

**Exporter Hedging Case Study**  
**Knowledge Matters KPO Services Limited**  
**Purchasing Insurance against Foreign Exchange Losses**

**Background**

Knowledge Matters KPO Services Limited (KMKS) is a well-established Knowledge Process Outsourcing (KPO) company with clients situated around the globe. It enters into contract negotiations with its clients starting in the month of January and reaches agreement with them on the rate per FTE (Full Time Equivalent Employee) in U.S. Dollars. The company start to bill at new rates on the first of every month for the work completed during the previous month. The client pays two months after the receipt of the bill.

It is February 1, 2010 and Mr. B. Arunkumar the Chief Financial Officer of KMKS has just completed his negotiations with his overseas clients for \$5 million a month for the twelve month period starting April 1, 2010. At the exchange rate prevailing today (US\$ 1 = Rs. 46.3750) he expects to make a profit margin of 30.00%. Table 1 (below) gives the calculations that Mr. B. Arunkumar made while finalising the contract.

**Table 1**  
**Contract Negotiations (2010-2011)**

	<b>Monthly</b>	<b>Annual</b>
	Million	Million
<b>Business in US\$</b>	\$5	\$60
<b>Business in Rupees</b>	Rs. 231.875	Rs. 2782.50
<b>Costs in Rupees</b>	Rs. 162.3125	Rs. 1947.75
<b>Profits in Rupees</b>	Rs. 69.5625	Rs. 834.75
<b>Profit Margin</b>	30.00	30.00%

Mr. Arunkumar had every reason to be satisfied with this outcome. In a very competitive market scenario he had been able to preserve the profit margins of the company and if all went as planned Mr. Arunkumar expected KMKS to show a very nice profit of Rs. 834.75 million at the end of the year from this contract.

**Currency Concerns**

While Mr. Arunkumar was indeed quite happy with the outcome of the negotiation, he had a serious concern the movement in foreign currency prices could have an adverse impact on these profit projections. In the previous year around the same time Mr. Arunkumar had achieved an identical outcome from the negotiations (the exchange rate prevailing on February 1, 2009 was: US\$ 1 = Rs. 48.8750) and had predicted that KMKS profits from this business would be Rs. 879.7500 million. Not only were the actual profits that he was going to report on March 31, 2010 much lower, he had the acute embarrassment to facing the Board and KMKS shareholder with an accounting loss on account of exchange rate movements.

**Table 2**  
**Contract Negotiations (2009-2010)**

	<b>Monthly</b>	<b>Annual</b>
	million	Million
<b>Business in US\$</b>	\$ 5.0000	\$60.0000
<b>Business in Rupees</b>	Rs. 244.3750	Rs. 2932.5000
<b>Costs in Rupees</b>	Rs. 171.0625	Rs. 2052.7500
<b>Profits in Rupees</b>	Rs. 73.3125	Rs. 879.7500
<b>Profit Margin (%)</b>	30.00%	30.00%

**Table 3**  
**Actual Profits (2009-2010)**

	Billed Amount	Exchange Rate	Received Amount	Accounting Loss	Unbilled Loss	Hedge All Receipts	Insurance @46.7624
Date	\$ Million	US\$ 1	Rs. Million	Rs. Million	Rs. Million	Rs. Million	Rs. Million
		<b>48.8750</b>					
01-02-2009		<b>48.8750</b>					
01-03-2009	5	51.1612					
01-04-2009	5	50.7300					
01-05-2009	5	50.0925	250.4625	-5.3435	11.4310	1.2000	11.4310
01-06-2009	5	46.9475	234.7375	-18.9125	9.2750	1.2000	9.2750
01-07-2009	5	47.8925	239.4625	-11.0000	6.0875	1.2000	6.0875
01-08-2009	5	47.9350	239.6750	4.9375	-9.6375	1.2000	-9.6375
01-09-2009	5	49.0250	245.1250	5.6625	-4.9125	1.2000	-4.9125
01-10-2009	5	47.7550	238.7750	-0.9000	-4.7000	1.2000	-4.7000
01-11-2009	5	46.9750	234.8750	-10.2500	0.7500	1.2000	0.7500
01-12-2009	5	46.3175	231.5875	-7.1875	-5.6000	1.2000	-5.6000
01-01-2010	5	46.6200	233.1000	-1.7750	-9.5000	1.2000	-9.5000
01-02-2010	5	46.3750	231.8750	0.2875	-12.7875	1.2000	-10.5628
01-03-2010		46.0850	230.4250	-2.6750	-11.2750	1.2000	-10.5628
01-04-2010		44.9175	224.5875	-7.2875	-12.5000	1.2000	-10.5628
Total			2834.6875	-54.4435	-43.3690	14.4000	-38.4949

