Finance 212

Team Case:

The Thor Corporation

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Introduction

The Thor Corporation, has receivables from two account in foreign countries and according to the predicted spot rates and trends, by the time the company will have received this money, it is actually clear that these predictions are not favorable for the company's assets.

Specifically there are above half million dollars in British Pounds and Brazilian Reals to be received six months after the delivery of the goods with an overall exposure of about 0,24% of the receivables with a standard deviation of 11.79%.

There have been considered therefore several hedging techniques according to the quotations offered from the State Bank either from a profit and a risk perspective.

The company, through the use of these hedging techniques, could bring its exposure to 43 bp reducing significantly the standard deviation at 2.03% through selling some of the receivable forward for the Pound side and buying an option for the Real.

Overview

	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07
expected trend	$1.55/£			$1.545/£			$1.54/£			$1.535/£	
	$0.32/R			$0.33/R			$0.34/R			$0.35/R	
	July 1 2006	-8,10%	safety low	1st Payment	safety high		Jan 1 2007		safety low	2nd Payment	safety high
	Overall	0,24%	-0,10		0,10				-0,10		0,10
exposure	11,79%	8,57%	-7,37%	0,96%	5,45%				-8,01%	1,60%	4,81%
	Receivable	Spot 07/06	-23,33%	-10,00%	43,33%		Receivable	Spot 07/06	-16,67%	-16,67%	50,00%
PC	£200.000,00	$312.000,00	-$23.000,00	-$3.000,00	$17.000,00		£200.000,00	$312.000,00	-$25.000,00	-$5.000,00	$15.000,00
Speaker	R$ 80.000,00	$24.000,00	-$5.600,00	$2.400,00	$10.400,00		R$ 80.000,00	$24.000,00	-$4.000,00	$4.000,00	$12.000,00

The predicted spot rates for the British pound on the due dates of October 2006 and April 2007 are $1.545/£ and $1.535/£ respectively. This means that the Dollar is expected to appreciate against the British Pound therefore the company would hedge against its asset receivable depreciation. For the Brazilian receivables, it has been forecasted $0.33/BR and $0.35/BR, and in this case the Dollar is depreciating against the Brazilian Real, which is a favorable condition, in this scenario, for the company. If the future spot rates will be exactly as predicted, the company is not facing terrible losses (0.024 * $672,000.00 = $1,612.80). However the forecasted spot rates are given with some uncertainty. Specifically it is suggested to consider ±$0.10 of fluctuation on the nominal rates. This makes our receivables fluctuating between +$17,000.00 and -$23,000.00 for the first trance from England; between +$10,400.00 and -$5,600.00 for the first trance from Brazil. Similar fluctuations are predicted for the second trances (see the tables). In the worst scenario, the company, could loose $57,600.00 (8.57% of total receivables). Do to the risk a large fluctuation, the company is recommended to insure its receivables through a hedging technique which will be explained later in the report.

The after hedge conditions of the company change has the worst scenario in a maximum loss of 0.21% of the receivables which would be also its lower limit of $1,380.00.

Rates / Conditions offered

The State Bank offered the following rates and conditions:

Exchange and investing rates					
	British Pounds		Brazilian Reals		cost
Spot Rates	$ 1,56 /£		$ 0,30 /BR		0,50%
Six Month Forward Rates	$ 1,54 /£		$ 0,29 /BR		0,50%
One-year Forward Rates	$ 1,55 /£		$ 0,31 /BR		0,50%
Six-Month Borrowing rates	8,00% p.a.		12,00% p.a.		0,75%
One year Borrowing rates	8,50% p.a.		12,50% p.a.		0,75%
Six-Month Investing rates	4,25% p.a.		8,00% p.a.		0,125%
One year Investing rates	4,75% p.a.		8,50% p.a.		0,125%

