International Research Journal of Applied Finance ISSN 2229 – 6891
Vol. X Issue – 3 March, 2019 www.irjaf.com
Case Study Series

Lease or Buy Decision Analysis: Apollo Manufacturing Corporation Case Study

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Abstract

Leasing allows a business flexibility in different ways. Whether it means lower transaction costs for leasing equipment as opposed to purchasing, reducing uncertainty regarding an asset's residual value, or having fewer restrictive covenants than borrowing. However, there are also potential problems involved in leasing such as higher overall costs, not owning the asset, and maintenance costs the lessee incurs in case the asset breaks down. This case study examines the quantitative analysis a company's managers must perform in order to best determine whether an asset should be purchased or leased given certain financial considerations and factors.

Key Words: Lease, Annual lease payments, Debt covenants, Depreciation, IRR, Marginal tax rate, MACRS, NPV, Salvage value

Introduction

Madiha Shah has recently become the Chief Financial Officer for a midsize manufacturing firm that is growing at a healthy pace. At a time when most manufacturing companies are looking to manufacture their products overseas, Apollo Manufacturing Corporation is actually expanding its operations in the United States. The company has been in business for fifty years and manufactures custom-made parts for different customers ranging from small companies to Fortune 500 firms. While the company has seen good and rough years, the overall path for the company has been a steady upward climb. Madiha started with the company in the last two months and has fifteen years in various areas of financing, especially leasing. She was brought in to help the company get a better handle on their leasing arrangements and come up with deals that will ultimately become cost-effective in the short and long term.

Apollo Manufacturing is looking to possibly lease an automatic assembly machine that has a purchase price of $100,000. While Apollo will be considering the usual leasing options for the machine there are certain factors that could play key roles such as depreciation method, salvage value as a percent of purchase price, marginal tax rate, and the current borrowing rate. While the company is profitable, it is running up against its debt covenants, especially the amount of long-term debt to assets covenant. This factor could play a crucial role in pursuing leasing as a fiscally prudent alternative. Madiha, Apollo's Chief Financial Officer, the Vice President in charge of manufacturing, and the Purchasing Manager have been working together on this project for some time and have narrowed the decision to three possible assembly machines with different annual lease payments. The key is to find the machine with the lease term that makes the best financial sense.

Company Background

Apollo Manufacturing Corporation produces various parts for consumer products made to the customer's specifications. The parts can vary in size, color, material, and quantity. The company was actually founded by Vincent (Vince) Coston and Thomas (Tom) Catton after the Korean War. Each had undergraduate degrees in engineering: Vince has a degree from

Stevens Institute of Technology in Civil Engineering while Tom graduated from Brooklyn Polytechnical Institute in Mechanical Engineering. They met while they were attending New York University for their MBAs in Management. They each worked for engineering firms in New Jersey, but were attending business school with the secret desire to start their own companies. They were both problem solvers by nature and also wanted to know about the business side of a project: They not only wanted to discover how to make a part or instrument, but how much would it cost to mass produce it. They both liked designing different objects according to the customer's specifications and then quoting a price that would be competitive. They planned to start their own business for approximately seven years until they were able to come up with the money, and the nerve, to get their enterprise off the ground.

The money to start their business, Apollo Manufacturing Corporation, came from their own savings, an inheritance that Tom did not expect, and selling Vince's boat. Vince vowed to work hard and buy a bigger boat someday. They were both lucky their spouses supported their dreams since it meant they would return to work while Vince and Tom ran the business. Vince and Tom were able to rent an old factory in Hoboken, New Jersey that was used for manufacturing and hire some of the former workers of the company. Vince and Tom made their sales pitch to various manufacturers they knew from their former companies and were able to land several small contracts. The jobs were small projects that larger manufacturers felt were not cost effective but just right for Apollo Manufacturing. Vince and Tom worked with their customers in designing the parts, offering suggestions on how to improve them, and make them at a much lower price than the competition. They were working hard and often labored seven days a week, including holidays, and sometimes even skipped family vacations. While their wives were not happy about the long days and missed vacations, Vince and Tom were starting to see their profits increase, more contracts for new projects, and the physical size of their business growing beyond their expectations.

