EVALUATION OF AIRCRAFT LEASING STRATEGIES: A CASE STUDY

by

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ABSTRACT

It is clear that airline companies offering new technology as well as old industries are seeking a new life in order to escape from economic crises by leasing. In this study, we developed a method to determine the leasing scheme under different operating conditions. Specifically, the leasing options such as financial leasing and Operational leasing methods are considered for a new A 320 model aircraft. Based on the operating characteristics of this model, we studied the effective parameters that make a leasing option better than the others. This scheme is a general framework which can be utilized for any type of aircraft model.

Keywords: Operating lease, Financial lease.

FİNANSAL UÇAK KİRALAMA SİSTEMLERİNİN KARŞILAŞTIRILMASI VE VAKA ANALİZİ ÇALIŞMASI

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ÖZ

Günümüz havayolu şirketleri ve endüstriyel firmalar ekonomik krizleri önlemek ve yaşanması muhtemel finansal krizleri en az'a indirgemek için leasing kullanmaktadırlar. Bu çalışmamızda, farklı operasyonel şartlar altında en uygun leasing modelini belirlemek için optimum yöntem geliştirilmiştir. Özellikle, çalışmamızda A 320 model uçak kullanılmıştır. İncelenen vaka çalışmasında örnek olarak incelenen uçak çeşidi için finansal ve operasyonel leasing çalışması yapılmıştır.

Anahtar Kelimeler: Operasyonel kiralama, Finansal kiralama.

DEDICATION

Dedicated to my parents, thesis advisor and friends for their endless support and patience during the forming phase of this thesis.

The ideal people burn like candles

despite themselves,

and they illuminate others...

ACKNOWLEDGEMENT

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CHAPTER 1

INTRODUCTION

Over the past several years, the airline companies have converted to their intention to use of leasing for modernization of their aircraft fleets. In this light, leasing has getting an important source of asset finance for businesses. A meaning of lease is a contractual agreement between two parties which are lessee and lessor. The lessee is the user of the equipment; the lessor is the owner of asset.

There is no doubt that most people are familiar with leasing in their everyday lives. Especially in developed and developing countries, leasing a car or signing a lease on an apartment. Often, people make the decision to lease because they need flexibility or do not want to borrow the money for a large purchase. Even if they want to borrow, they are obligated to show guarantee for borrowing from bank. However, leasing can be seen as an alternative to borrowing money for a large purchase or an alternative to debt financing. Formally, a lease is defined as a rental agreement involving a series of fixed payments (lease payments), whereby the owner of the asset grants the renter of the asset full usage rights (Berlin and Lexa, 2006).

Why do numbers of leasing customers increase and why does lease seem to be attractive? Using a bank loan or, even worse, an overdraft to fund asset purchases can be problematic especially in terms of interest rate. It can be unpredictable duration of agreement or can not make actual its value, just it's forecasting to be made. Because of this reason who wants to use bank loan, take in big responsibilities in terms of interest rate. Most of the companies in the airline industry convert to their intention to lease because they do not want to take unpredictable responsibilities. As a result, £21 billion of assets are financed this way last year and the trend, given the tax advantages and the

release of capital built into the systems on offer, is increasing. Basically, there are two ways to acquire assets which are leasing and hire purchase. The difference is as simple as the names suggest. With leasing you have the use, but not the ownership of the asset, and with hire purchase, you have the use and the option of ownership at the end of the term. The system that is most advantageous for your business will depend on a number of factors (Reuvid, 2002).

All in all, leasing is without a doubt one of the most commonly used financing solutions especially in airline industry. Because of this, important reason, we incorporated with two international companies: Turkish Airlines Co and Saab Co. This study benefited their wast experience and knowledge to develop best leasing model from the perspective of lessee. In this study, we selected an airbus 320-200 type of aircraft and we tried to find which lease method give us best option between financial leasing and operational leasing.

1.1. WHY AIRCRAFT LEASING IS IMPORTANT

It is an important element such that why most companies tent to select leasing assets rather than buying them. The benefits that leasing provide the companies can be list as follows;

- Taxes may be reduced by leasing.
- The lease contract may reduce certain types of uncertainty that might otherwise decrease the value of the firm.
- Transactions costs may be lower for a lease contract than for buying the asset.
- Leasing may require fewer (if any) restrictive covenants than secured borrowing.
- Leasing may encumber fewer assets than secured borrowing

It is often claimed that leasing provides all financing.

1.2 .LEASING MODELS

1.2.1. OPERATING LEASE

In most of the operating lease agreements, the primary rental period is much shorter than the asset's expected useful life. At the end of the lease period, under the normal condition, asset is back to lessor and the asset will have a significant residual value. The lessor could sell the asset in the secondhand market or assume a residul value in fair market condition, and the lessor's total returns from the asset will be lease rentals plus sale value of the asset at the end of the lease period. The lessor does not expect to recover the full capital of the asset from the lease rentals (Coyle, 2000).

There is no doubt that in the end of an operating lease term the leased asset should be in good condition for lessor, otherwise the asset cannot be sold or released to different users. Although this structure seems to be inefficient for lesse, the features given here this deny this: It allows airlines to respond rapidly to changes in market conditions. In other words , company easily changes its asset depending on the changing marketing or technological condition because it just made it as an operating lease without to having a purchase option. Usually between one and seven years, or an average of five years, and the asset can be returned to the lessor at relatively short notice and without major penalty. However, the lessee cannot choose the aircraft specification (except for good customer first user of aircraft). An airline gains the use of an aircraft without the obligation to pay off its full cost. The lessee is usually responsible for the maintenance of the aircraft but often has to pay to the lessor maintenance reserve. Operating leases may have a purchase option for the lessee to buy the aircraft at the end of the lease term, sometimes at a fair market value and sometimes at a stated price as it stated before. There will almost definitely be an option for the lessee to extend the lease for a further two to four period (Morrell, 2007).

To end up, operating leases have most important four criteria. First, the lessor cannot freely transfer ownership of the asset to the lessee by the end of the lease term.

Second, the present value of the lease payments (the value of all future lease payments in today's dollars) cannot equal or exceed 90% of the fair market value of the leased asset. Third, the lease cannot contain a "bargain purchase" option for the lessee to buy the equipment at the end of the lease term, which means that the equipment cannot be sold under fair market value at the end of the lease term. Fourth, the lease term cannot exceed 75% of the asset's economic (or useful) life (Berlin and Lexa, 2006).

Figure 1.1. Structure of Operating lease

First of all, lessee decides the type of aircraft, which is appropriate according to its investment decision. After a decision made, lessee contactes with lessor. According to lessee's request, lessor finds it's needed asset from manufacturer. Also, lessor takes all use right of asset from manufacture and it is leased to lessee for averagely five, seven or twelve years. As it is shown from figure 1, lessee is responsible to pay all it's rentals to lessor in the duration of lease agreement. Thus, at the end of the agreement term, mostly asset will go back to lessor. Nevertheless, some agreements have got purchase options. This option is based on asset's market value at the end of term.

1.2.2. FINANCIAL LEASE

Financial lease is the other major type of lease. In contrast to the situation with an operating lease, under a financial lease the payments covers the anticipated residual or salvage value. It means that financial lease payments covers fully lessor's cost of purchasing the asset and pay the lessor a return on the investment. For this reason, a financial lease is sometimes said to be a fully amortized or full-payout lease, whereas an operating lease is said to be partially amortized. Financial leases are often called capital leases by the accountants. With a financial lease, the lessee (not the lessor) is usually responsible for insurance, maintenance, and taxes. It is also important to note that a financial lease generally cannot be canceled, at least not without a significant penalty as in operating lease.

To better understanding of features of financial lease, we will state some important key points. The length of the primary lease period usually covers most of the expected useful life of the asset. A primary lease period covering more than 75% of the asset's useful life would be typical, although there is wide variation. Five- to seven-year primary lease periods are common, five years is typical for plant and machinery items, and periods of about 10 years are usual for ships, airplanes and railway rolling stocks. The lessee is required to insure and maintain the asset. Because the lessee will use the asset for most of, or even all of its life, if the asset is leased for a secondary period after the end of the primary period, and is responsible for its insurance and upkeep, most of the risks and rewards associated with ownership of the asset are transferred to the lessee (Coyle, 2000).

Beside these, we state how a financial lease would be recognized :

- Ownership of the asset to be transferred eventually to the lessee
- A bargain purchase option for the lessee at the end of the primary lease period
- A primary lease term of 75% or more of the asset's expected economic life
- The present value of the minimum lease rental payments (discounted at the lessor's cost of capital) exceeds 90% of the fair market value of the asset less related investment tax credits retained by the lessor (Coyle, 2000).
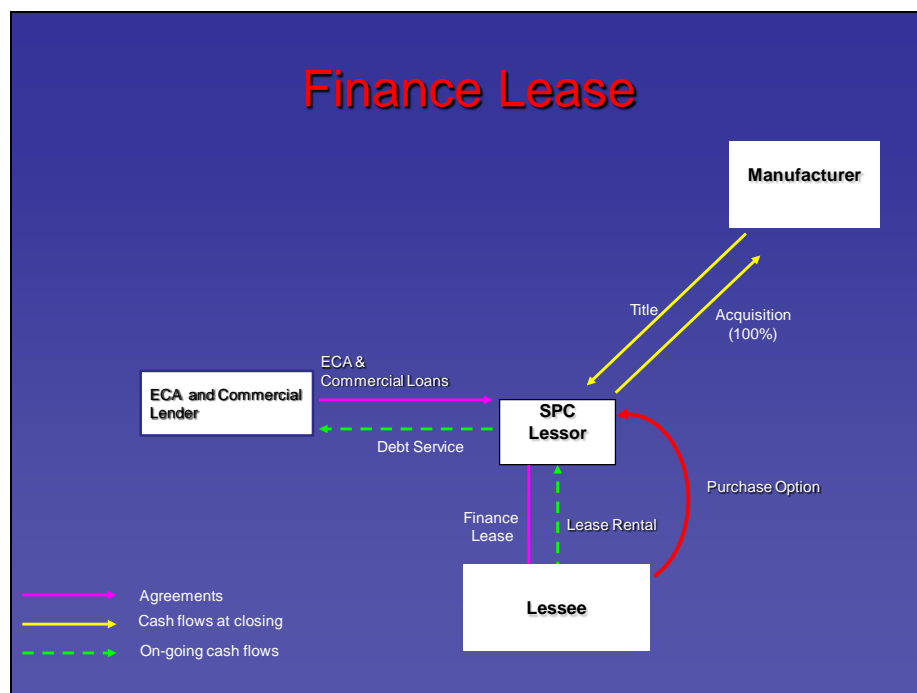
Figure 1.2. Structure of Financial lease

Basic structure of financial lease is similar with operating lease. First of all, lessee decides which type of aircraft is requested according to their investment decision. After a decision is made, lessee contactes with lessor. According to lessee's request, lessor finds the needed asset from manufacturer. Also, lessor will be the guarantor (averagely 85% exim bank and 15% commercial loan) between lessee and manufacturer. After this step, all use right of asset is to be transferred to lessee . The lessee does not have actual right of title until end of terms and all payments. Figure 1.2. depicts the relationships among all the involved policies in a financial lease structure.

CHAPTER 2

METHODS FOR LEASE DECISION

2.1. TIME VALUE OF MONEY

From perspective of outside; the "time value of money" seems like a sophisticated concept, yet it is one that even if people do not aware of its, but they grapple with its every day. Should you buy something today or save your money and buy it later? Here is a simple example of how a buying behavior can have varying results. Pretend we have $100, and we want to buy a $100 mobile phone. If we buy it now, we are broke. However, if we invest money at 6% interest in a year we would still buy the mobile phone, and we will have $6 left over. Well, if the price of the mobile phone increases at an annual rate of 8% due to inflation, we will not have enough money ($2 short) to buy the mobile phone a year from now. In that case, we probably are better off buying the phone now. In other words, under inflationary economy, our purchasing power will continue to decrease as we further delay the purchase of the phone. In order to make up this future loss in purchasing power, our earning interest rate should be sufficiently larger than the anticipated inflation rate (Park, 2007).

In the view of the fact that one of the basic problems faced by the financial manager is how to determine the value today of cash flows expected in the future. In the most general sense, as it is stated in previous paragraph that the phrase time value of money refers to the fact that a dollar in hand today is worth more than a dollar promised at some time in the future. This structure covers and built into our main study of thesis .

Our goal in this chapter is to clearly explain elements of time value of Money. Some key points of finance elements should be known to make sound decisions.

Another challenge is to estimate the appropriate internal rate of return(IRR), opportunities cost, future value of money, present value of future cash payment and also the discount rate is necessary for discounting cash flows back to the present value (Stowe et al., 2007).

2.1.1. Future Value

In order to make an optimum decision, managers should know future value of money. In calculating the future (terminal) value, we need to know the beginning amount, the interest rate, and the number of periods. In calculating the present value, we need to know the future value or cash flow, the interest or discount rate, and the number of periods. Thus, there is only a switch of two of the four variables (Home and Wachowicz, 2005).

Starting with the future value equation:

$$FV \ = \ PV \, (\, 1 + i \,)^{\, t} \quad (2.1)$$

where

> FV= future value
> PV = present value
> i = annual interest rate

The term $\ 1 \, / \, (\, 1 + i \,)^{\, t} \ $ (2.2) is known as the discount factor.

2.1.2 Interest Rate

In business life, money can be loaned and repaid in many ways, and equally, money can earn interest in many different ways. Usually, at the end of each interest period, the interest earned on the principal amount is calculated according to a specified interest rate or given interest rate. The two computational schemes for calculating this earned interest are simple interest and compound interest (Park, 2007).

2.1.2.1. Compound Interest Rate

A compound interest is that the interest earned in each period is calculated based on the total amount at the end of the previous period. This total amount covers the original principal plus the accumulated interest that has been left in the account (Park, 2007).

The effect of compounding does not seem to be great for short periods, but its effect would increase in the long term. Compound interest calculations apply to investments where the amount of interest is calculated on the present balance of the account. The compound interest formula calculates the value of a compound interest investment after 'n' interest periods.

$$A = P(1 + i)^n \qquad (2.3)$$

'**A**' = <u>Amount</u> after 'n' interest periods.
'**P**' = <u>Principal</u>, the amount invested at the start.
'**i**' = the <u>interest rate</u> applying to each period.
'**n**' = the <u>number</u> of interest periods

The interest rate is per interest period. Often, interest rates are given for a whole year, (per annum). A yearly interest rate must be divided by the number of payments per year.[1]

2.1.2.2. Simple Interest Rate

Simple interest is earned on only from the original amount or borrowed. In other words, under simple interest, the interest earned during each j interest period does not include additional as a compound interest. In general, for a deposit of *P* dollars at a simple interest rate of i for *N* periods, the total earned interest I would be (Park, 2007).

$$I = (i*P)*N \qquad (2.4)$$

2.1.3. Present Value and Discount Rate

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[1] Compound interest,

http://www.teacherschoice.com.au/Maths_Library/Money/compound_interest.htm,2009 (15.05.2009).