Premiums for calls and puts				
Type Maturity	Exercise Price	Premium	Exercise Price	Premium
Call 6-month	$ 1,56 /£	3,00%	$ 0,30 /BR	1,75%
Call 6-month	$ 1,58 /£	2,20%	$ 0,32 /BR	0,50%
Call 6-month	$ 1,54 /£	4,30%	$ 0,28 /BR	4,00%
Call 12-month	$ 1,56 /£	3,50%	$ 0,30 /BR	2,25%
Call 12-month	$ 1,58 /£	2,70%	$ 0,32 /BR	1,50%
Call 12-month	$ 1,54 /£	4,80%	$ 0,28 /BR	4,75%
Put 6-month	$ 1,56 /£	2,90%	$ 0,30 /BR	1,75%
Put 6-month	$ 1,58 /£	4,30%	$ 0,32 /BR	4,00%
Put 6-month	$ 1,54 /£	2,20%	$ 0,28 /BR	1,25%
Put 12-month	$ 1,56 /£	3,50%	$ 0,30 /BR	2,25%
Put 12-month	$ 1,58 /£	4,80%	$ 0,32 /BR	4,75%
Put 12-month	$ 1,54 /£	2,70%	$ 0,28 /BR	1,75%

Premiums are estimated on dollar notional values.

Transaction costs for borrowing locally and internationally are paid at the beginning of the contract.

Transaction costs for investing locally and internationally are paid at delivery or at the end of the contract.

Transaction costs for spot and forward contracts are paid at delivery or at the end of the contract.

Calculations

The calculation and the selection of the contract to be subscribed has been made as the future spot rates will follow the forecasted trend and within six months from now, the bank will offer the same rates, meaning that the possibility to break down the contract in two parts (hedging two times for six months or hedging for one year) would have given the same results.

The comparison have been made on the base of receiving the money after six months without considering the WACC of the company and calculating the NPV of the various possibilities.

Money Market Hedge

Money Market Hedge:

		PC					Speaker				
		borrow	change	invest	Notes Payable		borrow	change	invest	Notes Payable	
6Mo		£190.930,79	$296.362,77	$302.290,02	$308.217,28		R$ 74.941,45	$22.370,02	$23.236,86	$23.264,82	
1Yr		£183.066,36	$284.155,61	$297.297,80	$306.888,05		R$ 70.640,18	$21.086,09	$22.852,05	$22.772,98	
					hedging cost	Difference				hedging cost	Difference
6Mo	No cost	£192.307,69	$300.000,00	$306.375,00	$4.084,98		R$ 75.471,70	$22.641,51	$23.547,17	$310,31	
	Partial cost	£190.930,79	$296.362,77	$302.660,48	$3.714,52	$370,45	R$ 74.941,45	$22.370,02	$23.264,82	$282,35	$27,96
1Yr	No cost	£184.331,80	$287.557,60	$301.216,59	$3.918,79		R$ 71.111,11	$21.333,33	$23.146,67	$294,61	
	Partial cost	£183.066,36	$284.155,61	$297.653,00	$3.563,59	$355,19	R$ 70.640,18	$21.086,09	$22.878,41	$26,36	$26,36

In our case, delivering the money market hedge consist in borrowing an amount in England that by the time will have to be given back to the bank will match the receivables from the English company and same for the Brazilian company as well. We then will change the amount at the spot rate and invest in the US at the offered interest rate.

