial in the decision making process of relocation, making it an important area to conduct further research.

Recommendations

I recommend that Caterpillar focus on revenue growth while maintaining the low administrative costs by taking advantage of the infrastructure and technology resources of Chicago. In 2019, the net profit margin increased because of the higher efficiency of converting sales, but the gross profit remained as last year and only grew by 1% since relocation. Although the demand for equipment becomes lower because of the global economy, the prices of the products can be adjusted to optimize the revenues as Caterpillar 797. Since the total expenses have already been minimized due to the scalability and cost-effectiveness of Chicago infrastructure, the growing profitability of Caterpillar relies on the increase in revenues.

Moreover, new talents in Chicago will develop the product technology to monopolize the market by increasing sales revenue and controlling costs, so more selective recruitment on a larger scale needs to be executed soon. I also recommend laying off senior employees, which already seems irreversible as a social cycle.

Furthermore, I recommend Caterpillar to either reinforce the automation technology on Caterpillar 797 or transfer the focus to other potential products. If not fully affected by the global fuel prices, the market of Caterpillar 797 is saturated unless the recruited new talents can reduce the cost to the next level while the company can assure an increased output in the future. The technology team can start investigating the improvement of the

technology of Caterpillar 789D, 793D, and 793F, which are the smaller autonomous mining trucks compared to Caterpillar 797.

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Appendix A: Focus Group Discussion

GLOBAL HEADQUARTERS ANNOUNCEMENT - CORE Q&A

It was less than two years ago when Caterpillar announced its commitment to Peoria and plans for a new headquarters complex to be built in Peoria. How could we have such a dramatic change on such an important decision?

As we continue to work through the toughest stretch in our company's history, we need to prioritize our resources to focus on profitable growth. Growth comes from investing in people, products, solutions and services.

As a result of continuing challenging market conditions and the need to prioritize resources to focus on growth, the decision was made not to invest in a new headquarters complex in Peoria.

What are the main factors driving the decision to establish a new global headquarters in the Chicago area?

The number one priority is to grow the company. Proximity to a global transportation hub will result in better access to global customers, dealers and our worldwide operations, while also improving the productivity of our senior leaders. Enhancing executive recruitment is another factor behind the decision. The new location is an opportunity to add to our talented team.

When did the Board start considering the establishment of a new global headquarters? When did it decide? Was it purposely timed with Jim's first days as CEO?

The decision to establish a global headquarters in the Chicago area has been extensively discussed by Caterpillar's Board of Directors for some time, and the decision was recently made. As the CEO and a member of the Board, Jim Umpleby did have a role in the final decision.

This is a strategic decision that allows us to prioritize resources to focus on growth.

What will the move of the global headquarters cost? Will there be any cost savings?

It is important to understand there are two decisions within this announcement – the relocation of the global headquarters to the Chicago area and the decision to not move forward with building the Peoria headquarters complex. While these decisions are independent of one another, they are both aimed at one critical goal – growth of our company.

Relocating a headquarters to an existing office space that will have fewer people (about 300) will cost far less than the previously announced plans for the Peoria headquarters complex. We also believe this decision will improve the productivity of our executives and result in more frequent and efficient meetings with key stakeholders like our customers, dealers and employees.

This decision represents prudent, careful stewardship of resources after the company has gone through some difficult times. The long-term goal, however, goes beyond cost-savings and positions our leaders to drive revenue generation and profitable growth.

Who exactly will be moving to the new headquarters?

There will be about 10 officers moving to the new headquarters including the Executive Office (the CEO and his direct reports) and a few vice presidents. Additionally, there will be a limited number of people from core corporate functions like finance, legal, HSD and Corporate Affairs. Positions will be identified as soon as possible, and some relocations will begin later this year.

What locations are you considering for the new global headquarters, and when will the location be selected?

We are considering locations in the Chicago area. A decision is expected later this year. We made a deliberate decision to inform our employees and the community about the decision soon after it was made, recognizing we are still early in the site selection process.

Did you conduct a full study or analysis on the best place for Caterpillar to locate a global headquarters?

The Board of Directors extensively discussed the options before ultimately deciding the Chicago area was the right place to establish our new global headquarters. With a desire to improve access to our customers, dealers and employees being a priority and a large, existing footprint in Illinois, the Chicago area presents the global access desired while remaining close to our Midwest roots.

You mention this is good for executive recruitment- Why don't we have a strong executive pipeline? If we can't get executives to come to Peoria - are they really going to be committed to our company?

We are a global company and must continue to have the right talent in the right place to move our company forward. To do this, we remain committed to sourcing talent from not only within our four walls but from across the globe. We are proud of our people, including those in Central Illinois, but also believe the establishment of a new global headquarters in the Chicago area will allow us to add to our talented team.

Appendix B: Interview with Engineer

1. How did the customer population size and structure change after relocating Caterpillar's headquarters to Chicago?

Answer: Increase because it is easy for Caterpillar to contact customer and customer access Caterpillar through O'Hare Airport.

2. Did the relocation bring technological advancement to Caterpillar's product? (More advanced technologies in Chicago)

Answer: Yes, easy to keep and add talented young people in Chicago, one example is our Digital & Analytics Hub in Chicago attracted more young talented people with AI knowledge to improve our automation driving truck technology.

3. How does technology support Caterpillar to become NO.1 in the industry?

Answer: Automation truck operations reduce cost and running at very tough fields in the middle of Australia.