It's well-known that while financial decision is made, time value of money has a important key role, especially present value money. The value of an asset must be related to the benefits or returns we expect to receive from holding it. We call those returns the asset's future cash flows. We also need to recognize that a given amount of money received in the future is worth less than the same amount of money received today. Money received today gives us the option of immediately spending and consuming it. So money has a time value. When valuing an asset, before adding up the estimated future cash flows, we must discount each cash flow back to the present (Stowe et al., 2007).

The present value of a sum of money to be received at a future date is determined by discounting the future value at the interest rate that the money could earn over the period.

Starting with the future value equation:

$$PV = FV/(1+i)^t \quad (2.5)$$

where

    FV = future value

    PV = present value

    i = annual interest rate

The term $1/(1+i)^t$ is known as the discount factor.

2.1.4. Opportunity Cost

There is no doubt that scarcity of resources is one of the basic concepts of economics. It's a well-known that scarcity necessitates trade-offs, and trade-offs result in an opportunity cost. While the cost of a good or service often is thought of in monetary terms, the opportunity cost of a decision is based on what must be given up (the next best alternative) as a result of the decision. Any decision that involves a choice between two or more options has an opportunity cost. Opportunity cost is useful when evaluating the cost and benefit of choices. In our study we compared opportunities cost

of each type of lease . In our calculation to find opportunities cost, we used the Turkish treasury discount rate.[2]

2.2. RESIDUAL VALUE

Residual value is one of the important constituents of a leasing operation. It describes the future value of a good, like a aircraft, in terms of percentage of depreciation of its initial value. Residual values are calculated using a number of factors, generally a vehicles market value for the term and mileage required is the start point for the calculation, followed by Seasonality, monthly adjustment, lifecycle and disposal performance. The leasing company setting the residual values (RV's) will use their own historical information to insert the adjustment factors within the calculation to set the end value being the residual value. In this study, we directly take next 30 years estimating of A 320-200 number of aircraft residual value from Avmark Co[3]. as shown in figure 2.1.

2001	2002	2003	2004	2005	2006	2007	2008	2009
24.76	26.68	28.74	30.94	33.28	35.75	38.36	41.11	44.00
24.18	26.13	28.21	30.41	32.30	34.42	36.75	39.27	42.14
23.59	25.51	27.61	29.83	31.74	33.41	35.39	37.63	40.27
23.00	24.88	26.94	29.18	31.11	32.82	34.36	36.24	38.59
22.39	24.24	26.26	28.46	30.42	32.16	33.73	35.18	37.18
21.77	23.58	25.57	27.73	29.66	31.44	33.05	34.54	36.09
21.14	22.92	24.87	26.98	28.89	30.64	32.30	33.83	35.42
20.50	22.24	24.15	26.22	28.09	29.83	31.47	33.05	34.68
19.85	21.55	23.42	25.44	27.28	29.00	30.62	32.19	33.87
19.18	20.85	22.67	24.65	26.46	28.15	29.76	31.32	32.99
18.50	20.13	21.91	23.84	25.62	27.29	28.88	30.43	32.08
17.79	19.39	21.13	23.02	24.76	26.41	27.98	29.52	31.15
17.05	18.62	20.33	22.18	23.89	25.51	27.07	28.59	30.21
16.27	17.82	19.50	21.31	22.99	24.59	26.13	27.64	29.25
15.43	16.98	18.63	20.41	22.07	23.65	25.17	26.67	28.27
14.52	16.07	17.72	19.47	21.11	22.68	24.20	25.68	27.26
13.49	15.08	16.74	18.48	20.12	21.68	23.19	24.67	26.24
12.30	13.98	15.67	17.42	19.07	20.63	22.15	23.63	25.19
10.88	12.70	14.48	16.27	17.94	19.53	21.06	22.55	24.11
9.13	11.20	13.12	14.99	16.73	18.36	19.92	21.43	22.99
6.90	9.36	11.52	13.54	15.38	17.09	18.70	20.25	21.83
3.97	7.04	9.59	11.85	13.86	15.69	17.39	19.00	20.61
	4.03	7.18	9.82	12.09	14.11	15.94	17.65	19.32
		4.08	7.31	9.99	12.28	14.31	16.16	17.92
			4.14	7.41	10.12	12.44	14.49	16.39
				4.18	7.49	10.23	12.57	14.68
					4.21	7.56	10.32	12.72
						4.23	7.61	10.42
							4.25	7.67
								4.28

Figure 2.1. Estimated residual value of Avmark Co

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[2] Oppurtunity Cost, www.netmba.com/econ/micro/cost/opportunity (17.05.2009).

[3] Residual Value, http://en.wikipedia.org/wiki/Residual_value (22.05.2009).

All number is in terms of million dollars. Thus, although price of a 320-200 type of aircraft was a $ 38.000.000 dollars, but at the 2018 estimated price will decrease till $ 28.150.000 dollars.
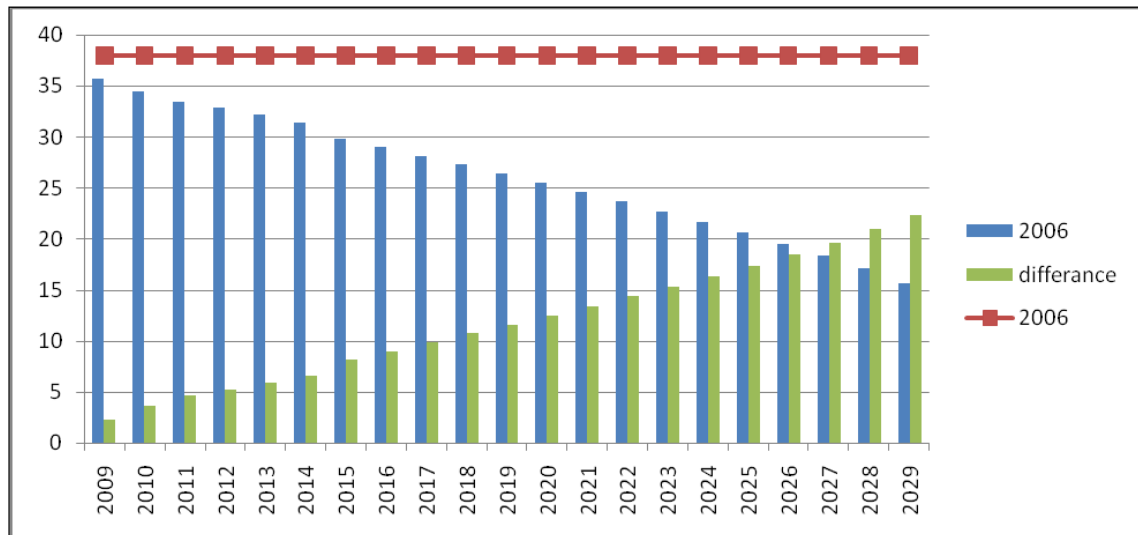
Figure 2.2. Residual value of A 320-200 type of aircraft

Figure 2.2. shows how 320-200 type of aircraft value (residual value) decrease over time. In the beginning of 2006, it's estimated price will decrease to $16.000.000 even if it has got to $ 38.000.000 at the beginning of term.

2.3. TAX BENEFITS AND TAX-BASED LEASING

From the perspective of lessor and lessee, structure of tax is very important. Tax benefits must be included in the analysis as a source of finance to deduct from taxable income. These benefits may be taken by airline itself and used as a deduction from taxable profits. Alternatively tax benefits may be used by a third party lessor that will via a lease transaction absorb them and pass on a share of them on an airline lessee. Tax benefits can be divided into two categories: domestic and border. By domestic lease , we mean that lessor and lessee are resident within the same tax jurisdiction. The most active domestic tax lease markets are those of the US, the UK, Japan and France. By cross-border lease, we mean that the lessor is located in one jurisdiction where it claims tax deductions available from asset ownership and the lessee is located in another jurisdiction. It is possible to structure transactions such that deprecation benefits are also

taken in the lessee's jurisdiction, either by the lessee itself or by another third party lessor. Usually these double dip transaction are structured so that ownership is passed to the lessee in such a way as to create eligibility for depreciation on the asset in both jurisdiction. In recent years, the most popular source of cross-border tax benefits has been Japanese operating leases (Littlejohns and Mcgairl, 1998).

In this study, we just discuss the advantage of French and Japanese structure type of lease.

2.3.1. French Structure

Prior to starting of assessment ,we would like to share important information based on this structure. It is important that because booing types of aircraft would financed by using of U.S source (exim bank or commercial loan) until Turkish airline has changed this idea. Type of booing aircraft was leased by the using of French lease finance by Turkish airline .In a normal type, French lease just would finance to type of airbus aircraft .In addition to, the attraction of the French market is found in the double dip opportunities that exist, particularly in cross-border transactions. Because of this reason, French leverage lease seems to be attractive for cross-border. Lease terms and rental structures have traditionally been flexible, although some uncertainty has been caused by rumors that the tax authorities may challenge uneven rental profiles (Littlejohns and Mcgairl, 1998).

2.3.2. Japanese Structure

The export-import bank of Japan provides cheap dollar funding for leasing companies that lease assets to foreign residents, since 1985. With the development of the Japanese leverage lease that Japan's big-ticket cross-border leasing industry really expended (Littlejohns and Mcgairl, 1998).

After passing a few years, Japanese Operating Leases (JOL) effective took over from the Japanese Leveraged Leases (JLL) that were discontinued at the end of the 1990s. The starting point for both is the demand from Japanese investors for tax benefits from capital investments, the aircraft providing a convenient vehicle. The first crucial difference between the two is that the aircraft is placed with the airline on an operating and not a finance lease, with a maximum term of 10 years for narrow bodied and 12

years for wide bodied aircraft. The second that stems from the first is that tax benefits are only available in Japan and not to the aircraft operator (apart from the rentals). However, the Japanese investors obtain generous tax write-offs such that an attractive lease rental is possible. Lessor would share their tax advantages with lessee and also it shows that Jol so seems to be attractive (Morrell, 2007).

CHAPTER 3

As we stated at the beginning of this study, two financial models used in this thesis construct the analysis from the perspective of a lessee. In other words, the operating lease model is first investigated from the perspective of cash flows, which are discounted to determine their present value and Irr (internal rate of return). After that we generalize thin approach. Thus, we find optimum result by comparing Irr , present value and residual value.

3.1. Evaulation of Operating Lease

In this study, operating lease agreement is a assumed to cover twelve years from December, 2006 until 2018. According to proposal, payments covers 12 years or 48 quarters and all payments are in advance. In this study, we assume that eximbank and commercial loan will be guarantor for agreement. In this part, Internal rate of return calculation techniques is taken from Saab Co. Irr calculation is made from perspective of lessor. In other words, we will determine the amount that lessor would earn from agreement also lessee would loss its revenue as much as lessor's earn.

3.1.1. Basic Terms in the Proposal

Table 3.1. Proposal of A 320-200 type of aircraft

Loan Amount	$ 38.000.000
BASE LIBOR	5,00
RENT / AC (per period)	$904.528
Letter of Credit	$904.528

Type of requested aircraft is a 320-200 with list price of $ 38.000.000. For this proposal total amount is supplied from exim bank as shown in Table 4.1. Under the normal condition, if economy structure goes on smoothly, the requested libor rate is 5 percent yearly by lessor. However, adjusted price is given to lessee, as shown in Table 4.2, based on a forecasted libor in a year if economy does not continue on the smoothline.

Table 3.2. Payments proposal from Lessor

Terms	Forecast int rate	A percent change in a year
1	5,4974	$ 72.375,00
2	5,5806	$ 72.225,00
3	5,5300	$ 72.075,00
4	5,3969	$ 71.925,00
5	5,2362	$ 71.775,00
6	5,1287	$ 71.625,00
7	5,1281	$ 71.475,00
8	5,0884	$ 71.325,00
9	5,0613	$ 71.175,00
10	5,0702	$ 71.025,00
11	5,1031	$ 70.875,00
12	5,1445	$ 70.725,00
13	5,1894	$ 70.575,00
14	5,2300	$ 70.425,00
15	5,2656	$ 70.275,00
16	5,2950	$ 70.125,00
17	5,3271	$ 69.975,00
18	5,3635	$ 69.825,00
19	5,3847	$ 67.933,00

20	5,3952	$	67.039,00
21	5,3996	$	65.593,00
22	5,4063	$	63.321,00
23	5,4604	$	63.033,00
24	5,4370	$	62.140,00
25	5,4345	$	60.625,00
26	5,4380	$	58.755,00
27	5,4438	$	58.529,00
28	5,4691	$	57.637,00
29	5,4892	$	56.058,00
30	5,5140	$	54.529,00
31	5,5196	$	54.361,00
32	5,5233	$	53.468,00
33	5,5247	$	51.831,00
34	5,5322	$	50.591,00
35	5,5366	$	50.475,00
36	5,5486	$	49.582,00
37	5,5829	$	47.891,00
38	5,6012	$	46.896,00
39	5,6605	$	46.829,00
40	5,6897	$	45.936,00
41	5,6373	$	44.193,00
42	5,6288	$	43.406,00
43	5,6385	$	43.385,00
44	5,6509	$	42.491,00
45	5,6621	$	40.700,00
46	5,6733	$	40.090,00
47	5,6830	$	40.111,00
48	5,6954	$	39.217,00

In this table percent changing of price in a year is given by exim bank .In this light, forecasting of interest rate to be found by using of zero coupon bonds from U.S. Treasury bank. After finding forecasted interest rate, adjustment rental payments are

determined. Under the normal condition that base libor is taken 5% if no any changing in interest rate of exim bank.[4] (Understanding the federal reserve system, 2009).

