CASE 1

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Question 1. Suppose that on July 26, 2004 Perry Capital purchased 10 million shares of King stock at prices averaging $12.40 and sold short 9 million shares of Mylan at average price of $15.90. If Mylan shareholders approve the merger, will Perry make $19.1 million from this trade?

SOLUTION:

The cash flow that will be generated due to King's stock if Perry buys 10 million shares at $12.4 will be : (10 mil * $-12.4) which is equal to (-$124) million

The cash flow that will be generated due to shorting of 9 million shares of Mylan at an average price of $15.9 will be: (9mil * 15.9) which is equal to $143.1 million.

According to the terms of the contract, if the merger takes place, then 0.9 shares of Mylan will be exchanged for every share of King's.

After merger, the number of shares that Mylan holds will be (0.9*10 mil) which is equal to 9 million due to conversion of King's stock.

So, if the merger goes through, then assuming that there are no transaction costs or brokerage fees, the total cash flow from the trade will be ($ 143.1mil - $ 124mil) which is equal to $ 19.1 million.

Therefore, **YES**, Perry Capital will make $19.1 million from the trade.

Question 2. Suppose that, in addition to the position taken above, on September 20, 2004 Perry bought 27 million shares of Mylan at a price of $19 and sold 27 million shares forward (to Goldman Sachs) for delivery February 28, 2005, at forward price of $18.70. Assume the riskless rate is 2% and there were no Mylan dividends payable before the settlement date. Is this an arbitrage opportunity for Goldman Sachs? Why or why not?

SOLUTION:

This is an instance of cash and carry arbitrage which is a combination of a long position in an asset such as a stock or commodity, and a short position in the underlying futures. It is an opportunity for making riskless profit from a trading strategy.

Let us assume that the Goldman Sachs executes the following trades:

a. It shorts 27 million shares of Mylan in the spot market on 20 September 2004
b. It takes a long position in government bonds (or riskless bank deposits) from the proceeds of the above trade.
c. It enters into the forward shares contract with Perry Capital.

The resulting cash flows from the above strategy is

Assuming September 20, 2004 as time t_0

The cash flow generated from shorting Mylan shares in the spot market= number of shares * Spot Price = (27 mil * $19) = $513 million

The cash flow generated from buying government bonds is (- $513 million)

Total cash flow at time t_0 = ($513mil) - ($513 mil) = $0

Assuming February 28, 2005 as time t_1,

$t_1 - t_0 = 161/365 = 0.441$years

Cash flow from liquidating the bond position assuming risk free rate 2% is ($513 mil * $e^{0.02*0.441}$) which is $ 517.29 mil (We have assumed that the risk-free rate of 2% is a continuously compounded interest rate)

Cash flow from the settlement of the share forward contract

Cash flow from the settlement of the share forward contract with Perry Capital = -$18.7 * 27 mil = -$504.9 mil

Total cash flow at time t_1 from both trades: $ 517.29 mil - $ 504.9 mil = $12.39 million.

To eliminate the arbitrage opportunity the forward price should have been:

$517.29 mil / 27 mil shares = $19.16 per share./

Thus, we see that without investing any capital Goldman Sachs can make a profit of $12.39 million if it enters into the 5-month shares forward contract of $18.37 per share with Perry Capital and executes the above mentioned strategy while we make the following assumptions:

- There are no transaction costs involved (ignoring the bid/ask spreads).
- Price is taken as mentioned.
- Goldman Sachs is a huge firm and has a huge brokerage division and hence there are no costs involved in closing the short position on the execution date of the forward contract.

Therefore there is an arbitrage opportunity for Goldman Sachs.

Question 3. Following Perry's forward sale and spot purchase of Mylan stock in September, they controlled voting interest in approximately 10% of Mylan's shares. (They could use 9 million of the purchased shares to close out their original short position. But they could also keep both long and short positions in separate accounts in order to keep all 27 million votes.) What are their economic incentives at this point for influencing the actions of Mylan management? What is the significance of the legal opinion that "a shareholder has no fiduciary duty to other shareholders"?