Vince and Tom knew they could grow their business by doing the following:

- **Always strive to be under budget and on time with every project:** They felt they could be more cost effective if they thought out each detail in a careful and intelligent manner. They came up with the motto, "Challenge yourself". They used it as a way to motivate their employees to always perform better at whatever task they faced. They kept track of the costs of each project, material, and process. They did not want to produce a skimpy, poor quality product, but at the same time, they knew that cost was an important factor.

- **Work with the company's employees:** Vince and Tom asked the most from their employees and sometimes they may have seemed to really be pushing the envelope. Nevertheless, they paid good salaries, provided excellent benefits, and had a generous profit-sharing plan. Vince and Tom were able to hire young engineers from Stevens and Brooklyn Polytech based on recommendations from professors they knew. Many of the engineers and designers stayed and loved the challenges they faced with every new project. Employees' suggestions were seriously considered and used quite often in the manufacturing of parts and products.

- **Do not take anything for granted:** Vince and Tom felt that every project was a new challenge and that no two projects should be treated the same. By not taking anything for granted, Vince and Tom wanted their employees to look at everything with fresh eyes and a positive attitude. It was not always easy, but it had to be done that way in order to ensure success.

Vince and Tom moved their manufacturing plant to the suburbs of New Jersey where they were able to purchase 100 acres of land in order to build a new facility. Their workers actually welcomed the move since many had families and homes in New Jersey. The new plant was near a major highway and this helped reduce transportation costs. Sales were growing and the company had more room for expansion than Vince and Tom could imagine. Vince and Tom had controlling shares in Apollo Manufacturing Corporation and were looking to hand over the reigns to their children very soon.

Current Situation

Vince and Tom have recently hired Madiha Shah as the new Chief Financial Officer. She has had fifteen years of corporate experience, is a Certified Public Accountant, and obtained her MBA in finance from New York University. Madiha came to Apollo Manufacturing seeking new challenges in finance and she liked the long-term prospects for the company. She knew that Vince and Tom wanted to expand the company's operations and would need sound financial advice in how it should occur. She had done her research on Vince and Tom and knew by talking with her professional connections that Apollo Manufacturing had a great reputation.

After being at the company for two months, Madiha now encountered her first real challenge that would have a serious impact on the company's future. Vince and Tom approached Madiha about acquiring a new automatic assembly machine for the company costing $100,000. This new asset could help expand operations, attract new customers, while increasing revenues and profitability. Apollo Manufacturing was profitable and had steady increases in profits over the years. However, the company had certain debt covenants that could severely restrict acquiring new equipment using loans or even leasing. Madiha felt that whoever negotiated the loan agreements for Apollo Manufacturing left plenty to be desired. Madiha reviewed the loans that Apollo Manufacturing had and she felt that the agreements could have been better for the company. She had made it one of her priorities to discuss with Vince and Tom on reworking the debt structure and refinancing when possible. But, with interest rates recently going up, that would be very difficult. She felt a key problem was that the long-term debt to assets covenant was too restrictive and actually benefited the lenders.

The situation that currently faced the company was whether to lease or buy the new automatic assembly machine. Each alternative of leasing or buying had good and bad points that needed to be considered. There were also other factors Madiha had to think about as part of the decision-making process. Given Apollo Manufacturing's recent credit rating, the current before-tax cost of borrowing for the company is 7%. According to the recent tax law changes, Apollo Manufacturing's corporate marginal tax rate is now at 21%. Based on the asset the company is looking at the depreciation method it could use is the Internal Revenue Service's 10-year Modified Accelerated Cost Recovery System (MACRS), which employs the half-year convention. But Madiha knew that with the tax law and MACRS changes could occur at any time.