Table 3.3. Any percentage changing of in interest rate

Terms	Forecasted int rate	Base libor	A percent change in a year	Basic Rent	Present value of Basic Rent	Adjustment.Rental Payment
1- Nov-06	5,4974	5,00%	$ 72.375,00	$904.528	$904.528	$35.998
1-Feb-07	5,5806	5,00%	$ 72.225,00	$904.528	$892.259	$41.932
1-May.07	5,53	5,00%	$ 72.075,00	$904.528	$880.157	$38.196
1-Aug-07	5,3969	5,00%	$ 71.925,00	$904.528	$868.219	$28.547
1-Nov-07	5,2362	5,00%	$ 71.775,00	$904.528	$856.443	$16.950
1-Feb-08	5,1287	5,00%	$ 71.625,00	$904.528	$844.827	$9.220
1-May-08	5,1281	5,00%	$ 71.475,00	$904.528	$833.368	$9.153
1-Aug-08	5,0884	%5,00	$ 71.325,00	$904.528	$822.065	$6.305
1-Nov-08	5,0613	%5,00	$ 71.175,00	$904.528	$810.915	$4.365
1-Feb-09	5,0702	%5,00	$ 71.025,00	$904.528	$799.916	$4.986
1-May-09	5,1031	%5,00	$ 70.875,00	$904.528	$789.066	$7.307
1-Aug-09	5,1445	%5,00	$ 70.725,00	$904.528	$778.364	$10.217
1-Nov-09	5,1894	%5,00	$ 70.575,00	$904.528	$767.806	$13.370
1-Feb-10	5,23	%5,00	$ 0.425,00	$904.528	$757.392	$16.197
1-May-10	5,2656	%5,00	$ 70.275,00	$904.528	$747.119	$18.663
1-Aug-10	5,295	%5,00	$ 70.125,00	$904.528	$736.986	$20.690
1-Nov-10	5,3271	%5,00	$ 69.975,00	$904.528	$726.990	$22.889
1-Feb-11	5,3635	%5,00	$ 9.825,00	$904.528	$717.129	$25.382
1-May-11	5,3847	%5,00	$ 67.93300	$904.528	$707.402	$26.133
1-Aug-11	5,3952	%5,00	$ 67.039,00	$904.528	$697.807	$26.493
1-Nov-11	5,3996	%5,00	$ 65.593,00	$904.528	$688.343	$26.210
1-Feb-12	5,4063	%5,00	$ 63.321,00	$904.528	$679.006	$25.729
1-May-12	5,4604	%5,00	$ 63.033,00	$904.528	$669.797	$29.019
1-Aug-12	5,437	%5,00	$ 62.140,00	$904.528	$660.712	$27.157
1-Nov-12	5,4345	%5,00	$ 60.625,00	$904.528	$651.750	$26.340
1-Feb-13	5,438	%5,00	$ 58.755,00	$904.528	$642.910	$25.734
1-May-13	5,4438	%5,00	$ 58.529,00	$904.528	$634.190	$25.974
1-Aug-13	5,4691	%5,00	$ 57.637,00	$904.528	$625.588	$27.039

[4] Understanding the federal reserve system,

http://www.pathtoinvesting.org/invmarkets/thefed/fedreserve/im_fedreserve_011.htm ,

2009

1-Nov-13	5,4892	%5,00	$	56.058,00	$904.528	$617.103	$27.424
1-Feb-14	5,514	%5,00	$	54.529,00	$904.528	$608.733	$28.027
1-May-14	5,5196	%5,00	$	54.361,00	$904.528	$600.476	$28.246
1-Aug-14	5,5233	%5,00	$	53.468,00	$904.528	$592.332	$27.978
1-Nov-14	5,5247	%5,00	$	51.831,00	$904.528	$584.298	$27.196
1-Feb-15	5,5322	%5,00	$	50.591,00	$904.528	$576.373	$26.925
1-May-15	5,5366	%5,00	$	50.475,00	$904.528	$568.555	$27.083
1-Aug-15	5,5486	%5,00	$	49.582,00	$904.528	$560.843	$27.201
1-Nov-15	5,5829	%5,00	$	47.891,00	$904.528	$553.236	$27.918
1-Feb-16	5,6012	%5,00	$	6.896,00	$904.528	$545.733	$28.194
1-May-16	5,6605	%5,00	$	46.829,00	$904.528	$538.331	$30.932
1-Aug-16	5,6897	%5,00	$	5.936,00	$904.528	$531.029	$31.682
1-Nov-16	5,6373	%5,00	$	44.193,00	$904.528	$523.826	$28.166
1-Feb-17	5,6288	%5,00	$	43.406,00	$904.528	$516.721	$27.296
1-May-17	5,6385	%5,00	$	43.385,00	$904.528	$509.713	$27.702
1-Aug-17	5,6509	%5,00	$	42.491,00	$904.528	$502.799	$27.658
1-Nov-17	5,6621	%5,00	$	0.700,00	$904.528	$495.980	$26.949
1-Feb-18	5,6733	%5,00	$	40.090,00	$904.528	$489.252	$26.994
1-May-18	5,683	%5,00	$	40.111,00	$904.528	$482.616	$27.396
1-Aug-18	5,6954	%5,00	$	9.217,00	$904.528	$476.070	$27.272

In this part, our calculation starts with determining the adjustment rental payment. Firstly we convert rental payments cash flows to their present values. To do this, we need to know the cash flows in each period. Here we calculate the Present value of each quarter using in excel by using the formula given below:

$$PV = Fv/(1+r)^t \qquad (3.1)$$

Pv=Present value of money,

Fv=Future value of money,

r=Interest rates

t= time period.

Calculation 1 (adjustment rental payment),

Table 3.4. Adjustment Interest Rate and rental payments

Quarter	payment	Pv	Interest rate
0	$904.528	$904.528	5,5%
1	$904.528	$892.259	5,5%

$PV_0 = (904.528)/(1+(5,5\%)/4)^0$

$PV_0 = 904.528.$

We started calculation from first quarter at time zero because the payment is made in advance means such that payment is received by the seller or the lessor in the beginning of agreement. Similarly the cash total paid for the 2rd quarter's rent will be paid at the beginning of the 2rd quarter.

$PV_1 = (904.528)/(1+(5,5\%)/4)^1$

$PV_1 = 892.259.$

This method is applied to all of the remaining 47 quarters, ending at the 1st August 2018.

Table 3.5. Present Value of Rental Payments

Terms	Basic Rent	Present value of Basic Rent
1-Nov-06	$904.528	$904.528
1-Feb-07	$904.528	$892.259
1-May-07	$904.528	$880.157
1-Aug-07	$904.528	$868.219
1-Nov-07	$904.528	$856.443
1-Feb-08	$904.528	$844.827
1-May-08	$904.528	$833.368
1-Aug-08	$904.528	$822.065
1-Nov-08	$904.528	$810.915
1-Feb-09	$904.528	$799.916

1-May-09	$904.528	$789.066
1-Aug-09	$904.528	$778.364
1-Nov-09	$904.528	$767.806
1-Feb-10	$904.528	$757.392
1-May-10	$904.528	$747.119
1-Aug-10	$904.528	$736.986
1-Nov-10	$904.528	$726.990
1-Feb-11	$904.528	$717.129
1-May-11	$904.528	$707.402
1-Aug-11	$904.528	$697.807
1-Nov-11	$904.528	$688.343
1-Feb-12	$904.528	$679.006
1-May-12	$904.528	$669.797
1-Aug-12	$904.528	$660.712
1-Nov-12	$904.528	$651.750
1-Feb-13	$904.528	$642.910
1-May-13	$904.528	$634.190
1-Aug-13	$904.528	$625.588
1-Nov-13	$904.528	$617.103
1-Feb-14	$904.528	$608.733
1-May-14	$904.528	$600.476
1-Aug-14	$904.528	$592.332
1-Nov-14	$904.528	$584.298
1-Feb-15	$904.528	$576.373
1-May-15	$904.528	$568.555
1-Aug-15	$904.528	$560.843
1-Nov-15	$904.528	$553.236
1-Feb-16	$904.528	$545.733
1-May-16	$904.528	$538.331
1-Aug-16	$904.528	$531.029
1-Nov-16	$904.528	$523.826
1-Feb-17	$904.528	$516.721
1-May-17	$904.528	$509.713
1-Aug-17	$904.528	$502.799
1-Nov-17	$904.528	$495.980
1-Feb-18	$904.528	$489.252
1-May-18	$904.528	$482.616
1-Aug-18	$904.528	$476.070
1-Nov-18		

Last step is to find the adjustment rents for each quarter :

Adjustment Rent=(Adj. quarterly Interest Rates – interest rate(Fed Bank)) * changing of price in a per cent .   (3.2)

Thus, Adjustment for rent at time 0 is \$35.998 and for quarter 1 is \$ 41.932.

$Adj.Rent_0 = (5,4974-5,00)*72.375$

$\qquad = \$35.998$

$Adj.Rent_1 = =(5,5806-5,00)*72.225$

$\qquad = \$41.932$

After we apply to all of them, we find table 3.6.

Table 3.6. Adjustment rental payments

Quarter	Adjustment Rent
0	35.998
1	41.932
2	38.196
3	28.547
4	16.950
5	9.220
6	9.153
7	6.305
8	4.365
9	4.986
10	7.307
11	10.217
12	13.370
13	16.197
14	18.663
15	20.690
16	22.889
17	25.382
18	26.133
19	26.493
20	26.210
21	25.729
22	29.019
23	27.157
24	26.340

25	25.734
26	25.974
27	27.039
28	27.424
29	28.027
30	28.246
31	27.978
32	27.196
33	26.925
34	27.083
35	27.201
36	27.918
37	28.194
38	30.932
39	31.682
40	28.166
41	27.296
42	27.702
43	27.658
44	26.949
45	26.994
46	27.396
47	27.272

3.1.2. Determining Opportunities Cost

In this section we discuss the concept of Opportunities Cost and the way to find it. Even it is introduced previously, we want to make it clear that it is the cost of passing up the next best choice when making a decision or the increase in costs due to delays in making a decision. For example, if an asset is used for one purpose, the opportunity cost is the value of the next best purpose that the asset could have been used for (Terms and Definitions, 2007).

The compound interest is used for making evaluation of opportunities cost.

$$A = P(1 + i)^n \qquad (3.3)$$

where:

'**A**' = <u>Amount</u> after 'n' interest periods.

'**P**' = <u>Principal</u>, the amount invested at the start.

'**i**' = the <u>interest rate</u> applying to each period.

'**n**' = the <u>number</u> of interest periods (Finance-Irr calculation,16-04-2005).

Table 3.7. Example of Opportunity Cost

Quarter	Payment	Pv	Opp.Cost	Turkish Treasury interest rate
0	904.528	904.528	942.425	5,51%
1	904.528	892.259	929.642	5,51%

Opp.Cost0=904.528*(1+(5,51%)/4)^3 =$942.425

Opp.Cost1=892.259*(1+(5,51%)/4)^3 =$929.642

As in table 3.7, in this calculation, n is equal to 3 months (also it is made clear in previous sentence) and all rental payment covert to present value. To finding present values of all rental cash payments interest rate of Turkish treasury bank is used in the calculation. Thus, we generalize the concept to find the opportunity cost for all periods as in Table 3.8.

Table 3.8. Complete opportunities cost for all periods

Quarter	payment	Pv	Opp.Cost	Turkish Treasury interest rate
0	904.528	904.528	942.425	5,51%
1	904.528	892.259	929.642	5,51%
2	904.528	880.157	917.033	5,51%
3	904.528	868.219	904.595	5,51%
4	904.528	856.443	892.325	5,51%
5	904.528	844.827	880.222	5,51%
6	904.528	833.368	868.283	5,51%
7	904.528	822.065	856.507	5,51%
8	904.528	810.915	844.889	5,51%
9	904.528	799.916	833.430	5,51%
10	904.528	789.066	822.125	5,51%
11	904.528	778.364	810.975	5,51%
12	904.528	767.806	799.975	5,51%

13	904.528	757.392	789.124	5,51%
14	904.528	747.119	778.421	5,51%
15	904.528	736.986	767.863	5,51%
16	904.528	726.990	757.448	5,51%
17	904.528	717.129	747.174	5,51%
18	904.528	707.402	737.040	5,51%
19	904.528	697.807	727.043	5,51%
20	904.528	688.343	717.182	5,51%
21	904.528	679.006	707.455	5,51%
22	904.528	669.797	697.859	5,51%
23	904.528	660.712	688.394	5,51%
24	904.528	651.750	679.057	5,51%
25	904.528	642.910	669.846	5,51%
26	904.528	634.190	660.761	5,51%
27	904.528	625.588	651.798	5,51%
28	904.528	617.103	642.958	5,51%
29	904.528	608.733	634.237	5,51%
30	904.528	600.476	625.635	5,51%
31	904.528	592.332	617.149	5,51%
32	904.528	584.298	608.778	5,51%
33	904.528	576.373	600.521	5,51%
34	904.528	568.555	592.376	5,51%
35	904.528	560.843	584.341	5,51%
36	904.528	553.236	576.415	5,51%
37	904.528	545.733	568.597	5,51%
38	904.528	538.331	560.885	5,51%
39	904.528	531.029	553.277	5,51%
40	904.528	523.826	545.773	5,51%
41	904.528	516.721	538.370	5,51%
42	904.528	509.713	531.068	5,51%
43	904.528	502.799	523.865	5,51%
44	904.528	495.980	516.760	5,51%
45	904.528	489.252	509.751	5,51%
46	904.528	482.616	502.837	5,51%
47	904.528	476.070	496.016	5,51%

3.1.1.3. Determining Total Rental Payments

Total rent is composed of rental payments, opportunities cost and adjustment rental Payment. In other words,

Total Rental Payment $_0$ =(Pv+ Adjustment Rent+ Net.Opp.cost)   (3.4)

$\qquad$ =$904.528+$35.998+$37.897 =$978.422.

Total Rent $_1$ =(Pv+ Adjustment Rent+ Net.Opp.cost)   (3.5)

$\qquad$ =$892.259+$41.932+$37.383   =$971.574

Finally, we generalize this Formula to find all of total payments for the 48 periods.