Solution:
Perry's positions were as the following:

- 10 million shares at $12.4/share long position in King
- 9 million shares at $15.9/share short position in Mylan
- 27 million shares at $19/share long position in Mylan
- a forward conctract to deliver 27 million shares of Mylan at $18.7/share
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Suppose that Perry's successfully influenced the actions of Mylan management and got the merger go through, their 10 million shares of King would become 9 million shares of Mylan, which are exactly enough to cacel out their short position in Mylan. According to Question 1, Perry's would make $15.9*9 million-$12.4*10 million = $19.1 million from this transaction, assuming no transaction and any other kind of costs. According to Question 2, Perry's cost of longing 27 million shares of Mylan and selling 27 million shares forward contract was $12.65. Therefore, Perry's would make a profit of $19.1 – $12.65 = $6.45 million from the position they had.

Suppose that Perry's failed to influence the action of Mylan management and the merger did not go through, their 10 million shares of King would not be converted to Mylan's stock shares. Therefore they are facing two risks:
1. They would have to buy 9 million share of Mylan on the market to cancel out their short position in Mylan;
2. What the stock price of King would be when Perry's sell their 10 million shares is unknown. Hence there is very likely a loss if the merger did not go through.

This is the economic incentive for Perry's to let the merger go through.

There is no point for Perry's to use 9 million of the purchased Mylan shares to cover their short position, because their 9-million-share short position always cancel out with their 9 out of 27 million share long position, no matter they close them out or not. By closing out their short position, they lose the voting power of those 9 million shares. By keeping both long and short positions in separate accounts they could keep all voting power of their 27 million shares.

The significance of the legal opinion that "a shareholder has no fiduciary duty to other shareholders" is, if this is true, then shareholders are allowed to act in the way that maximize their own interest without considering the interest of other shareholders. In our case, if the merger did go through, then the interest of other shareholders of Mylan would be hurt since the stock price of Mylan would almost definitely go down. Under this circumstance, Perry's was still trying to make the merger go through, so that they could

make profit from their King shares. Their act was not for the best of Mylan's shareholders' interest.

Question 4. Suppose the transaction in Question 2 had been done 5 times bigger – in 138 million shares – so that Perry ended up being in control of 51% of Mylan's shares. They could then take over management and do anything they wanted. If this were possible, would it present an arbitrage opportunity for Perry?

Solution:

1) Assume that Perry does not buy more King's stocks.

Perry's positions were as the following:

- 10 million shares at $12.4/share long position in King
- 9 million shares at $15.9/share short position in Mylan
- 138 million shares at $19/share long position in Mylan
- a forward conctract to deliver 138 million shares of Mylan at $18.7/share

As shown in the Question.1, Perry can get $\$\ 19.1\ \ million$ at the settlement day.
On the other hand, Perry's loss will be,

$$\begin{aligned}\text{Perry's loss} &= 138 \text{ x } 19 \text{ x } e^{0.02*\left(\frac{161}{365}\right)} - 138 \text{ x } 18.7 \qquad (unit:\ million\ dollars)\\ &= 2645.23 - 2580.6\\ &= \$\ 64.63\ \ million\end{aligned}$$

Thus, net loss will be,

$$\begin{aligned}&= 64.63 - 19.1\\ &= \$\ 45.53\ \ million\end{aligned}$$

Thus, there is no more arbitrage opportunity.

2) However, if Perry Capital still can long shares of King stock and short shares of Mylan on September 20, there might be an arbitrage opportunity.
According to the reading, King's shares were traded at around 70% of the Mylan share price in the months following the merger announcement(July 24th). Thus, it can be a valid assumption that Perry still can long shares of Kings at $13.3/share which is 70% the Mylan share price which is $19/share.

Let x be the number of King's shares Perry Capital bought.

On September 20, Perry Capital longs the x million shares of Kings, and short the 0.9 x million shares of Mylan. Total profit that Perry Capital can earn through the arbitrage will be

$$0.9 * x * 19 - x * 13.3 = \$\ 3.8\,x\ \ million$$

If this profit compensates the loss from the above transaction, there will be an arbitrage opportunity for Perry.

$$3.8\,x = 45.53\ million$$

$$x = 11.98\ million$$

Which means, if Perry longs more than 11.98 million shares of Kings stock and shorts equivalent amount of Mylan's, there would be an arbitrage opportunity.