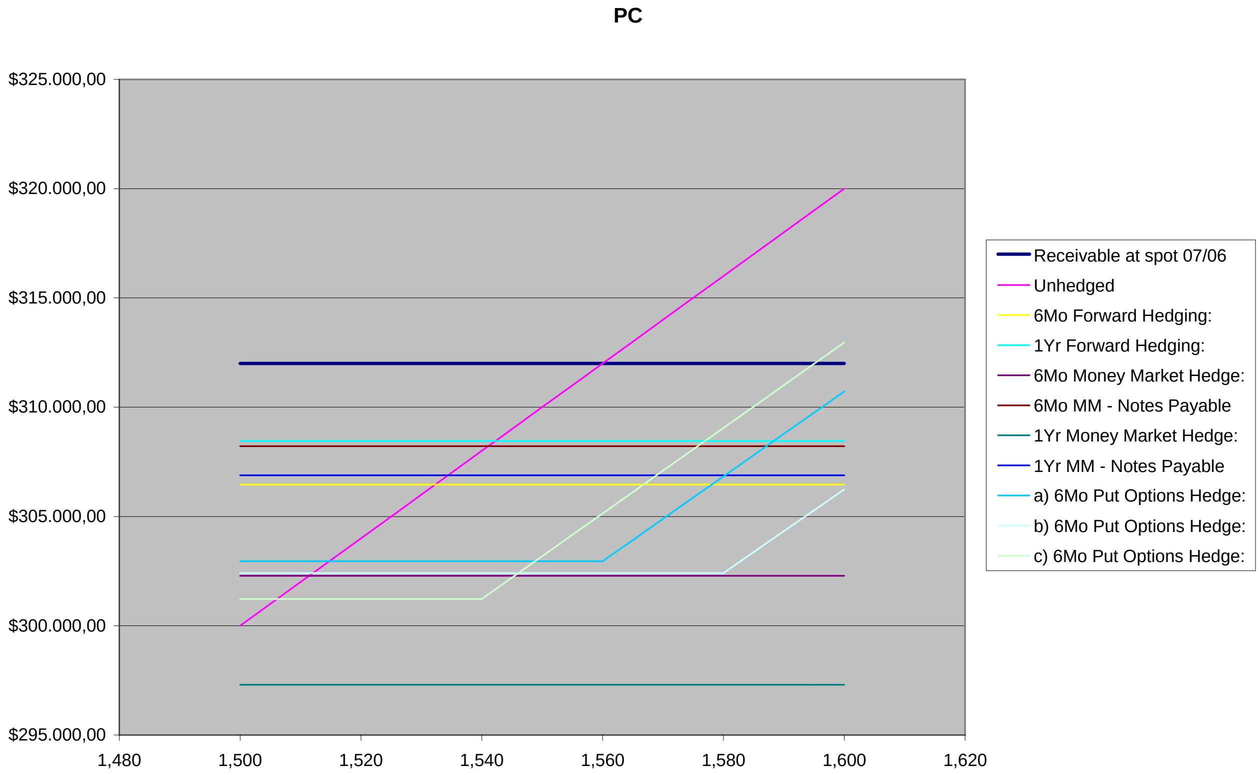
A close look at the balance sheet

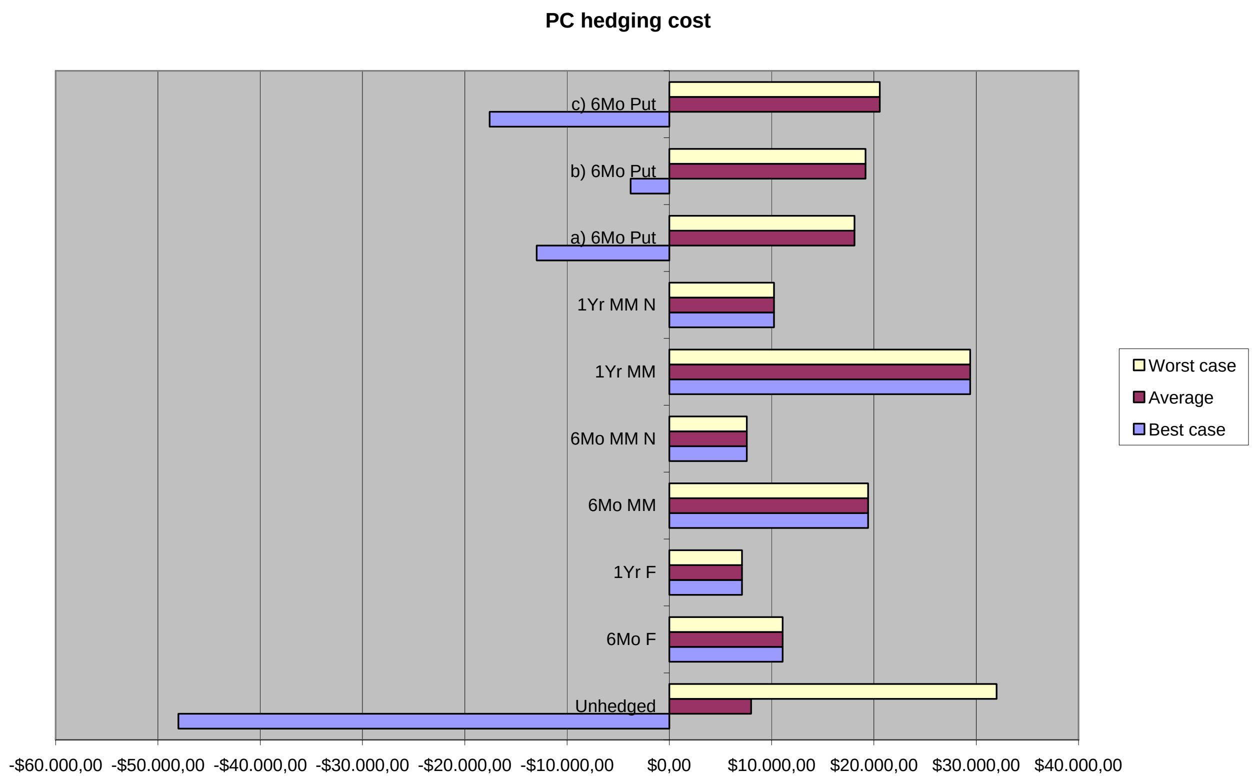
Looking into the balance sheet, there are two items in the form of the credit line debt and the long term debt that the company could consider as part of its strategy. One of the solutions connected to the money market hedging could be, once the money is brought into the US, the company could pay off some debt which has a greater interest rate compared to the one offered from the bank to invest in this amount. Considering that the long term debt might not be modifiable in terms of the contract with the bank, the revolving credit line, however, will surely be possible to decrease this amount outstanding and therefore diminish the interest charge.