Table 3.9. Results of total rental payments

Quarter	payment	Pv	Opp.Cost	Adjust rent	Net.Opp.cost	Total Rent
0	904.528	904.528	942.425	35.998	37.897	978.422
1	904.528	892.259	929.642	41.932	37.383	971.574
2	904.528	880.157	917.033	38.196	36.876	955.229
3	904.528	868.219	904.595	28.547	36.376	933.142
4	904.528	856.443	892.325	16.950	35.882	909.275
5	904.528	844.827	880.222	9.220	35.396	889.442
6	904.528	833.368	868.283	9.153	34.916	877.437
7	904.528	822.065	856.507	6.305	34.442	862.812
8	904.528	810.915	844.889	4.365	33.975	849.255
9	904.528	799.916	833.430	4.986	33.514	838.416
10	904.528	789.066	822.125	7.307	33.059	829.433
11	904.528	778.364	810.975	10.217	32.611	821.191
12	904.528	767.806	799.975	13.370	32.169	813.344
13	904.528	757.392	789.124	16.197	31.732	805.321
14	904.528	747.119	778.421	18.663	31.302	797.084
15	904.528	736.986	767.863	20.690	30.877	788.553
16	904.528	726.990	757.448	22.889	30.459	780.337
17	904.528	717.129	747.174	25.382	30.045	772.556
18	904.528	707.402	737.040	26.133	29.638	763.173
19	904.528	697.807	727.043	26.493	29.236	753.536
20	904.528	688.343	717.182	26.210	28.839	743.392
21	904.528	679.006	707.455	25.729	28.448	733.183
22	904.528	669.797	697.859	29.019	28.062	726.878
23	904.528	660.712	688.394	27.157	27.682	715.550
24	904.528	651.750	679.057	26.340	27.306	705.397
25	904.528	642.910	669.846	25.734	26.936	695.580

26	904.528	634.190	660.761	25.974	26.571	686.735
27	904.528	625.588	651.798	27.039	26.210	678.838
28	904.528	617.103	642.958	27.424	25.855	670.382
29	904.528	608.733	634.237	28.027	25.504	662.264
30	904.528	600.476	625.635	28.246	25.158	653.881
31	904.528	592.332	617.149	27.978	24.817	645.126
32	904.528	584.298	608.778	27.196	24.480	635.974
33	904.528	576.373	600.521	26.925	24.148	627.446
34	904.528	568.555	592.376	27.083	23.821	619.459
35	904.528	560.843	584.341	27.201	23.498	611.542
36	904.528	553.236	576.415	27.918	23.179	604.333
37	904.528	545.733	568.597	28.194	22.864	596.791
38	904.528	538.331	560.885	30.932	22.554	591.817
39	904.528	531.029	553.277	31.682	22.248	584.960
40	904.528	523.826	545.773	28.166	21.947	573.939
41	904.528	516.721	538.370	27.296	21.649	565.666
42	904.528	509.713	531.068	27.702	21.355	558.770
43	904.528	502.799	523.865	27.658	21.066	551.523
44	904.528	495.980	516.760	26.949	20.780	543.708
45	904.528	489.252	509.751	26.994	20.498	536.745
46	904.528	482.616	502.837	27.396	20.220	530.232
47	904.528	476.070	496.016	27.272	19.946	523.289
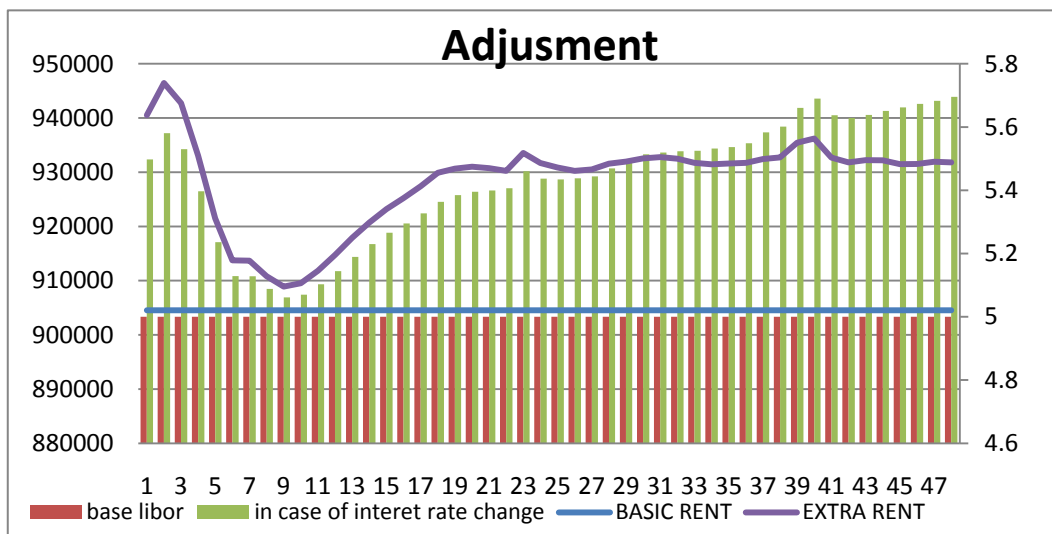
Figure 3.1. Adjustment Rent of Operating Lease

Figure 3.1.states about how basic rent is changed based on the adjustment of interest rate.

3.1.1.4. Results of Analysis

An analysis of internal rate of return is desired when making a financial decision. Thus, in this part we calculate internal rate of return, (IRR) for the cash flow for the project to the gain of lessor from this agreement.

In IRR calculation with Excel, it gives the rate for "per period", irrespective of whether these periods are days, months, or years. When the cash-flows are entered in to excel, we write down in the iteration part as a 0,001 and it starts to iteration. Otherwise, if may not work. Basically, it calculates "i" interest rate and then it finds internal rate of return (Finance and Irr calculation, 2005). In this calculation, flow cash payment (quarterly total payment) is used instead of present value of cash payments.

To demonstrate the calculations, first we consider just the two quarters, and then it is generalized to all of them.

Table 3.10. Assessment of present value, opportunity cost and total payments

Quarter	Payment	Adjustment Rent	Oppurnuties Cost	Total Rent	Present Value
0	$904.528	$35.998	$4.153	$944.679	$944.679
1	$904.528	$41.932	$4.153	$950.613	$937.703

We use below formula to find opportunities cost , total rent and present value.

Opp.Cost $_n$=(monthly rental payments)*(Turkish Treasury interest rate(just given to Turkish airline))*(30/360)+ (monthly rental payments)*(Turkish Treasury interest rate)*(60/360).   (3.6)

Total Rent$_n$= Quarterly Rental Payment $_n$ + Adjustment Rent $_n$ + Opportunities Cost $_n$ (3.7)

PV$_n$=Total Rent $_n$/(1+(i))^n (3.7)

Opp.Cost $_0$=$(904.528/3)*5,51%*(30/360)+ $(904.528/3)*5,51%*(60/360) =$4.153

Total Rent$_0$= $904.528 + $35.998 + $4.153= $944.679

PV$_0$= 944.679_0$ / (1+(5,51% /4))^0 = $944.679

Opp.Cost $_1$=$(904.528/3)*5,51%*(30/360)+ $(904.528/3)*5,51%*(60/360) =$4.153

Total Rent$_1$= $904.528 + $41.932 + $4.153 =$937.703

PV$_1$= 950.613_1$ / (1+(5,51% /4))^1 =$937.703

Finally , we find below table after it is generalized to all of them.

Table 3.11. Results of present value, opportunity cost and total payments

Quarter	Payment	Adjustment Rent	Oppurnuties Cost	Total Rent	Present Value
0	$904.528	$35.998	$4.153	$944.679	$944.679
1	$904.528	$41.932	$4.153	$950.613	$937.703
2	$904.528	$38.196	$4.153	$946.878	$921.334
3	$904.528	$28.547	$4.153	$937.228	$899.560
4	$904.528	$16.950	$4.153	$925.631	$876.363
5	$904.528	$9.220	$4.153	$917.901	$857.242
6	$904.528	$9.153	$4.153	$917.835	$845.539
7	$904.528	$6.305	$4.153	$914.986	$831.468
8	$904.528	$4.365	$4.153	$913.047	$818.437
9	$904.528	$4.986	$4.153	$913.667	$807.871
10	$904.528	$7.307	$4.153	$915.989	$798.924
11	$904.528	$10.217	$4.153	$918.898	$790.577
12	$904.528	$13.370	$4.153	$922.051	$782.516
13	$904.528	$16.197	$4.153	$924.878	$774.256
14	$904.528	$18.663	$4.153	$927.345	$765.777
15	$904.528	$20.690	$4.153	$929.371	$757.028
16	$904.528	$22.889	$4.153	$931.570	$748.514
17	$904.528	$25.382	$4.153	$934.063	$740.325
18	$904.528	$26.133	$4.153	$934.815	$730.858
19	$904.528	$26.493	$4.153	$935.174	$721.210
20	$904.528	$26.210	$4.153	$934.891	$711.200
21	$904.528	$25.729	$4.153	$934.410	$701.180
22	$904.528	$29.019	$4.153	$937.701	$694.093
23	$904.528	$27.157	$4.153	$935.838	$683.307
24	$904.528	$26.340	$4.153	$935.022	$673.439
25	$904.528	$25.734	$4.153	$934.415	$663.862
26	$904.528	$25.974	$4.153	$934.655	$655.015
27	$904.528	$27.039	$4.153	$935.721	$646.856
28	$904.528	$27.424	$4.153	$936.105	$638.333
29	$904.528	$28.027	$4.153	$936.708	$630.070
30	$904.528	$28.246	$4.153	$936.927	$621.658
31	$904.528	$27.978	$4.153	$936.659	$613.040
32	$904.528	$27.196	$4.153	$935.877	$604.210
33	$904.528	$26.925	$4.153	$935.606	$595.832
34	$904.528	$27.083	$4.153	$935.764	$587.839

35	$904.528	$27.201	$4.153	$935.882	$579.929
36	$904.528	$27.918	$4.153	$936.599	$572.491
37	$904.528	$28.194	$4.153	$936.875	$564.883
38	$904.528	$30.932	$4.153	$939.613	$558.840
39	$904.528	$31.682	$4.153	$940.364	$551.690
40	$904.528	$28.166	$4.153	$936.847	$542.163
41	$904.528	$27.296	$4.153	$935.977	$534.303
42	$904.528	$27.702	$4.153	$936.383	$527.276
43	$904.528	$27.658	$4.153	$936.339	$520.091
44	$904.528	$26.949	$4.153	$935.630	$512.639
45	$904.528	$26.994	$4.153	$935.676	$505.701
46	$904.528	$27.396	$4.153	$936.077	$499.048
47	$904.528	$27.272	$4.153	$935.954	$492.205

In this part, we find i and irr. But, first of all we need to find i.

$0 = \$-38.000.000 + 904.528/(1+i)^0 + 904.528/(1+i)^1 + ... +$

$904.528/(1+i)^{47}+28.150.000/(1+i)^{48}$

i=2,1169% ⟶ effective periodic rate

Irr=(1+ effective periodic rate)$^{\text{number of terms in a year}}$ -1

Irr=(1+2,1169%)^4-1

Irr=8,7401% ⟶ effective annual rate

Summing up, the IRR "per period" is calculated by Excel show in table 3.12

Table 3.12. Internal rate of return for operating lease

Quarter	Total Rent	-38.000.000
0	944.679	944.679
1	950.613	950.613
2	946.878	946.878
3	937.228	937.228
4	925.631	925.631
5	917.901	917.901
6	917.835	917.835
7	914.986	914.986
8	913.047	913.047
9	913.667	913.667
10	915.989	915.989
11	918.898	918.898

12	922.051	922.051
13	924.878	924.878
14	927.345	927.345
15	929.371	929.371
16	931.570	931.570
17	934.063	934.063
18	934.815	934.815
19	935.174	935.174
20	934.891	934.891
21	934.410	934.410
22	937.701	937.701
23	935.838	935.838
24	935.022	935.022
25	934.415	934.415
26	934.655	934.655
27	935.721	935.721
28	936.105	936.105
29	936.708	936.708
30	936.927	936.927
31	936.659	936.659
32	935.877	935.877
33	935.606	935.606
34	935.764	935.764
35	935.882	935.882
36	936.599	936.599
37	936.875	936.875
38	939.613	939.613
39	940.364	940.364
40	936.847	936.847
41	935.977	935.977
42	936.383	936.383
43	936.339	936.339
44	935.630	935.630
45	935.676	935.676
46	936.077	936.077
47	935.954	935.954
		28.150.000

The result in the Excel indicates that IRR = 8.74 % . Let's review the result in detail :

IRR=8,7401%

In IRR calculation with Excel, it will give us the rate "per period", irrespective of whether these periods are days, months, or years. When we put in cash-flow table in Excel, we write down iteration part as a 0,001 and iteration is started with entering 0,001.

Table 3.13. Summary of Operating Lease

Operating lease	
Price of Aircraft:	$38.000.000
Quarterly payment	904.528
PV:	33.031.372
IRR	8,74%

3.2. EVALUATION OF FINANCIAL LEASE

In this part , there are two basic elements depend on the part that is financed. Specifically 85 % will be financed by Eximbank and and remaning part will be by Commercial Loan.

PART 1-Exim Bank (85%)

There is no doubt that supporting of lease financing is so important from the perspective of some foreign buyers in U.S. Capital goods prefer lease financing as an alternative to traditional installment loans. Ex-Im Bank will guarantee lease financing in U.S. for aircraft or goods and services to creditworthy international lessees, both private and public sector, when financing is otherwise not available or applicable interest rates are not economically viable.[5](Export-import bank of the u.s, 2006).

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[5] Export-import bank of the u.s, http://www.exim.gov/products/lease_guar.cfm, 2009

Table 3.14. Basic payment structure of Exim bank

	1 Aircraft			
EXIMBANK (%85):	$ 32.300.000			
TOTAL AMOUNT:	$ 38.000.000			
NUMBER OF AIRCRAFT:	1		SECTRUST-SET UP COST(FLAT)	$0
EXPOSURE FEE:	$ 969.000		SEC TRUST-ADM FEE(PA)	$0
INTEREST RATE (LİBOR+MARGIN):	5,53357%		SEC TRUST-COUNCEL FEE(FLAT)	$0
MARGIN:	-0,0470%	-0,0100%	SPC-SET-UP(FLAT)	$0
DELİVERY DATE :	01.Kas.06		SPC-LEGAL COST (FLAT)	$4.750
			SPC-AD FEE(FLAT)	$56.241
6 MONTH LIBOR:	5,58057%		LENDERS(OUT-OF-POC(FLAT)	$0
DAYS:	4	360	LENDERS(LEGAL COST)(FLAT)	$122.720
PMT PERIOD:	48	12 Years		
DAYS IN PMT PERIOD:	90			
MGMT FEE (FLAT)	0,100%	$ 32.300,00		
AGENCY FEE (FLAT)	$0	AGENCY FEE (P.A.)	$1.250	

The value of aircraft is $38.000.000 US dollars. According to given financial lease proposal exim bank covers 85% of aircraft value and remaining 15% will be supplied by commercial Banks. Table 3.14 presents all the details in the payment structure of Exim Bank. By using capital, they would paid $ 38.000.000. However, because of this financial selection is not selected as a cash option, we just investigated leasing options. Prior to assess evolution of exim bank and commercial loan, we explain key point definitions from this table 1.

Exposure Fee: Eximbank's exposure fees vary according to the term of the loan, the classification of the borrower or guarantor, and the borrower's country. They are assessed on each loan disbursement, and may be paid at disbursement or financed over the life of the loan (Delphos, 1991).