4. What is the best seller automation truck and how many sales does it contribute in the recent years?

Answer: The best seller automation truck is Caterpillar 797F. There were 282 Caterpillar 797F in operations in May 2020. The total outputs from 2016 to 2019 were 2,411, 2,970, 3,854, 3,406; the prices of each unit were \$3.9M, \$3.5M, and remained as \$3.4M.

5. A growth or recession after relocation?

Answer: Recession but was not affected by relocation instead by the global economy especially petroleum price and ore price.

6. What is the pattern of employment/unemployment after relocation?

Answer: Normal cyclic as usual. No effects by relocation.

7. As the leader in the industry, what are Caterpillar's environmental controls?

Answer: Caterpillar has an annual sustainability report you can find online. Gas engines were developed to replace diesel. Emissions reduced significantly. Remanufacturing to restore used parts to reduce making new parts which has more impacting on the environment.

8. Does the infrastructure in Chicago improve the transport links of globalisation than in Peoria?

Answer: Yes, that was the main reason for relocation. O'Hare Airport in Chicago allows access to global customers.

Appendix C: Income Statement

name	ttm	12/31/2019	12/31/2018	12/31/2017	12/31/2016
TotalRevenue	43,657,000,000	53,800,000,000	54,722,000,000	45,462,000,000	38,537,000,000
OperatingRevenue	43,657,000,000	53,800,000,000	54,722,000,000	45,462,000,000	38,537,000,000
CostOfRevenue	31,059,000,000	37,384,000,000	37,719,000,000	31,695,000,000	28,905,000,000
GrossProfit	12,598,000,000	16,416,000,000	17,003,000,000	13,767,000,000	9,632,000,000
OperatingExpense	7,575,000,000	8,126,000,000	8,710,000,000	9,361,000,000	8,539,000,000
SellingGeneralAndAdministration	4,709,000,000	5,162,000,000	5,478,000,000	5,177,000,000	4,686,000,000
ResearchAndDevelopment	1,427,000,000	1,693,000,000	1,850,000,000	1,905,000,000	1,951,000,000
DepreciationAmortizationDepletionIncomeStatement					
DepreciationAndAmortizationInIncomeStatement					
OtherOperatingExpenses	1,439,000,000	1,271,000,000	1,382,000,000	2,279,000,000	1,902,000,000
OperatingIncome	5,023,000,000	8,290,000,000	8,293,000,000	4,406,000,000	1,093,000,000
NetNonOperatingInterestIncomeExpense	-496,000,000	-421,000,000	-404,000,000	-531,000,000	-505,000,000
InterestIncomeNonOperating					
InterestExpenseNonOperating	496,000,000	421,000,000	404,000,000	531,000,000	505,000,000
OtherIncomeExpense	-108,000,000	-57,000,000	-67,000,000	207,000,000	-449,000,000
GainOnSaleOfSecurity	-20,000,000	200,000,000	-35,000,000	96,000,000	64,000,000
EarningsFromEquityInterest					
SpecialIncomeCharges			0	0	-595,000,000
ImpairmentOfCapitalAssets			0	0	595,000,000
WriteOff					
OtherSpecialCharges					
OtherNonOperatingIncomeExpenses	-88,000,000	-257,000,000	-32,000,000	111,000,000	82,000,000
PretaxIncome	4,419,000,000	7,812,000,000	7,822,000,000	4,082,000,000	139,000,000
TaxProvision	1,115,000,000	1,746,000,000	1,698,000,000	3,339,000,000	192,000,000
EarningsFromEquityInterestNetOfTax	16,000,000	28,000,000	24,000,000	16,000,000	-6,000,000
NetIncomeCommonStockholders	3,316,000,000	6,093,000,000	6,147,000,000	754,000,000	-67,000,000
NetIncome	3,316,000,000	6,093,000,000	6,147,000,000	754,000,000	-67,000,000
NetIncomeIncludingNoncontrollingInterests	3,320,000,000	6,094,000,000	6,148,000,000	759,000,000	-59,000,000
NetIncomeContinuousOperations	3,320,000,000	6,094,000,000	6,148,000,000	759,000,000	-59,000,000
NetIncomeExtraordinary					
NetIncomeFromTaxLossCarryforward					
MinorityInterests	-4,000,000	-1,000,000	-1,000,000	-5,000,000	-8,000,000
DilutedNIAvailtoComStockholders	3,316,000,000	6,093,000,000	6,147,000,000	754,000,000	-67,000,000
BasicEPS		10.85	10.39	1.27	-0.11
DilutedEPS		10.74	10.26	1.26	-0.11
BasicAverageShares		561,600,000	591,400,000	591,800,000	584,300,000
DilutedAverageShares		567,500,000	599,400,000	599,300,000	584,300,000
TotalOperatingIncomeAsReported	5,023,000,000	8,290,000,000	8,293,000,000	4,406,000,000	498,000,000
TotalExpenses	38,634,000,000	45,510,000,000	46,429,000,000	41,056,000,000	37,444,000,000
NetIncomeFromContinuingAndDiscontinuedOperation	3,316,000,000	6,093,000,000	6,147,000,000	754,000,000	-67,000,000
NormalizedIncome	3,330,953,609.414	5,937,800,000	6,173,565,000	684,592,000	251,600,000
InterestIncome					
InterestExpense	496,000,000	421,000,000	404,000,000	531,000,000	505,000,000
NetInterestIncome	-496,000,000	-421,000,000	-404,000,000	-531,000,000	-505,000,000