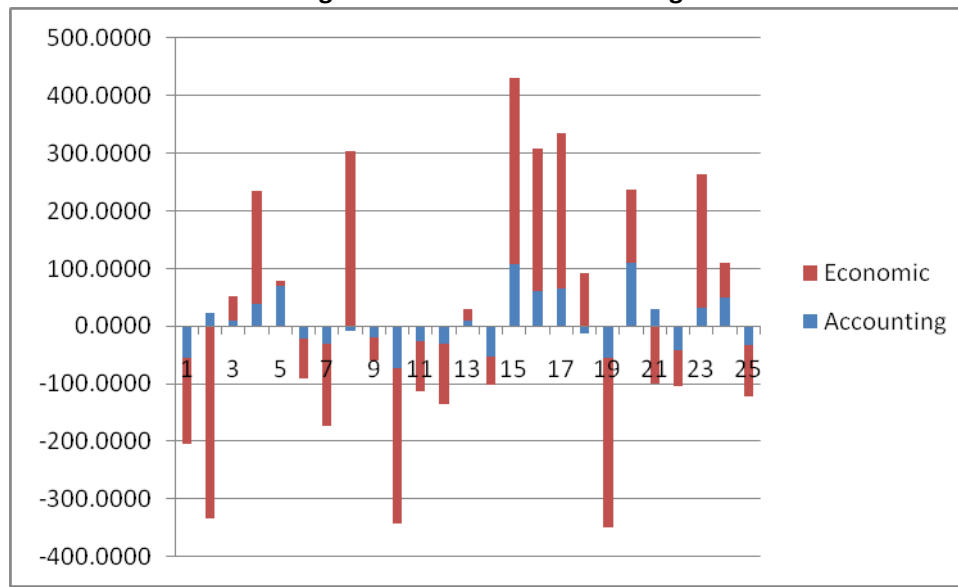
From Table 3 it can be seen that against expected revenue of Rs. 2932.50 KMKS received an income of only Rs. 2834.6875, i.e., a reduction in profit of Rs. 97.8125 million which could further be broken up into an accounting loss of Rs. 54.4435 million (the difference between the exchange rate at which the work was billed and the rate at which it was received) and an additional economic loss Rs. 43.3690 million (the difference between the exchange rate at which the work was contracted for and the rate at which the work was billed).

Mr. Arunkumar also knew something his Board and his shareholders did not – he had gotten extremely lucky that the day he signed the contract the exchange rate was US\$ 1 = Rs. 48.8750 and fell shortly thereafter to Rs. 51.1612 giving him a substantial gain in the initial period and reducing his losses when it fell again almost to Rs. 44.9175. He could not bear to think about what would have happened if the negotiations had stretched a little bit more and the contract had been signed when the exchange rate was US\$ 51.1612.

#### **An Uncertain Future**

An analysis of the last four years of currency movements suggests that the monthly volatility of the exchange rate is about 2.5%. Assuming that on average the currency does not appreciate or depreciate over the next one year period, it is possible to simulate the possible movement of the exchange rate over the next twelve month period and to compute the amount of accounting loss and economic loss implied by these simulated currency movements. Figure 1 gives the result of one such simulation in which 25 possible currency paths are simulated and the net consequence in terms of account loss and economic loss is computed.

**Figure 1**  
**Unhedged Economic and Accounting Loss**



It can be seen that relatively high level of volatility assumed for the currency movement translates into a very high volatility in both the economic loss numbers as well as accounting loss numbers for the firm. The average accounting loss based on this simulation is Rs. 5.7625 million (standard deviation of Rs. 51.3191) and the average economic loss based on this simulation is Rs. 5.3220 million (standard deviation of Rs. 184.1285), generating a total (average) loss of Rs. 11.0846 and a very high standard deviation of Rs. 221.5258 million. The company could earn an additional profit of Rs. 430.1354 million but if things did not go well the profits of KMKS would fall by as much as Rs. 350.3023 million, which would be a disaster for KMKS.