Agency fee (flat): An annual fee paid to an agent for the work and responsibility involved in managing a loan after it has been signed. However , in this agreement agency fee accepted as a flat not a annually (Agency Fee, 2006).In addition, in order to obtain tax yields from financial lease agreement, some special purpose companies have to be established in some European countries. By doing so, some transactions expense and management cost are occurred. All of them belong to lessee. These are; sectrust-set up cost(flat)

sec trust-adm fee(pa)

sec trust-councel fee(flat)

spc-set-up(flat)

spc-legal cost (flat)

spc-ad fee(flat)

lenders(out-of-poc(flat)

lenders(legal cost)(flat)

3.2.1.1. Calculation of Eximbank Credit

Total amount: $ 38.000.000

Eximbank provides %85 of total amount.

Eximbank=$ 38.000.000-($ 38.000.000*%85)= $32.300.000.

3.2.1.2. Calculation of Exposure fee

Exposure fee=($32.300.000)-($32.300.000)*%3

Exposure fee =$969.000

(According to Turkish Airline financial policy, it does not accept to be paid to lessor.

However, in this study, we assume that as it was accepted).

3.2.1.3 . Calculation of Libor and margin (Interest Rate)

We investigate that interest rate in the given proposal from eximbank.

Interest Rate (Libor+Margin):

As it given in table 3.15, we find an interest rate with an using estimated interest rate

Table 3.15. An evaluation of interest rate

0	Forecasting interest rate	Interest rate (libor+margin)	Margin
1	0,0558	5,5336%	-0,0470%

For calculation of first quarter interest rate;

Interest Rate 1=0,0558+(-0,0470) =5,5336%

Thus, as we see from assessment, the same formula is to be applied to remaining parts;

Table 3.16. Results of calculation of exim bank interest rate

0	Forecasting interest rate	interest rate (libor+margin)	Margin
1	0,0558	5,5336%	-0,0470%
2	0,0553	5,4830%	-0,0470%
3	0,0540	5,3499%	-0,0470%
4	0,0524	5,1892%	-0,0470%
5	0,0513	5,0817%	-0,0470%
6	0,0513	5,0811%	-0,0470%
7	0,0509	5,0414%	-0,0470%
8	0,0506	5,0143%	-0,0470%
9	0,0507	5,0232%	-0,0470%
10	0,0510	5,0561%	-0,0470%
11	0,0514	5,0975%	-0,0470%
12	0,0519	5,1424%	-0,0470%
13	0,0523	5,1830%	-0,0470%
14	0,0527	5,2186%	-0,0470%
15	0,0530	5,2480%	-0,0470%
16	0,0533	5,2801%	-0,0470%
17	0,0536	5,3165%	-0,0470%
18	0,0538	5,3377%	-0,0470%
19	0,0540	5,3482%	-0,0470%
20	0,0540	5,3526%	-0,0470%
21	0,0541	5,3593%	-0,0470%
22	0,0546	5,4134%	-0,0470%
23	0,0544	5,3900%	-0,0470%
24	0,0543	5,3875%	-0,0470%
25	0,0544	5,3910%	-0,0470%
26	0,0544	5,3968%	-0,0470%
27	0,0547	5,4221%	-0,0470%
28	0,0549	5,4422%	-0,0470%
29	0,0551	5,4670%	-0,0470%
30	0,0552	5,4726%	-0,0470%
31	0,0552	5,4763%	-0,0470%
32	0,0552	5,4777%	-0,0470%
33	0,0553	5,4852%	-0,0470%
34	0,0554	5,4896%	-0,0470%

35	0,0555	5,5016%	-0,0470%
36	0,0558	5,5359%	-0,0470%
37	0,0560	5,5542%	-0,0470%
38	0,0566	5,6135%	-0,0470%
39	0,0569	5,6427%	-0,0470%
40	0,0564	5,5903%	-0,0470%
41	0,0563	5,5818%	-0,0470%
42	0,0564	5,5915%	-0,0470%
43	0,0565	5,6039%	-0,0470%
44	0,0566	5,6151%	-0,0470%
45	0,0567	5,6263%	-0,0470%
46	0,0568	5,6360%	-0,0470%
47	0,0570	5,6484%	-0,0470%
48	0,0570	5,6559%	-0,0470%

3.2.1.4. Management Fee (Flat): It is transaction (management) fee that financial Supplier (Eximbank) requests (0,1%) from lessee. As it is known that in the financial lease all transaction costs belong to lessee. Thus, in the beginning of the agreement, mgmt fee is to be requested instantly. Basic calculation of this transaction evolutions is shown below.

Mgmt Fee=(0,100%)* $ 32.300.000

= $32.000,00

3.2.1.5 . Evaluation of S.P.C Fee

In this part, we investigate the establishment fee of a special purpose company(spc).

Table 3.17. Structure of Special purpose company

Sectrust-set up cost(flat)	$0
Sec trust-adm fee(pa)	$0
Sec trust-councel fee(flat)	$0
Spc-set-up(flat)	$0
Spc-legal cost (flat)	$4.750

Spc-ad fee(flat)	$56.241
Lenders(out-of-poc(flat)	$0
Lenders(legal cost)(flat)	$122.720
Agency fee (p.a.)	$1.250

Flat= just once a payment for all terms

P.A= A payment for every annual terms

General formula of quarter expense= mgmt fee (FLAT)+agency fee for establishment of a new Co.+ spc legal cost(Flat)+spc –ad fee (Flat)+lendors (legal Cost)(flat).   (3.8)

Calculation of Quarter Expense is as shown below;

Table 3.18, shows the transaction fee to be paid for every term.

We start to calculate from first quarter as below:

FQE 1= $ 32.300,00+$1.250+$4.750+$56.241 +$122.720+$969.000

ACE1 =$1.186.261

After this first assessment, we use same formula to all the other quarters ;

FQE 2 (In the second quarter expense)= $ 1.250

FQE 3 =$1.250

FQE48 =$1.250

The annual expense is agency fee (P.A.), $1.250.

3.2.1.6. Transaction fees of S.P.C

Table 3.18. Transaction fees of Spc

Terms	Transaction Fee
0	1.186.261
1	1.250
2	1.250
3	1.250
4	1.250
5	1.250
6	1.250
7	1.250
8	1.250
9	1.250

10	1.250
11	1.250
12	1.250
13	1.250
14	1.250
15	1.250
16	1.250
17	1.250
18	1.250
19	1.250
20	1.250
21	1.250
22	1.250
23	1.250
24	1.250
25	1.250
26	1.250
27	1.250
28	1.250
29	1.250
30	1.250
31	1.250
32	1.250
33	1.250
34	1.250
35	1.250
36	1.250
37	1.250
38	1.250
39	1.250
40	1.250
41	1.250
42	1.250
43	1.250
44	1.250
45	1.250
46	1.250
47	1.250
48	1.250

3.2.1.7 . Sensitive Analysis

As it was shown from Table 3.18. the payment proposal was given to Turkish Airline from exim bank. In the financial lease, payment structure is not in advance as opposed to operating lease. As it is seen from Table 3.18. prior to pay first rental, Airline just paid the transactions cost and it did not deduct from rental structures. All in all, as we understand from above table , payment structure are dived in to two types, which are these Capital and interest amounts.

Table 3.19. Sensitive Analysis

	BALANCE	CAPITAL	INTEREST	Expanse	TOTAL
					(32.300.000)
01.Nov.06	32.300.000			$1.186.261	
01.Feb.07	31.821.477	478.523	446.836		925.359
01.May.07	31.336.334	485.143	436.189		921.332
01.Aug.07	30.844.480	491.854	419.116		910.970
01.Nov.07	30.345.822	498.658	400.142	1.250	898.800
01.Feb.08	29.840.265	505.557	385.523		891.080
01.May.08	29.327.714	512.551	379.051		891.601
01.Aug.08	28.808.073	519.641	369.632		889.273
01.Nov.08	28.281.243	526.830	361.133	1.250	887.963
01.Feb.09	27.747.125	534.118	355.156		889.274
01.May.09	27.205.618	541.507	350.731		892.238
01.Aug.09	26.656.619	548.998	346.699		895.697
01.Nov.09	26.100.026	556.593	342.700	1.250	899.293
01.Feb.10	25.535.733	564.293	338.190		902.483
01.May.10	24.963.634	572.099	333.150		905.250
01.Aug.10	24.383.620	580.014	327.526		907.539
01.Nov.10	23.795.583	588.038	321.870	1.250	909.907
01.Feb.11	23.199.410	596.172	316.274		912.446
01.May.11	22.594.991	604.420	309.578		913.998
01.Aug.11	21.982.209	612.781	302.105		914.887
01.Nov.11	21.360.951	621.259	294.154	1.250	915.412
01.Feb.12	20.731.098	629.853	286.201		916.054
01.May.12	20.092.531	638.566	280.564		919.130
01.Aug.12	19.445.131	647.400	270.748		918.148
01.Nov.12	18.788.775	656.356	261.901	1.250	918.257
01.Feb.13	18.123.339	665.436	253.225		918.661
01.May.13	17.448.697	674.642	244.519		919.161

01.Aug.13	16.764.722	683.975	236.523		920.498
01.Nov.13	16.071.285	693.437	228.093	1.250	921.529
01.Feb.14	15.368.255	703.030	219.654		922.684
01.May.14	14.655.500	712.756	210.261		923.016
01.Aug.14	13.932.884	722.616	200.643		923.259
01.Nov.14	13.200.272	732.612	190.800	1.250	923.413
01.Feb.15	12.457.524	742.747	182.237		924.984
01.May.15	11.704.502	753.022	172.118		925.141
01.Aug.15	10.941.063	763.440	162.067		925.506
01.Nov.15	10.167.062	774.001	152.435	1.250	926.436
01.Feb.16	9.382.353	784.708	142.115		926.824
01.May.16	8.586.789	795.564	132.538		928.102
01.Aug.16	7.780.219	806.570	121.926		928.496
01.Nov.16	6.962.491	817.728	109.455	1.250	927.183
01.Feb.17	6.133.451	829.040	97.803		926.843
01.May.17	5.292.942	840.509	86.306		926.815
01.Aug.17	4.440.805	852.137	74.643		926.779
01.Nov.17	3.576.880	863.925	62.750	1.250	926.675
01.Feb.18	2.701.003	875.877	50.643		926.519
01.May.18	1.813.010	887.993	38.307		926.300
01.Aug.18	912.732	900.278	25.769		926.047
01.Nov.18	(0)	912.732	12.990		925.722
	TOTAL:	**32.300.000**	**11.642.985**	**1.200.011**	**43.942.985**

Prior to starting of financial lease evaluation, we would like to make it clear that structure of Capital payment amount are given by exim bank. As it is stated in the previous sentence, financial lease covers capital and interest payments. Because of this reason, in this section just we calculate interest payment and it has been calculated from balance loan and estimated interest rates. Quarterly capital payment is deducted from previous balance amount in order to calculate adjustment balance payment. Before going in to detail calculation, we express some important issues:

Most of the banks want to keep their firsts capital payments structure very low because of the higher interest payments from lessee. Now, we examine the cash flows as a couple of quarter and generalize for all other terms.

3.2.1.8. Evaluation of Balance, Capital and Interest

Table 3.20. Evaluations of balance, capital and interest rate

		BALANCE	CAPITAL	INTEREST	EXPENSE	TOTAL
						(32.300.000)
0	01.Nov.06	32.300.000			$1.186.261	
1	01.Feb.07	31.821.477	478.523	446.836		925.359
2	01.May.07	31.336.334	485.143	436.189		921.332

In this section, we discuss Quarter Remaining Balance (QRB) and Quarter Interest Payments (QIP). We calculate here balance and interest payment. Our calculation structure type follows this way :

First of all we calculate Quarter Remaining Balance after that Quarter Interest Payments to be calculated.

QRB1 = $ 32.300.000 - $ 478.523 = $ 31.821.477

QIP n = (Remaining Balance n-1)*(Margin + (Estimated interest rate)n) * # of years (3.9).

QIP 1= $ 32.300.000 * ((-)0,00470% + 5,5806%)*1/4 = $446.836

Transaction and Management Cost = mgmt fee (flat) + agency fee (flat) + sectrust-set up cost(flat) + sec trust adm fee(pa) + sec trust councel fee(flat) + spc set up(flat) + spc legal cost (flat) + spc ad fee(flat) + lenders(out of poc(flat) + lenders(legal cost)(flat) + agency fee (p.a.).   (3.10).

Tmc1= $ 32.300,00 + $0+ $0+ $0+ $0+ $0+ $0+ $4.750+ $56.241+ $122.720+ $1.250

Tmc 1= $1.186.261,

Tmc 2= $1.250

Tmc 12=$1.250

After calculation of previous section, we easily get Table 3.20.

Evaluations results of balance, capital and interest rate for the remaining period, are given in the Table 3.21.
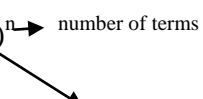
Table 3.21. Evaluations results of balance, capital and interest rate

Terms			**BALANCE**	**CAPITAL**	**INTEREST**	**Expense**	**TOTAL**
							(32.300.000)
0	01.Nov.06		32.300.000			$1.186.261	
1	01.Feb.07		31.821.477	478.523	446.836		925.359
2	01.May.07		31.336.334	485.143	436.189		921.332
3	01.Aug.07		30.844.480	491.854	419.116		910.970
4	01.Nov.07		30.345.822	498.658	400.142	1.250	898.800
5	01.Feb.08		29.840.265	505.557	385.523		891.080
6	01.May.08		29.327.714	512.551	379.051		891.601
7	01.Aug.08		28.808.073	519.641	369.632		889.273
8	01.Nov.08		28.281.243	526.830	361.133	1.250	887.963
9	01.Feb.09		27.747.125	534.118	355.156		889.274
10	01.May.09		27.205.618	541.507	350.731		892.238
11	01.Aug.09		26.656.619	548.998	346.699		895.697

12	01.Nov.09	26.100.026	556.593	342.700	1.250	899.293
13	01.Feb.10	25.535.733	564.293	338.190		902.483
14	01.May.10	24.963.634	572.099	333.150		905.250
15	01.Aug.10	24.383.620	580.014	327.526		907.539
16	01.Nov.10	23.795.583	588.038	321.870	1.250	909.907
17	01.Feb.11	23.199.410	596.172	316.274		912.446
18	01.May.11	22.594.991	604.420	309.578		913.998
19	01.Aug.11	21.982.209	612.781	302.105		914.887
20	01.Nov.11	21.360.951	621.259	294.154	1.250	915.412
21	01.Feb.12	20.731.098	629.853	286.201		916.054
22	01.May.12	20.092.531	638.566	280.564		919.130
23	01.Aug.12	19.445.131	647.400	270.748		918.148
24	01.Nov.12	18.788.775	656.356	261.901	1.250	918.257
25	01.Feb.13	18.123.339	665.436	253.225		918.661
26	01.May.13	17.448.697	674.642	244.519		919.161
27	01.Aug.13	16.764.722	683.975	236.523		920.498
28	01.Nov.13	16.071.285	693.437	228.093	1.250	921.529
29	01.Feb.14	15.368.255	703.030	219.654		922.684
30	01.May.14	14.655.500	712.756	210.261		923.016
31	01.Aug.14	13.932.884	722.616	200.643		923.259
32	01.Nov.14	13.200.272	732.612	190.800	1.250	923.413
33	01.Feb.15	12.457.524	742.747	182.237		924.984
34	01.May.15	11.704.502	753.022	172.118		925.141
35	01.Aug.15	10.941.063	763.440	162.067		925.506
36	01.Nov.15	10.167.062	774.001	152.435	1.250	926.436
37	01.Feb.16	9.382.353	784.708	142.115		926.824
38	01.May.16	8.586.789	795.564	132.538		928.102
39	01.Aug.16	7.780.219	806.570	121.926		928.496
40	01.Nov.16	6.962.491	817.728	109.455	1.250	927.183
41	01.Feb.17	6.133.451	829.040	97.803		926.843
42	01.May.17	5.292.942	840.509	86.306		926.815
43	01.Aug.17	4.440.805	852.137	74.643		926.779
44	01.Nov.17	3.576.880	863.925	62.750	1.250	926.675
45	01.Feb.18	2.701.003	875.877	50.643		926.519
46	01.May.18	1.813.010	887.993	38.307		926.300
47	01.Aug.18	912.732	900.278	25.769		926.047
48	01.Nov.18	(0)	912.732	12.990		925.722
		TOTAL:	**32.300.000**	**11.642.985**	**1.200.011**	**43.942.985**

3.2.1.9. Evaluation of Present Value

Pv (Present Value) = Fv (Future Value) / (1+i)^{n} → number of terms

Discount rate

In this section, we calculate the present value of total amount of expanse. However, this section does not cover transaction expenses, just it involves in interest and capital payments. But last part will cover. First of all, we start with the first two quarter's loan. Discount rate is taken 5,50%.