Hedging technique selection

Hedging cost										
PC	Unhedged	6Mo F	1Yr F	6Mo MM	6Mo MM N	1Yr MM	1Yr MM N	a) 6Mo Put	b) 6Mo Put	c) 6Mo Put
Best case	-$48.000,00	$11.080,00	$7.100,00	$19.419,95	$7.565,44	$29.404,39	$10.223,89	-$12.976,00	-$3.792,00	-$17.568,00
Average	$8.000,00	$11.080,00	$7.100,00	$19.419,95	$7.565,44	$29.404,39	$10.223,89	$18.096,00	$19.176,00	$20.574,00
Worst case	$32.000,00	$11.080,00	$7.100,00	$19.419,95	$7.565,44	$29.404,39	$10.223,89	$18.096,00	$19.176,00	$20.574,00
Speaker	Unhedged	6Mo F	1Yr F	6Mo MM	6Mo MM N	1Yr MM	1Yr MM N	a) 6Mo Put	b) 6Mo Put	c) 6Mo Put
Best case	-$9.600,00	$1.368,00	-$1.848,00	$1.526,28	$1.470,35	$2.295,89	$2.454,04	-$20.358,40	-$19.372,80	-$20.851,20
Average	-$6.400,00	$1.368,00	-$1.848,00	$1.526,28	$1.470,35	$2.295,89	$2.454,04	-$5.448,00	-$4.224,00	-$5.720,00
Worst case	$22.400,00	$1.368,00	-$1.848,00	$1.526,28	$1.470,35	$2.295,89	$2.454,04	-$5.448,00	-$4.224,00	-$5.720,00
				Worst case	Average	Best case				
Overall hedging cost	$2.876,00	Company exposure		0,21%	0,21%	-1,83%	Std.dev	2,03%		

Going for a conservative solution the company could sell a 1 year forward the receivables for the English company and (see option “C”) again for the Brazilian company as well. This solution is recommended because the dollar is appreciating against the Pound and the main concern is to limit the losses. The possibility for the dollar to depreciate is less foreseen and with that the possibility to make money in that sense. For the Brazilian Real however, the situation is the opposite and therefore is better to have an instrument which eventually will give the company the possibility to choose whether or not to exercise to exchange its receivables for a predetermined exchange rate. Below the representations of the scenarios:


