The Centralia Corporation’s Currency Swap

The Centralia Corporation is a U.S. manufacturer of small kitchen electrical appliances. It has decided to construct a wholly owned manufacturing facility in Zaragoza, Spain, to manufacture microwave ovens for sale to the European Union market. The plant is expected to cost €4,920,000, and to take about one year to complete. The plant is to be financed over its economic life of eight years. The borrowing capacity created by this capital expenditure is $1,700,000; the remainder of the plant will be equity financed. Centralia is not well known in the Spanish or international bond market; consequently, it would have to pay 9 percent per annum to borrow euros, whereas the normal borrowing rate in the euro zone for well-known firms of equivalent risk is 7 percent. Centralia could borrow dollars in the United States at a rate of 8 percent.

Study Questions
1. Suppose a Spanish MNC has a mirror-image situation and needs $1,700,000 to finance a capital expenditure of one of its U.S. subsidiaries. It finds that it must pay a 9 percent fixed rate in the United States for dollars, whereas it can borrow euros at 7 percent. The exchange rate has been forecast to be $0.90/€1.00 in one year. Set up a currency swap that will benefit each counter party.

<table>
<thead>
<tr>
<th>Company</th>
<th>$</th>
<th>Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Corporation</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>Spanish Corporation</td>
<td>9%</td>
<td>7%</td>
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</tbody>
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\[\text{QSD (Quality Spread Differential) = 3\%}\]

假設利益分攤 Swap Bank 1%
Centralia Co. 1%
Spanish MNC 1%

\[\text{US Co.} \quad \text{Euro 8\%} \quad \text{US Co.} \quad \text{Euro 7\%} \quad \text{Spanish Co.} \quad \text{Euro 7\%} \]

\[\text{Swap bank make Euro 1\%} \]
US Co. save Euro 1%
Spanish Co. save $1%

\[\therefore \text{ Every party can benefit from this Swap transaction!}\]
2. Suppose that one year after the inception of the currency swap between Centralia and the Spanish MNC, the U.S. dollar fixed rate has fallen from 8 to 6 percent and the euro zone fixed rate for euros has fallen from 7 to 5.5 percent. In both dollars and euros, determine the market value of the swap if the exchange rate is $ 0.9043/C 1.00.

Answer

The market value of the U.S. dollar debt at a new rate of 6% is $1,889,802

\[
1,700,000 \times 0.08 = 136,000
\]

\[
136,000 \times PVIFA_{6\%, 1} + 1,700,000 \times PVIF_{6\%, 0} = 1,889,802
\]

Similarly, the market value of the euro debt at a new rate of 5.5% is Euro 2,049,905

\[
1,700,000 \times 0.09 = Euro 1,888,889
\]

\[
1,888,889 \times 0.07 = 132,222
\]

\[
132,222 \times PVIFA_{5.5\%, 1} + 1,888,889 \times PVIF_{5.5\%, 0} = 2,049,905
\]

From the U.S. MNC counter-party perspective, the swap has a value of $1,889,802 - $36,073 = $ 36,073. The U.S. MNC counter party should be willing to accept $ 36,073 to sell the swap, that is, give up the stream of dollars in return for not having to pay the euro stream. The U.S. MNC is then in a position to refinance the $1,700,000 eight percent debt at the new rate of 6 percent. The U.S. firm might also enter in a new currency swap.

The Spanish counter party should be willing to buy its interest in the currency swap for Euro 2,049,905 - $ 1,889,802 - 0.9043 = Euro 39,890. That is, the Spanish counter party should be willing to pay Euro 39,890 to give up the stream of euro it would receive under the swap agreement in return for not having to pay the dollar stream. The Spanish MNC is then free to refinance the Euro 1, 888,889 7 percent debt at 5.5 percent, and perhaps enter into a new currency swap.

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