Present value calculation is summarized in Table 3.22.

Table 3.22. Present value calculation of Exim bank loan

Terms		BALANCE	CAPITAL	INTEREST	Expense	TOTAL
						(32.300.000)
0	01.Nov.06	32.300.000			$1.186.261	
1	01.Feb.07	31.821.477	478.523	446.836		925.359
2	01.May.07	31.336.334	485.143	436.189		921.332

$Pv_1 = (\$925.359) / (1+(5,50\%)/4)^\wedge 1$

$Pv_1 = \$ 912.808$

$Pv_2 = (\$921.332) / (1+(5,50\%)/4)^\wedge 2$

$Pv_2 = \$ 896.508$

Consequently, we apply same formulation to all of them .Thus, we find all the quarters in Table 3.23.

Table 3.23. Results of present value calculation

Terms		Balance	Capital	Interest	Expense	Total	Pv
						(32.300.000)	
0	01.Nov.06	32.300.000			$1.186.261		$ -
1	01.Feb.07	31.821.477	478.523	446.836		925.359	$ 912.808
2	01.May.07	31.336.334	485.143	436.189		921.332	$ 896.508
3	01.Aug.07	30.844.480	491.854	419.116		910.970	$ 874.403
4	01.Nov.07	30.345.822	498.658	400.142	1.250	898.800	$ 851.020
5	01.Feb.08	29.840.265	505.557	385.523		891.080	$ 832.266
6	01.May.08	29.327.714	512.551	379.051		891.601	$ 821.458

7	01.Aug.08	28.808.073	519.641	369.632		889.273	$ 808.200
8	01.Nov.08	28.281.243	526.830	361.133	1.250	887.963	$ 796.064
9	01.Feb.09	27.747.125	534.118	355.156		889.274	$ 786.426
10	01.May.09	27.205.618	541.507	350.731		892.238	$ 778.345
11	01.Aug.09	26.656.619	548.998	346.699		895.697	$ 770.764
12	01.Nov.09	26.100.026	556.593	342.700	1.250	899.293	$ 763.363
13	01.Feb.10	25.535.733	564.293	338.190		902.483	$ 755.680
14	01.May.10	24.963.634	572.099	333.150		905.250	$ 747.715
15	01.Aug.10	24.383.620	580.014	327.526		907.539	$ 739.439
16	01.Nov.10	23.795.583	588.038	321.870	1.250	909.907	$ 731.313
17	01.Feb.11	23.199.410	596.172	316.274		912.446	$ 723.407
18	01.May.11	22.594.991	604.420	309.578		913.998	$ 714.808
19	01.Aug.11	21.982.209	612.781	302.105		914.887	$ 705.799
20	01.Nov.11	21.360.951	621.259	294.154	1.250	915.412	$ 696.626
21	01.Feb.12	20.731.098	629.853	286.201		916.054	$ 687.658
22	01.May.12	20.092.531	638.566	280.564		919.130	$ 680.609
23	01.Aug.12	19.445.131	647.400	270.748		918.148	$ 670.661
24	01.Nov.12	18.788.775	656.356	261.901	1.250	918.257	$ 661.642
25	01.Feb.13	18.123.339	665.436	253.225		918.661	$ 652.956
26	01.May.13	17.448.697	674.642	244.519		919.161	$ 644.450
27	01.Aug.13	16.764.722	683.975	236.523		920.498	$ 636.633
28	01.Nov.13	16.071.285	693.437	228.093	1.250	921.529	$ 628.702
29	01.Feb.14	15.368.255	703.030	219.654		922.684	$ 620.951
30	01.May.14	14.655.500	712.756	210.261		923.016	$ 612.750
31	01.Aug.14	13.932.884	722.616	200.643		923.259	$ 604.598
32	01.Nov.14	13.200.272	732.612	190.800	1.250	923.413	$ 596.497
33	01.Feb.15	12.457.524	742.747	182.237		924.984	$ 589.407
34	01.May.15	11.704.502	753.022	172.118		925.141	$ 581.511
35	01.Aug.15	10.941.063	763.440	162.067		925.506	$ 573.851
36	01.Nov.15	10.167.062	774.001	152.435	1.250	926.436	$ 566.636
37	01.Feb.16	9.382.353	784.708	142.115		926.824	$ 559.184
38	01.May.16	8.586.789	795.564	132.538		928.102	$ 552.361
39	01.Aug.16	7.780.219	806.570	121.926		928.496	$ 545.100
40	01.Nov.16	6.962.491	817.728	109.455	1.250	927.183	$ 536.946
41	01.Feb.17	6.133.451	829.040	97.803		926.843	$ 529.469
42	01.May.17	5.292.942	840.509	86.306		926.815	$ 522.272
43	01.Aug.17	4.440.805	852.137	74.643		926.779	$ 515.168
44	01.Nov.17	3.576.880	863.925	62.750	1.250	926.675	$ 508.124
45	01.Feb.18	2.701.003	875.877	50.643		926.519	$ 501.147

46	01.May.18	1.813.010	887.993	38.307		926.300	$ 494.233
47	01.Aug.18	912.732	900.278	25.769		926.047	$ 487.396
48	01.Nov.18	(0)	912.732	12.990		925.722	$ 480.617
		TOTAL:	**32.300.000**	**11.642.985**	**1.200.011**	**43.942.985**	**$31.947.943**

3.2.1.10. Internal Rate of Return

Internal Rate of Return Calculation of Exim Bank Loan is as shown below;

Basically, we start with finding of "i" such that:

$$0 = -(32.300.000) + 925.359 /(1+i) + 921.332 /(1+i)^2 + ... + 925.722 /(1+i)^{48}$$

I=1,3 %

IRR=(1+ efective periodic interest rate)^number of terms -1   (3.11)

IRR=(1+1,3 %)^{12/3}-1

IRR=5,30228%

	balance	capital	interest	expense	total
Total	-	$32.300.000	$11.642.985	$1.200.011	**$43.942.985**

Present Value of Total Loan= **$31.947.943**

IRR=5,30228%

3.3. Evaluation of Commercial Loan

Table 3.24. Structure of commercial loan

BARCLAYS	**1 Aircraft**			
commercial loan (%15):	$ 5.700.000			
total amount:	$ 38.000.000		commitment fee (p.a.)	
number of aircraft:	1		sectrust-set up cost(flat)	
			sec trust-adm fee(flat)	
interest rate (libor+margin):	7,03057%		spc-set-up(flat)	
margin 1:	1,450%		spc-ad fee(pa)	
delivery date :	01.kas.06		lenders(out-of-poc(flat)	

			lenders(legal cost)(flat)	
3 month libor:	5,58057%			
days:	2	360		
pmt period:	44	11 years	commitment fee (p.a.)	$ 25.650,00
days in pmt period:	90			
mgmt fee (flat)	0,750%	$ 42.750,00		
agency fee (p.a.)	$5.000	agency fee (flat)	$0	

In this part, for A320-200 type of aircraft, how it is to be financed by Commercial Loan (15%).

3.3.1. **Evaluation of Commercial Loan Credit.**

<mark>TOTAL AMOUNT</mark>: $ 38.000.000

Commercial credit provides %15 of total amount.

Commercial Loan Credit=$ 38.000.000-($ 38.000.000*%15) $5.700.000.

3.3.1.1. Calculation of Interest Rates (Libor and Margin)

We investigate the interest rate given in the proposal by Commercial Loan. As it is given in Table 3.24. we find an interest rate that is equivalent to estimated interest rate and margin (libor + margin).

Table 3.25. Interest Rate (Libor+Margin)

Est.int.rate	Margin	interest rate
5,5806%	1,4500%	7,0306%
5,5300%	1,4500%	6,9800%

For calculation of first quarter interest rate;

Interest Rate =Estimated Libor + Margin (3.12).

I_1=5,5806% + 1,4500% = 7,0306%

I_2 = 5,5300% +1,4500% = 6,9800%

Thus, as we see from the above calculation, the same formula is applied to remaining parts and the result follows.

Table 3.26. Estimated Interest Rate

Est.int.rate	Margin	Interest rate
5,5806%	1,4500%	7,0306%
5,5300%	1,4500%	6,9800%
5,3969%	1,4500%	6,8469%
5,2362%	1,4500%	6,6862%
5,1287%	1,4500%	6,5787%
5,1281%	1,4500%	6,5781%
5,0884%	1,4500%	6,5384%
5,0613%	1,4500%	6,5113%
5,0702%	1,4500%	6,5202%
5,1031%	1,4500%	6,5531%
5,1445%	1,4500%	6,5945%
5,1894%	1,4500%	6,6394%
5,2300%	1,4500%	6,6800%
5,2656%	1,4500%	6,7156%
5,2950%	1,4500%	6,7450%
5,3271%	1,4500%	6,7771%
5,3635%	1,4500%	6,8135%
5,3847%	1,4500%	6,8347%
5,3952%	1,4500%	6,8452%
5,3996%	1,4500%	6,8496%
5,4063%	1,4500%	6,8563%
5,4604%	1,4500%	6,9104%
5,4370%	1,4500%	6,8870%
5,4345%	1,4500%	6,8845%
5,4380%	1,4500%	6,8880%
5,4438%	1,4500%	6,8938%
5,4691%	1,4500%	6,9191%
5,4892%	1,4500%	6,9392%
5,5140%	1,4500%	6,9640%
5,5196%	1,4500%	6,9696%
5,5233%	1,4500%	6,9733%

5,5247%	1,4500%	6,9747%
5,5322%	1,4500%	6,9822%
5,5366%	1,4500%	6,9866%
5,5486%	1,4500%	6,9986%
5,5829%	1,4500%	7,0329%
5,6012%	1,4500%	7,0512%
5,6605%	1,4500%	7,1105%
5,6897%	1,4500%	7,1397%
5,6373%	1,4500%	7,0873%
5,6288%	1,4500%	7,0788%
5,6385%	1,4500%	7,0885%
5,6509%	1,4500%	7,1009%
5,6621%	1,4500%	7,1121%
5,6733%	1,4500%	7,1233%
5,6830%	1,4500%	7,1330%
5,6954%	1,4500%	7,1454%
5,7029%	1,4500%	7,1529%

Table 3.27. Assessment of capital, Interest and total payments

Balance	Capital	Interest		Total
5.700.000				(5.700.000)
5.700.000		-	47.750,00	
5.570.455	129.545	100.186		229.731
5.440.909	129.545	97.204		226.749
5.311.364	129.545	93.133		222.679
5.181.818	129.545	88.781	30.650	218.327
5.052.273	129.545	85.224		214.770
4.922.727	129.545	83.085		212.631
4.793.182	129.545	80.467		210.012
4.663.636	129.545	78.025	30.650	207.570
4.534.091	129.545	76.020		205.565
4.404.545	129.545	74.281		203.826
4.275.000	129.545	72.614		202.159
4.145.455	129.545	70.959	30.650	200.504
4.015.909	129.545	69.229		198.774
3.886.364	129.545	67.423		196.968

3.756.818	129.545	65.534		195.080
3.627.273	129.545	63.651	30.650	193.196
3.497.727	129.545	61.786		191.332
3.368.182	129.545	59.765		189.310
3.238.636	129.545	57.640		187.185
3.109.091	129.545	55.458	30.650	185.004
2.979.545	129.545	53.292	-	182.838
2.850.000	129.545	51.475	-	181.020
2.720.455	129.545	49.070	-	178.616
2.590.909	129.545	46.822	30.650	176.368
2.461.364	129.545	44.615	-	174.161
2.331.818	129.545	42.420	-	171.966
2.202.273	129.545	40.335	-	169.881
2.072.727	129.545	38.205	30.650	167.750
1.943.182	129.545	36.086	-	165.632
1.813.636	129.545	33.858	-	163.403
1.684.091	129.545	31.617	-	161.163
1.554.545	129.545	29.365	30.650	158.911
1.425.000	129.545	27.135	-	156.681
1.295.455	129.545	24.890	-	154.435
1.165.909	129.545	22.666	-	152.211
1.036.364	129.545	20.499	30.650	150.045
906.818	129.545	18.269	-	147.814
777.273	129.545	16.120	-	145.665
647.727	129.545	13.874	-	143.419
518.182	129.545	11.477	30.650	141.022
388.636	129.545	9.170	-	138.716
259.091	129.545	6.887	-	136.433
129.545	129.545	4.599	-	134.145
0	129.545	2.303		131.849

3.3.1.2. Assessment of Mgmt Fee

Mgmt fee (flat): It is transaction (management) fee that financial Supplier (commercial loan) requests (0,750%) from lessee . As it is known, in the financial lease, all transaction cost belongs to lessee as opposed to operating lease. Thus, in the beginning of the agreement, mgmt fee is to be requested instantly. Basic calculation of this transaction evolutions is shown below,

3.3.1.3. Mgmt Fee Calculation

Mgmt Fee=(0,750%)* $ 5.700.000

Mgmt Fee(flat)= $ 42.750,00

3.3.1.4. Commitment Fee Calculation

Commitment Fee (P.a)= Commercial loan*0,45%.   (3.13) .   (It is directly given by commercial loan Co.)