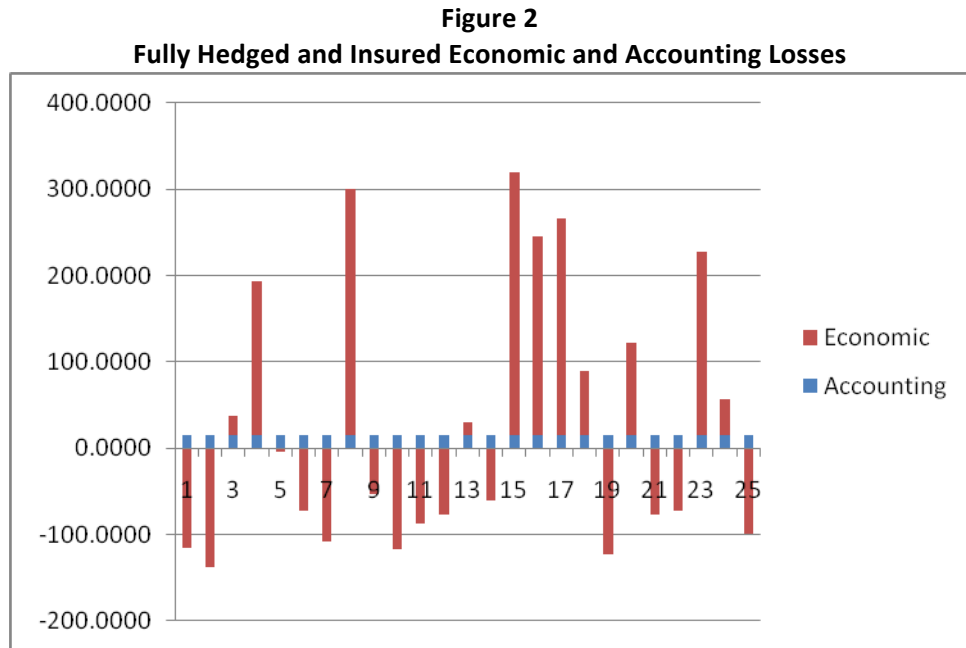
### Hedging Strategy

From the above analysis it appears that KMKS needs to observe the following rules while managing its foreign exchange exposures:

1. Sell all the US\$ on the date of billing itself using a forward contract route and deliver the currency upon its receipt from the international client. This hedging strategy would completely eliminate the accounting loss and replace it with a modest gain. It would also eliminate the possibility of any significant accounting gain but since the company is continuously billing the client this would not amount to a loss of economic value should there a secular depreciation in the value of the rupee.
2. Purchase currency insurance on the entire contracted amount using a series of deep-out of the money put (catastrophic insurance) which would reduce the cost of the insurance but allow KMKS to preserve a minimal profit margin even if the rupee should appreciate dramatically over the next twelve months.

It may be seen from Table 3 that if the company had hedged<sup>1</sup> all the billed amounts on the date of billing itself and bought insurance<sup>2</sup> on the entire \$60 million on the date the contract was signed (February 1, 2009), the net amount received would have been higher by Rs. 55.7176 after deducting the cost of purchasing the currency insurance and there would have been no accounting loss that would need to be reported.

Similarly if the company does decide to follow this policy going forward, using the simulated values mentioned earlier, the hedged and insured incremental numbers are captured in Figure 2.



From Figure 2 it can be seen that on account of the twin hedging and insurance strategy, while the maximum gains that are possible have been reduced somewhat from Rs. 430.1354 million to Rs. 319.4805 million, the low has sharply fallen to Rs. 123.8701 million.

The hedged and insured average accounting gains based on this simulation are Rs. 14.4 million (standard deviation of nil) and the average economic loss based on this simulation is Rs. 20.7858 million (standard deviation of Rs. 143.9572 million), generating a total (average) gain of Rs. 35.1858 million and a lower standard deviation of Rs. 143.9572 million relative to the un-hedged position. Here the put option purchased is once again at a much lower exchange rate of Rs. 44.3705 (spot is 46.3750) and at a price of Rs. 18 million for the full year (the price of the option has already been deducted from gains / losses shown in Figure 2).

<sup>1</sup>By booking a forward contract which has the effect of selling the billed US\$ amount on the date of billing itself by borrowing the US\$ needed and then repaying the US\$ loan when the billed amount is actually received. In Table 3 it is assumed that 24 points is the gain on account of hedging because of the fact that rupee interest rates are higher than US\$ interest rates.

<sup>2</sup> Through the purchase of a Put Option on the US\$ at US\$ 1 = Rs. 46.7624 at a price of Rs. 0.30 million per US\$ million, i.e., a total payment of Rs. 18.00 million.