Vince and Tom and the company's Purchasing Manager, Sharon Black, had narrowed the choices to three different leasing companies to determine which lease term made the best deal for Apollo Manufacturing. Two of the term sheets would result in leasing the machine and one would end up in purchasing it, as seen in the Internal Rate of Return (IRR) calculations.

While all three machines were what Apollo Manufacturing needed, the ultimate goal was deciding which one made the best sense financially. Madiha reviewed the lease term sheets from each leasing company in order to discuss the situation with Vince, Tom, and Sharon.

Financial Information:

Lease Term Sheets

Lease Term Sheet from Stanford Leasing Company	
Purchase price of machine	$100,000
Length of time of lease	7
Depreciation Method	MACRS
Estimated useful life of asset	10
Salvage value as a percent of purchase price	20%
Lease payments per year	$16,500
Marginal tax rate	21%
Current borrowing rate	7%

Lease Term Sheet from Georgia Leasing Corporation	
Purchase price of machine	$100,000
Length of time of lease	7
Depreciation Method	MACRS
Estimated useful life of asset	10
Salvage value as a percent of purchase price	25%
Lease payments per year	$15,000
Marginal tax rate	21%
Current borrowing rate	7%

Lease Term Sheet from ND Commercial Bank	
Purchase price of machine	$100,000
Length of time of lease	7
Depreciation Method	MACRS
Estimated useful life of asset	10
Salvage value as a percent of purchase price	22%
Lease payments per year	$15,500
Marginal tax rate	21%
Current borrowing rate	7%

Table 1: Modified Accelerated Cost Recovery System 10-Year Depreciation Using Half-Year Conventions

MACRS Depreciation Schedule Using Half-Year Convention	
Year	Depreciation
1	10.00%
2	18.00%
3	14.40%
4	11.52%
5	9.22%
6	7.37%
7	6.55%
8	6.55%
9	6.56%
10	6.55%
11	3.28%

Assignment

Apollo Manufacturing Corporation

To: Vince, Tom, and Sharon

From: Madiha Shah – CFO

Date: January 5, 2019

Re: Leasing of assembly machine

As you are aware, we have narrowed our acquisition of the proposed assembly machine to three candidates: Stanford Leasing Company, Georgia Leasing Corporation, and ND Commercial Bank.

The lease terms are shown below:

Lease Term Sheet from Stanford Leasing Company	
Purchase price of machine	$100,000
Length of time of lease	7
Depreciation Method	MACRS
Estimated useful life of asset	10
Salvage value as a percent of purchase price	20%
Lease payments per year	$16,500
Marginal tax rate	21%
Current borrowing rate	7%

Lease Term Sheet from Georgia Leasing Corporation	
Purchase price of machine	$100,000
Length of time of lease	7
Depreciation Method	MACRS
Estimated useful life of asset	10
Salvage value as a percent of purchase price	25%
Lease payments per year	$15,000
Marginal tax rate	21%
Current borrowing rate	7%

Lease Term Sheet from ND Commercial Bank	
Purchase price of machine	$100,000
Length of time of lease	7
Depreciation Method	MACRS
Estimated useful life of asset	10
Salvage value as a percent of purchase price	22%
Lease payments per year	$15,500
Marginal tax rate	21%
Current borrowing rate	7%

In order to assess which is the better deal for Apollo Manufacturing, the following questions must be answered:

1. What is the Net Present Value (NPV) of the three lease terms using the after-tax cost of borrowing? And which lease term has the best deal for the company?
2. In examining the three lease term sheets, what is the implied before tax borrowing rate and how does that rate compare to the company's current borrowing rate?
3. Based upon the analysis of the implied rates and the NPV, which of the term sheets make leasing a better option for the company and why?
4. Besides the financial aspects of leasing, what other factors should the company consider in making a lease decision? That is, what are the qualitative aspects of a lease that should be considered?
5. What should be the final conclusion based upon the financial analysis and the identification of the pros and cons of leasing?

I will examine these questions and present my results to you in one week.

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