Commitment Fee (P.a) = $ 5.700.000 *0,45% = $ 25.650,00

Agency Fee of commercial loan (P.a)= $5.000 is given to Turkish airline directly by commercial loan Co.

3.3.1.5. Annually Transaction Expenses

Here, we determine annually total transaction fees and we show them in table. First of all, we start to determine the first and second annual total transaction and management cost, then it is generalized for all of terms as shown below:

Table 3.28. Assessment of Transaction and management expanse

Years	Transaction and management expense	Mgmt fee (flat)	Agency fee (p.a.)	Commitment fee (p.a.)
		$42.750	$5.000	$25.650
0	$73.400	$42.750	$5.000	$25.650
1	$30.650	0	$5.000	$25.650

3.3.1.5.1. Calculation of Annually Transaction Expenses

We let ATME stands for Annually Transaction and Management Expense.

 Atme N=Mgmt Fee(Flat) + Agency Fee (Pa)+ Commitment Fee(P.A)

$ATME_0$=$42.750+$5.000+$25.650 =$73.400

$ATME_1$=$0+$5.000+$25.650 =$30.650

After presenting the first calculation, we generalize for all of the other terms. See Table 3.28.

Table 3.29. Result of Transaction and Management Expenses

Years	Transaction and management expense	Mgmt fee (flat)	Agency fee (p.a.)	Commitment fee (p.a.)
		$42.750	$5.000	$25.650
0	$73.400		$5.000	$25.650

1	$30.650		$5.000	$25.650
2	$30.650		$5.000	$25.650
3	$30.650		$5.000	$25.650
4	$30.650		$5.000	$25.650
5	$30.650		$5.000	$25.650
6	$30.650		$5.000	$25.650
7	$30.650		$5.000	$25.650
8	$30.650		$5.000	$25.650
9	$30.650		$5.000	$25.650
10	$30.650		$5.000	$25.650
11	$30.650		$5.000	$25.650
12	$30.650		$5.000	$25.650

3.3.1.6. Assess of Sensitive Analysis

Table 3.30. Sensitive Analysis

Terms	Balance	Capital	Interest	Trans. expanse	Total
	5.700.000				-5.700.000
0	5.700.000		0	73.400	
1	5.570.455	129.545	100.186		229.731
2	5.440.909	129.545	97.204		226.749
3	5.311.364	129.545	93.133		222.679
4	5.181.818	129.545	88.781	30.650	218.327
5	5.052.273	129.545	85.224		214.770
6	4.922.727	129.545	83.085		212.631
7	4.793.182	129.545	80.467		210.012
8	4.663.636	129.545	78.025	30.650	207.570
9	4.534.091	129.545	76.020		205.565
10	4.404.545	129.545	74.281		203.826
11	4.275.000	129.545	72.614		202.159
12	4.145.455	129.545	70.959	30.650	200.504
13	4.015.909	129.545	69.229		198.774
14	3.886.364	129.545	67.423		196.968
15	3.756.818	129.545	65.534		195.080
16	3.627.273	129.545	63.651	30.650	193.196
17	3.497.727	129.545	61.786		191.332
18	3.368.182	129.545	59.765		189.310

19	3.238.636	129.545	57.640		187.185
20	3.109.091	129.545	55.458	30.650	185.004
21	2.979.545	129.545	53.292	0	182.838
22	2.850.000	129.545	51.475	0	181.020
23	2.720.455	129.545	49.070	0	178.616
24	2.590.909	129.545	46.822	30.650	176.368
25	2.461.364	129.545	44.615	0	174.161
26	2.331.818	129.545	42.420	0	171.966
27	2.202.273	129.545	40.335	0	169.881
28	2.072.727	129.545	38.205	30.650	167.750
29	1.943.182	129.545	36.086	0	165.632
30	1.813.636	129.545	33.858	0	163.403
31	1.684.091	129.545	31.617	0	161.163
32	1.554.545	129.545	29.365	30.650	158.911
33	1.425.000	129.545	27.135	0	156.681
34	1.295.455	129.545	24.890	0	154.435
35	1.165.909	129.545	22.666	0	152.211
36	1.036.364	129.545	20.499	30.650	150.045
37	906.818	129.545	18.269	0	147.814
38	777.273	129.545	16.120	0	145.665
39	647.727	129.545	13.874	0	143.419
40	518.182	129.545	11.477	30.650	141.022
41	388.636	129.545	9.170	0	138.716
42	259.091	129.545	6.887	0	136.433
43	129.545	129.545	4.599	0	134.145
44	0	129.545	2.303		131.849

As it shown from Table 3.29, it is a payment proposal to Turkish Airline from commercial loan Co. In the financial lease, payments are not in advance opposite to operating lease. All payments, exception of management or transactions expenses, are deposited in quarterly terms. As it seen from Table 3.29, prior to first rental, Turkish Airline just paid transactions cost but it does not deducted from rental structures.

Prior to starting the financial lease evaluation, we would like to state that remaining 15% amounts are given by Commercial loan Co. As it is stated in previous part, financial lease covers capital and interest payments. As it seen from Table 3.29, also capital payment schedule is directly given to lessee by lessor. By doing so, in this section we only calculate interest payment and adjusted remaining balance. Quarterly

capital payment is deducted from previous balance amount in order to calculate adjustment balance payment. Now, we determine to figures for a couple of quarters and generalize for all of them.

Table 3.31. Calculation of Balance Capital and Interest Rate

Terms	Balance	Capital	Interest		Total
	5.700.000				-5.700.000
0	5.700.000		0	73.400	
1	5.570.455	129.545	100.186		229.731
2	5.440.909	129.545	97.204		226.749

In this section, we let QRB stands for Quarter Remaining Balance and QIP for Quarter Interest Payments. We calculate here both the balance and interest payment. Our calculation structure type follows this way;

First of all we calculate, Quarter remaining balance after that quarter interest payments are to be calculated.

$QRB_1 = \$ 5.700.000 - \$ 129.545$

$\qquad = \$ 5.570.455$

$QIP_n = (\text{Remaining Balance}_{n-1}) * (\text{Margin} + (\text{Estimated interest rate})_n) * \# \text{ of years}$

$QIP_1 = \$ 5.700.000 * (1,450\% + 5,5806\%) * (90/360) = \$ 100.186$

This method is now utilized for all terms and results are shown in Table 3.31. Even if other expenses, covers transactions and management fee, they are not added to rental and interest calculation, and they are calculated differently. However, all of expanse and payments are shown in the same table.

Table 3.32. Result of Balance Capital and Interest Rate

Terms	Balance	Capital	Interest		Total
	5.700.000				-5.700.000
0	5.700.000		0	73.400	
1	5.570.455	129.545	100.186		229.731

2	5.440.909	129.545	97.204		226.749
3	5.311.364	129.545	93.133		222.679
4	5.181.818	129.545	88.781	30.650	218.327
5	5.052.273	129.545	85.224		214.770
6	4.922.727	129.545	83.085		212.631
7	4.793.182	129.545	80.467		210.012
8	4.663.636	129.545	78.025	30.650	207.570
9	4.534.091	129.545	76.020		205.565
10	4.404.545	129.545	74.281		203.826
11	4.275.000	129.545	72.614		202.159
12	4.145.455	129.545	70.959	30.650	200.504
13	4.015.909	129.545	69.229		198.774
14	3.886.364	129.545	67.423		196.968
15	3.756.818	129.545	65.534		195.080
16	3.627.273	129.545	63.651	30.650	193.196
17	3.497.727	129.545	61.786		191.332
18	3.368.182	129.545	59.765		189.310
19	3.238.636	129.545	57.640		187.185
20	3.109.091	129.545	55.458	30.650	185.004
21	2.979.545	129.545	53.292	0	182.838
22	2.850.000	129.545	51.475	0	181.020
23	2.720.455	129.545	49.070	0	178.616
24	2.590.909	129.545	46.822	30.650	176.368
25	2.461.364	129.545	44.615	0	174.161
26	2.331.818	129.545	42.420	0	171.966
27	2.202.273	129.545	40.335	0	169.881
28	2.072.727	129.545	38.205	30.650	167.750
29	1.943.182	129.545	36.086	0	165.632
30	1.813.636	129.545	33.858	0	163.403
31	1.684.091	129.545	31.617	0	161.163
32	1.554.545	129.545	29.365	30.650	158.911
33	1.425.000	129.545	27.135	0	156.681
34	1.295.455	129.545	24.890	0	154.435
35	1.165.909	129.545	22.666	0	152.211
36	1.036.364	129.545	20.499	30.650	150.045
37	906.818	129.545	18.269	0	147.814
38	777.273	129.545	16.120	0	145.665
39	647.727	129.545	13.874	0	143.419
40	518.182	129.545	11.477	30.650	141.022

41	388.636	129.545	9.170	0	138.716
42	259.091	129.545	6.887	0	136.433
43	129.545	129.545	4.599	0	134.145
44	0	129.545	2.303		131.849

3.3.1.7. Assessment of Present Value

Pv (Present Value) = Fv(Future Value) / $(1+i)^n$ → number of terms

Discount rate

In this section, we calculate the present value of total amount of loan. However, it does not cover transaction expenses, just it involves in interest and capital payments. First of all, we start with first two quarter's loan. Discount rate is taken 5,50%.

Table 3.33. Assessment of Present Value

Terms	Balance	Capital	Interest		Total	Present value
	5.700.000				-5.700.000	
0	5.700.000		0	73.400		
1	5.570.455	129.545	100.186		229.731	226.615
2	5.440.909	129.545	97.204		226.749	220.640

3.3.1.7.1. Calculation of Present Value

Pv_1= ($229.731) / (1+(5,50%)/4)^ 1

Pv_1= $ 226.615

Pv_2= ($226.749) / (1+(5,50%)/4)^ 2

Pv_2= $ 220.640

Consequently, we apply same formulation for all of them, and present the result in Table 3.34.

Table 3.34. Result of Present Value

Terms	Balance	Capital	Interest		Total	Present value
	5.700.000				-5.700.000	
0	5.700.000		0	73.400		
1	5.570.455	129.545	100.186	0	229.731	226.615

2	5.440.909	129.545	97.204	0	226.749	220.640
3	5.311.364	129.545	93.133	0	222.679	213.740
4	5.181.818	129.545	88.781	30.650	218.327	206.721
5	5.052.273	129.545	85.224	0	214.770	200.594
6	4.922.727	129.545	83.085	0	212.631	195.903
7	4.793.182	129.545	80.467	0	210.012	190.866
8	4.663.636	129.545	78.025	30.650	207.570	186.088
9	4.534.091	129.545	76.020	0	205.565	181.791
10	4.404.545	129.545	74.281	0	203.826	177.808
11	4.275.000	129.545	72.614	0	202.159	173.962
12	4.145.455	129.545	70.959	30.650	200.504	170.198
13	4.015.909	129.545	69.229	0	198.774	166.441
14	3.886.364	129.545	67.423	0	196.968	162.691
15	3.756.818	129.545	65.534	0	195.080	158.946
16	3.627.273	129.545	63.651	30.650	193.196	155.276
17	3.497.727	129.545	61.786	0	191.332	151.692
18	3.368.182	129.545	59.765	0	189.310	148.053
19	3.238.636	129.545	57.640	0	187.185	144.406
20	3.109.091	129.545	55.458	30.650	185.004	140.787
21	2.979.545	129.545	53.292	0	182.838	137.252
22	2.850.000	129.545	51.475	0	181.020	134.044
23	2.720.455	129.545	49.070	0	178.616	130.470
24	2.590.909	129.545	46.822	30.650	176.368	127.080
25	2.461.364	129.545	44.615	0	174.161	123.788
26	2.331.818	129.545	42.420	0	171.966	120.570
27	2.202.273	129.545	40.335	0	169.881	117.493
28	2.072.727	129.545	38.205	30.650	167.750	114.446
29	1.943.182	129.545	36.086	0	165.632	111.467
30	1.813.636	129.545	33.858	0	163.403	108.476
31	1.684.091	129.545	31.617	0	161.163	105.538
32	1.554.545	129.545	29.365	30.650	158.911	102.651
33	1.425.000	129.545	27.135	0	156.681	99.838
34	1.295.455	129.545	24.890	0	154.435	97.073
35	1.165.909	129.545	22.666	0	152.211	94.377
36	1.036.364	129.545	20.499	30.650	150.045	91.772
37	906.818	129.545	18.269	0	147.814	89.182
38	777.273	129.545	16.120	0	145.665	86.693
39	647.727	129.545	13.874	0	143.419	84.198
40	518.182	129.545	11.477	30.650	141.022	81.668

41	388.636	129.545	9.170	0	138.716	79.243
42	259.091	129.545	6.887	0	136.433	76.881
43	129.545	129.545	4.599	0	134.145	74.567
44	0	129.545	2.303		131.849	72.297
Total	0	5.700.000	2.175.517	379.900	7.875.517	6.034.282

3.3.1.8. Irr assessment of Commercial Loan

Internal Rate of Return Calculation of Commercial Loan Co starts by finding "i" such that:

Basically, we start with finding of "i" such that:

$0 = -(5.700.000)+ 229.731/(1+i) + 226.749/(1+i)^2 + ... + 131.849/(1+i)^{44}$

I=1,3 %

IRR=(1+seasional effective rate)^ annually effective rate -1

IRR=$(1+1,6926 \%)^{12/3}-1$

IRR=6,9442%

3.3.1.9. Sensitive analysis of Commercial Loan Co

Table 3.35. Sensitive analysis of Commercial Loan

Terms	balance	capital	interest	expense	total	present value
Total	0	5.700.000	2.175.517	379.900	7.875.517	6.034.282

Table 3.36. Result of Exim Bank and commercial loan proposal

Balance	Capital	Interest	Expense	Total	Pv	
38.000.000				(38.000.000)		
38.000.000	-	-	1.259.661	(36.740.339)	$	1.259.661
37.391.932	608.068	547.022	-	1.155.090	$	1.139.423
36.777.243	614.688	533.393	-	1.148.081	$	1.117.148
36.155.844	621.400	512.249		1.133.649	$	1.088.143
				1.149.027	$	1.087.945