PC
$325.000,00
$320.000,00
$315.000,00
$310.000,00
$305.000,00
$300.000,00
$295.000,00
1,480
1,500
1,520
1,540
1,560
1,580
1,600
1,620
Receivable at spot 07/06
Unhedged
6Mo Forward Hedging:
1Yr Forward Hedging:
6Mo Money Market Hedge:
6Mo MM - Notes Payable
1Yr Money Market Hedge:
1Yr MM - Notes Payable
a) 6Mo Put Options Hedge:
b) 6Mo Put Options Hedge:
c) 6Mo Put Options Hedge:


PC hedging cost
c) 6Mo Put
b) 6Mo Put
a) 6Mo Put
1Yr MM N
1Yr MM
6Mo MM N
6Mo MM
1Yr F
6Mo F
Unhedged
-$60.000,00
-$50.000,00
-$40.000,00
-$30.000,00
-$20.000,00
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$10.000,00
$20.000,00
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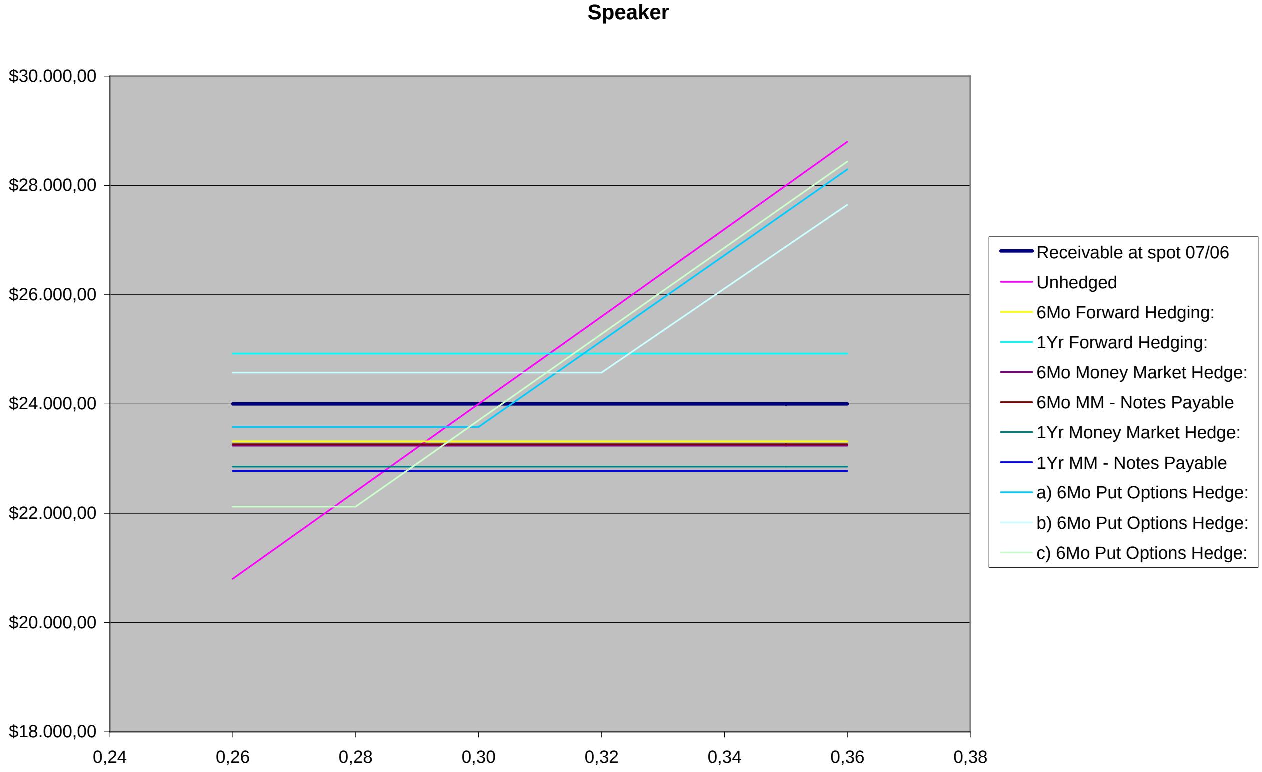
