Intracorporate Sale
Parent sells to subsidiary
Denominates the sale in €

- Parent sells a good worth Q$ to the subsidiary and denominates the sale in €

The parent’s cash-flow can be valued as:

\[
\left( \frac{SO}{e_0} \right) (1 - t_s) - \left( \frac{SO}{e_0} \right) (1 - t_f) \cdot e_0
\]

After Tax $ value of sale by parent

After Tax $ value of exchange gain or loss

After Tax $ value of Sale assuming no change in exchange rate

There is no tax effect for any exchange adjustment for the subsidiary because the transaction is denominated in €.

Intracorporate Sale
Parent sells to subsidiary
Denominates the sale in €

- The subsidiary’s cash-flow can be valued as:

\[
\left( \frac{SO}{e_0} \right) (1 - t_f) = \left( \frac{SO}{e_0} \right) (1 - t_f) \cdot e_0
\]

\[
\left( \frac{SO}{e_0} \right) (1 - t_s) - \left( \frac{SO}{e_0} \right) (1 - t_f) \cdot e_0
\]

\[
\left( \frac{SO}{e_0} \right) (1 - t_s) - \left( \frac{SO}{e_0} \right) (1 - t_f) \cdot e_0
\]

The subsidiary pays € which has an after tax value of

There is no tax effect for any exchange adjustment for the subsidiary because the transaction is denominated in €.

Numerical Ex1
- Parent Corp buys an input in the US for $900,000
- Parent processes input at cost of $200,000
- Parent sells the good to subsidiary at current equivalent of Q$ = $1,000,000
- Subsidiary further processes good at price 50,000 €
- Subsidiary sells final good for 2,100,000 €
- Spot exchange rate is e0 = 1.4800$/€
- US income tax rate is tus = 28%
- Foreign income tax rate is tf = 40%

\[
\begin{align*}
&\text{After tax proceeds from sale to sub:} \\
&\quad \left( \frac{1,000,000}{1.4800} \right) (1-0.28) = 486,486 € \\
&\text{After tax input cost:} \\
&\quad (-900,000)(1-0.28) = -648,000 \\
&\text{After tax processing cost:} \\
&\quad (-200,000)(1-0.28) = -144,000 \\
&\text{After tax revenue from final sale:} \\
&\quad (2,100,000)(1-0.40)(1-0.40) = 1,260,000 € \\
&\text{After tax processing cost:} \\
&\quad (-50,000)(1-0.40)(1-0.40) = -30,000 € \\
&\text{After tax payment from sub to parent:} \\
&\quad (-1,100,000)(1-0.40)(1-0.40) = -405,400 € \\
&\text{Overall Firm After tax dollar value:} \\
&\quad 1,311,081 € - 792,000
\end{align*}
\]
**Intracorporate Sale**

Parent sells to subsidiary

- Denominates the sale in $

\[
\begin{align*}
\text{Parent Charges subsidiary }& \text{ then parent has} \\
\text{Sub pays} & \text{ since the sale is in $, the € value of the $Q}\text{ will change. If the $ gets stronger this is bad to the Sub and it will get some taxes back.} \\
\text{The $ gets stronger the term is negative so the whole terms is } & (>) \\
\text{The Sub’s position is then} & \left(-\frac{1-e}{e}\right)_{Q}e1 \\
\text{The combined Parent and Subsidiary} & \text{position is then} \\
\end{align*}
\]

**$ Denominated Sale**

Parent to sub

1. After tax proceeds from sale to sub \(\left(1,000,000\left(1-0.28\right)\right) = 720,000\)
2. After tax input cost \(\left(-900,000\left(1-0.28\right)\right) = -648,000\)
3. After tax processing cost \(\left(-200,000\left(1-0.28\right)\right) = -144,000\)
4. After tax revenue from final sale \(\left(1,200,000\left(1-0.40\right)\right) = 1,260,000\)
5. After tax processing cost \(\left(-50,000\left(1-0.40\right)\right) = -30,000\)
6. After tax payment from sub to parent \(\left(-1,100,000\left(1-0.40\right)\right) = -720,000\)
7. Overall Firm After tax dollar value \(959,730e1 - 272,000\)

**Combined Payoff**

\[
\begin{align*}
\text{Overall After Tax Dollar income} & = 959,730e1 - 272,000 \\
\text{Euro Denominated Sale to Sub} & = 1,311,081€e1 - 792,000 \\
\text{Combined Payoff} & = 1.4800$/€ \\
\end{align*}
\]
Intracorporate Sale
Subsidiary sells to Parent
Denominates the sale in $.

<table>
<thead>
<tr>
<th>For the sub we have</th>
<th>-q(t-1)</th>
<th>Exchange Adj</th>
</tr>
</thead>
<tbody>
<tr>
<td>for the parent on</td>
<td>-q(t-1)</td>
<td>(q(t-1))</td>
</tr>
</tbody>
</table>

The combined position for the corporation as a whole is then:

\[
(q(t-1)) - q(t-1) + (q(t-1)) = q(t-1) - q(t-1) + q(t-1)
\]

\[
\text{Tax arbitrage}
\]

Numerical Example 2
Subsidiary buys an input in France for 200,000€
Subsidiary processes input at cost of 50,000€
Subsidiary sells the good to parent at current equivalent of Q$ = $450,000
Parent corp further processes good at price $10,000
Parent sells final good for $600,000
Spot exchange rate is e0 = 1.4800$/€
US income tax rate is tus = 28%
Foreign income tax rate is tf = 40%

Pay-off diagram
Sub sells to Parent in $.

\[
\text{Dollar Denominated Sale to parent}
\]

\[
\text{Dollar Value} = 190,800 - 28,378€\text{e1} = \text{after tax dollar value}
\]

\[
\text{Dollar Denominated Sale to parent}
\]

\[
\text{Dollar Value} = 190,800 - 28,378€\text{e1} = \text{after tax dollar value}
\]

\[
\text{Net after tax dollar value of € purchase by parent}
\]

\[
\text{After Tax $ value of purchase assuming no change in the exchange rate}
\]

\[
\text{Net after tax dollar value of € purchase by parent}
\]

\[
\text{After Tax $ value of exchange gain or loss}
\]

\[
\text{Net after tax dollar value of € purchase by parent}
\]

\[
\text{After Tax $ value of purchase assuming no change in the exchange rate}
\]

\[
\text{After Tax $ value of exchange gain or loss}
\]

\[
\text{Net after tax dollar value of € purchase by parent}
\]

\[
\text{After Tax $ value of purchase assuming no change in the exchange rate}
\]

\[
\text{Net after tax dollar value of € purchase by parent}
\]

\[
\text{After Tax $ value of purchase assuming no change in the exchange rate}
\]

\[
\text{Net after tax dollar value of € purchase by parent}
\]
Pay-off diagram
Sub sells to Parent in €

$424,800 - 186,487€ = $0

Dollar Value

$424,800

$0

2.2779€/$1

Euro Denominated Sale to parent

Combined Payoff Graph
Sub Sells to Parent

$424,800 - 186,487€ = $0 denominated after tax dollar value

Dollar Value

$424,800

$0

$190,800

6.7235

1.4800€/$1

Euro Denominated Sale to parent

$190,800 - 28,378€ = € $0 denominated after tax dollar value