35.527.640	628.204	488.923	31.900		
34.892.538	635.102	470.747		1.105.849	$ 1.032.861
34.250.441	642.096	462.136	-	1.104.232	$ 1.017.361
33.601.255	649.187	450.099		1.099.285	$ 999.066
32.944.879	656.375	439.158	31.900	1.127.434	$ 1.010.751
32.281.216	663.664	431.176		1.094.839	$ 968.217
31.610.163	671.053	425.012	-	1.096.064	$ 956.153
30.931.619	678.544	419.313		1.097.856	$ 944.726
30.245.481	686.139	413.659	31.900	1.131.698	$ 960.638
29.551.642	693.838	407.419		1.101.258	$ 922.121
28.849.998	701.645	400.573	-	1.102.218	$ 910.407
28.140.439	709.559	393.060		1.102.619	$ 898.385
27.422.856	717.583	385.521	31.900	1.135.004	$ 912.228
26.697.138	725.718	378.060		1.103.778	$ 875.098
25.963.172	733.965	369.343	-	1.103.308	$ 862.862
25.220.846	742.327	359.745		1.102.072	$ 850.205
24.470.042	750.804	349.612	31.900	1.132.316	$ 861.689
23.710.643	759.398	339.493		1.098.891	$ 824.910
22.942.531	768.112	332.038	-	1.100.150	$ 814.653
22.165.586	776.946	319.818		1.096.764	$ 801.130

21.379.684	785.902	308.723	31.900	1.126.525	$	811.708
20.584.702	794.982	297.840	-	1.092.822	$	776.744
19.780.515	804.187	286.940	-	1.091.127	$	765.020
18.966.995	813.520	276.858	-	1.090.378	$	754.126
18.144.012	822.982	266.298	31.900	1.121.180	$	764.911
17.311.437	832.575	255.740	-	1.088.315	$	732.419
16.469.136	842.301	244.119	-	1.086.420	$	721.227
15.616.975	852.161	232.261	-	1.084.422	$	710.136
14.754.817	862.158	220.165	31.900	1.114.223	$	719.755
13.882.524	872.293	209.372	-	1.081.665	$	689.246
12.106.972	892.985	184.732	-	1.077.718	$	668.228
11.203.425	903.546	172.934	31.900	1.108.381	$	677.919
10.289.171	914.254	160.384	-	1.074.638	$	648.366
9.364.062	925.110	148.658	-	1.073.768	$	639.054
8.427.946	936.115	135.800	-	1.071.915	$	629.298
7.480.673	947.273	120.931	31.900	1.100.105	$	637.088
6.522.087	958.586	106.973	-	1.065.559	$	608.712
5.552.033	970.055	93.193	-	1.063.247	$	599.153
4.570.351	981.682	79.242	-	1.060.924	$	589.735
				1.059.774	$	581.106

3.576.880	993.471	65.053	1.250		
2.701.003	875.877	50.643	-	926.519	$ 501.147
1.813.010	887.993	38.307	-	926.300	$ 494.233
912.732	900.278	25.769	-	926.047	$ 487.396
(0)	912.732	12.990	-	925.722	$ 480.617
TOTAL:	**38.000.000**	**13.818.502**	**1.579.911**	**53.398.414**	**39.481.707**

The result of IRR is 6,25%

CHAPTER 4
DISCUSSION OF RESULTS

In the previous chapters, we studied in detail how a A 320-200 type of aircraft can be financed. We investigated structure of basic finance by evaluating of present value, future value, internal rate of return, U.s zero coupon rate, Turkish treasury interest rate and residual value. In this chapter, we will compare the results and decide which financing method is more appropriate: Financial or Operating lease.

Table 4.1. Summary of Operating and Financial Lease

Comparison with Operation and Financial Lease			
Operational Lease		Financial Lease	
Price of Aircraft:	$38.000.000	Price of Aircraft:	$38.000.000
Total Payment	$44.771.135	Total Payment	$53.398.414
PV:	$33.031.372	PV	$39.481.707
IRR	8.7401%	IRR	6,09%

Over time of leasing period, we analyze the critical part, that is the cost benefit values by determining the value of money overtime. First of all, we compare the present values of total payments.

Table 4.2. Present value of operational leasing total payments

Quarter	Payment	Adjustment Rent	Opportunities Cost	Total Rent	Present Value
0	$904.528	$35.998	$4.153	$944.679	$944.679
1	$904.528	$41.932	$4.153	$950.613	$937.703
2	$904.528	$38.196	$4.153	$946.878	$921.334
3	$904.528	$28.547	$4.153	$937.228	$899.560
4	$904.528	$16.950	$4.153	$925.631	$876.363

5	$904.528	$9.220	$4.153	$917.901	$857.242
6	$904.528	$9.153	$4.153	$917.835	$845.539
7	$904.528	$6.305	$4.153	$914.986	$831.468
8	$904.528	$4.365	$4.153	$913.047	$818.437
9	$904.528	$4.986	$4.153	$913.667	$807.871
10	$904.528	$7.307	$4.153	$915.989	$798.924
11	$904.528	$10.217	$4.153	$918.898	$790.577
12	$904.528	$13.370	$4.153	$922.051	$782.516
13	$904.528	$16.197	$4.153	$924.878	$774.256
14	$904.528	$18.663	$4.153	$927.345	$765.777
15	$904.528	$20.690	$4.153	$929.371	$757.028
16	$904.528	$22.889	$4.153	$931.570	$748.514
17	$904.528	$25.382	$4.153	$934.063	$740.325
18	$904.528	$26.133	$4.153	$934.815	$730.858
19	$904.528	$26.493	$4.153	$935.174	$721.210
20	$904.528	$26.210	$4.153	$934.891	$711.200
21	$904.528	$25.729	$4.153	$934.410	$701.180
22	$904.528	$29.019	$4.153	$937.701	$694.093
23	$904.528	$27.157	$4.153	$935.838	$683.307
24	$904.528	$26.340	$4.153	$935.022	$673.439
25	$904.528	$25.734	$4.153	$934.415	$663.862
26	$904.528	$25.974	$4.153	$934.655	$655.015
27	$904.528	$27.039	$4.153	$935.721	$646.856
28	$904.528	$27.424	$4.153	$936.105	$638.333
29	$904.528	$28.027	$4.153	$936.708	$630.070
30	$904.528	$28.246	$4.153	$936.927	$621.658
31	$904.528	$27.978	$4.153	$936.659	$613.040
32	$904.528	$27.196	$4.153	$935.877	$604.210
33	$904.528	$26.925	$4.153	$935.606	$595.832
34	$904.528	$27.083	$4.153	$935.764	$587.839
35	$904.528	$27.201	$4.153	$935.882	$579.929
36	$904.528	$27.918	$4.153	$936.599	$572.491
37	$904.528	$28.194	$4.153	$936.875	$564.883
38	$904.528	$30.932	$4.153	$939.613	$558.840
39	$904.528	$31.682	$4.153	$940.364	$551.690
40	$904.528	$28.166	$4.153	$936.847	$542.163
41	$904.528	$27.296	$4.153	$935.977	$534.303
42	$904.528	$27.702	$4.153	$936.383	$527.276
43	$904.528	$27.658	$4.153	$936.339	$520.091

44	$904.528	$26.949	$4.153	$935.630	$512.639
45	$904.528	$26.994	$4.153	$935.676	$505.701
46	$904.528	$27.396	$4.153	$936.077	$499.048
47	$904.528	$27.272	$4.153	$935.954	$492.205

This statement is to be concluded from Table 4.2. that is total payment is $ 44.771.135 (operational lease) us million dollars twelve years in future. When we convert it to present value the price is $ 28.150.000 .

Table 4.3. Present and future value of total payments

	Operating Lease	
	Present value	Future value
Total Payments	$ 44.771.135	$ 28.150.000

Secondly, we assess the present and future value of financial lease proposal.

Table 4.4. Present and future value of financial lease payments

Balance	Capital	Interest	Expense	Total	Pv	
$38.000.000				$(38.000.000)		
$38.000.000	-	-	$1.259.661	$(36.740.339)	$	1.259.661
$37.391.932	$608.068	$547.022	-	$1.155.090	$	1.139.423
$36.777.243	$614.688	$533.393	-	$1.148.081	$	1.117.148
$36.155.844	$621.400	$512.249		$1.133.649	$	1.088.143
35.527.640	628.204	488.923	31.900	1.149.027	$	1.087.945
34.892.538	635.102	470.747		1.105.849	$	1.032.861
34.250.441	642.096	462.136	-	1.104.232	$	1.017.361
33.601.255	649.187	450.099		1.099.285	$	999.066
32.944.879	656.375	439.158	31.900	1.127.434	$	1.010.751
32.281.216	663.664	431.176		1.094.839	$	968.217
31.610.163	671.053	425.012	-	1.096.064	$	956.153
30.931.619	678.544	419.313		1.097.856	$	944.726
30.245.481	686.139	413.659	31.900	1.131.698	$	960.638
29.551.642	693.838	407.419		1.101.258	$	922.121

28.849.998	701.645	400.573	-	1.102.218	$	910.407
28.140.439	709.559	393.060		1.102.619	$	898.385
27.422.856	717.583	385.521	31.900	1.135.004	$	912.228
26.697.138	725.718	378.060		1.103.778	$	875.098
25.963.172	733.965	369.343	-	1.103.308	$	862.862
25.220.846	742.327	359.745		1.102.072	$	850.205
24.470.042	750.804	349.612	31.900	1.132.316	$	861.689
23.710.643	759.398	339.493		1.098.891	$	824.910
22.942.531	768.112	332.038	-	1.100.150	$	814.653
22.165.586	776.946	319.818		1.096.764	$	801.130
21.379.684	785.902	308.723	31.900	1.126.525	$	811.708
20.584.702	794.982	297.840	-	1.092.822	$	776.744
19.780.515	804.187	286.940	-	1.091.127	$	765.020
18.966.995	813.520	276.858	-	1.090.378	$	754.126
18.144.012	822.982	266.298	31.900	1.121.180	$	764.911
17.311.437	832.575	255.740	-	1.088.315	$	732.419
16.469.136	842.301	244.119	-	1.086.420	$	721.227
15.616.975	852.161	232.261	-	1.084.422	$	710.136
14.754.817	862.158	220.165	31.900	1.114.223	$	719.755
13.882.524	872.293	209.372	-	1.081.665	$	689.246
12.999.957	882.568	197.008	-	1.079.576	$	678.584
12.106.972	892.985	184.732	-	1.077.718	$	668.228
11.203.425	903.546	172.934	31.900	1.108.381	$	677.919
10.289.171	914.254	160.384	-	1.074.638	$	648.366
9.364.062	925.110	148.658	-	1.073.768	$	639.054
8.427.946	936.115	135.800	-	1.071.915	$	629.298
7.480.673	947.273	120.931	31.900	1.100.105	$	637.088
6.522.087	958.586	106.973	-	1.065.559	$	608.712
5.552.033	970.055	93.193	-	1.063.247	$	599.153
4.570.351	981.682	79.242	-	1.060.924	$	589.735
3.576.880	993.471	65.053	1.250	1.059.774	$	581.106
2.701.003	875.877	50.643	-	926.519	$	501.147
1.813.010	887.993	38.307	-	926.300	$	494.233
912.732	900.278	25.769	-	926.047	$	487.396
(0)	912.732	12.990	-	925.722	$	480.617
TOTAL:	**$ 38.000.000**	**$ 13.818.502**	**1.579.911**	**53.398.414**		**39.481.707**

The statement is to be concluded from Table 4.4 that is the total payment is $ 53.398.414 (financial lease) us million dollars in twelve years in the future. When we convert it to present value, its price is $ 39.481.707.

Table 4.5. Comparison of internal rate of return

Comparison with Operation and Financial Lease			
Operational Lease		Financial Lease	
Total Loan:	$38.000.000	Total Loan:	$32.300.000
Total Payment	$44.771.135	Total Payment	$53.398.414
IRR	8,74%	IRR	6,09%

Table.4.6. Comparing both Leasing Options

A 320-200	Assessment of lease Decision			
	Irr	Pv	2006 Aircraft value	2018 Aircraft value
Operation lease	8,71%	$33.031.372	$ 38.000.000	$28.150.000
Finance lease	6,09%	$39.481.707	$ 38.000.000	$28.150.000

Difference between present value of operating and financial lease is $ 6.450.335. Now we consider the Avmark Co data for the residual value of aircraft. According to it's calculation result, price of A 320-200 type of aircraft , when it was produced at 2006, it will be $ 28.150.000 at 2018. Thus, $39.481.707-$33.031.372= $6.450.335 in the residual value. Finally, we consider that if we use financial lease, we spent more $6.450.335.However, even if it was spent more, airline will have got aircraft and it's price will be $28.150.000 at 2018 (residual value).

Pv of residual value=($28.150.000)/(1+(5,51%)/4)^48 =$14.597.642

All in all, airline will select financial lease because ;

Revenue=$14.597.642-$6.450.335 =$ 8.147.307

CHAPTER 5

CONCLUSIONS AND FUTURE DIRECTIONS

Our intention in this study was to comprehend the methodology used by Turkish airline and Eximbank. Their interest rate calculations was modified to make better future interest rate estimations. For example not many institutions could forecast 2008 economic crises and as a result bankrupted.

Due to the flexibility of lease structure, the importance of leasing is increasing. The case of lease agreement between Turkish airline and credit loan companies are assessed based on ordered A-320 types of aircraft in 2006. According to the assessment made, type of lease is chosen. Until 2006, Turkish airline, like many other network carriers, just had two options in order to acquire its requiring aircraft; financial and operating lease. If an airline selects operating lease option, then she does not take the risk and consequently does not get the rewards in terms of guarantee ownership and residual value. Similarly, it takes several critical risks if it accepts financial lease.

We have analyzed the case study that based on how to A-320 type of aircraft would be financed. Structure of evaluation covers present value, internal rate of return, future value, U.S zero coupon rate and residual value. From the calculation point of view, all methods appear to be the same. However, operating lease calculation does not cover taking residual value risk and rewards until present value calculation of total payment. In this token, residual value risk was added to the calculation to make a better compare with financial lease. After making assessment analysis, in a case study, financial lease still appeared to be better option.

We have to underline a fact that mostly operating lease are selected in airline industry when the agreement term is short and residual value of aircraft is equal or smaller than ending term of marketing price. Thus, results of economical analysis are linking with internal rate of return that type of lease agreement is selected based on smaller irr result.

Assessment made in the case study, shows that a specific operating lease proposal is seem to be interior if it is compared with a specific financial lease proposal. The difference between financial and operating lease resulted in financial lease selection. In this selection, residual value was very critical to make this selection.

Future directions include new methods that use tax advantages in some countries. For example, French and Japanese Operating leases use investment flexibilities in the companies such that savings from not paying tax are reflected to the lesse's cost in the proposals. These leasing structures are basically same except that tax advantages are subtracted from the total bill that lessee pay. Nevertheless, these are need to be investigated theorically.

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