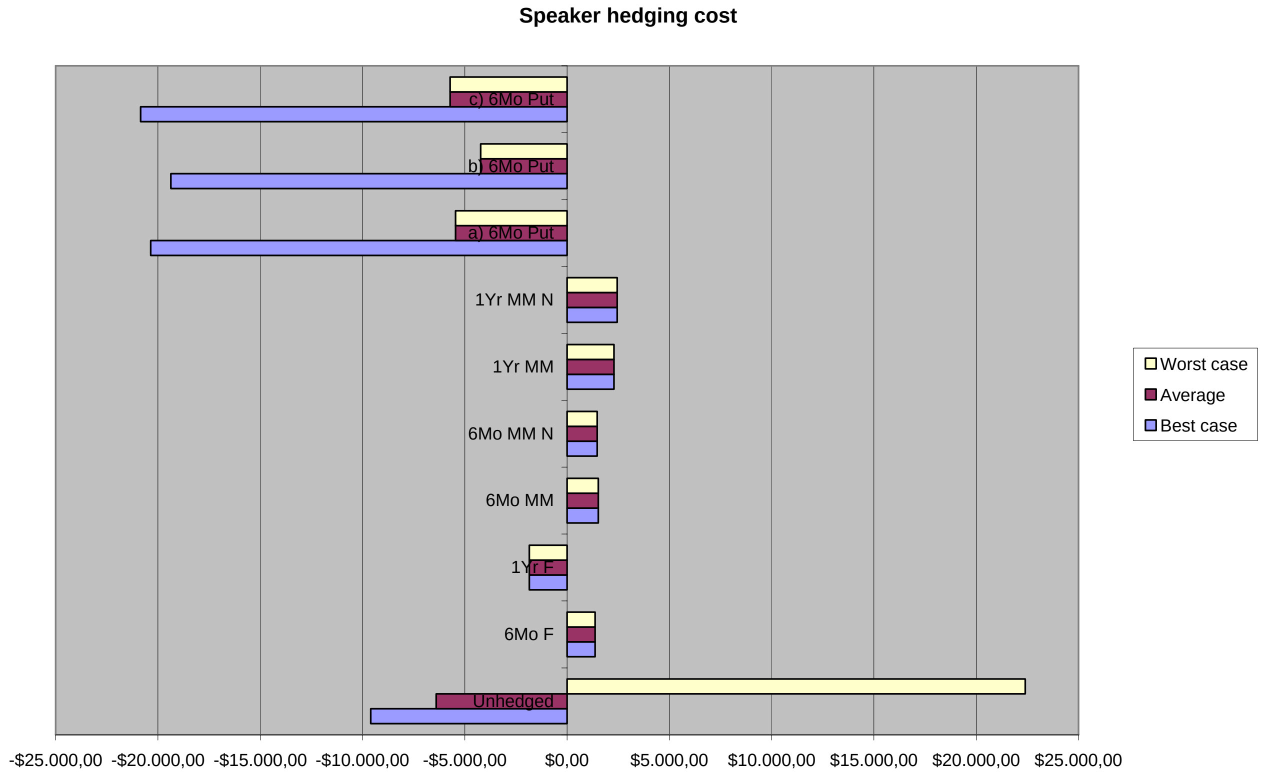
$40.000,00
Worst case
Average
Best case


Speaker
$30.000,00
$28.000,00
$26.000,00
$24.000,00
$22.000,00
$20.000,00
$18.000,00
0,24
0,26
0,28
0,30
0,32
0,34
0,36
0,38
Receivable at spot 07/06
Unhedged
6Mo Forward Hedging:
1Yr Forward Hedging:
6Mo Money Market Hedge:
6Mo MM - Notes Payable
1Yr Money Market Hedge:
1Yr MM - Notes Payable
a) 6Mo Put Options Hedge:
b) 6Mo Put Options Hedge:
c) 6Mo Put Options Hedge:


Speaker hedging cost
c) 6Mo Put
b) 6Mo Put
a) 6Mo Put
1Yr MM N
1Yr MM
6Mo MM N
6Mo MM
1Yr F
6Mo F
Unhedged
-$25.000,00
-$20.000,00
-$15.000,00
-$10.000,00
-$5.000,00
$0,00
$5.000,00
$10.000,00
$15.000,00
$20.000,00
$25.000,00
Worst case
Average
Best case