Rauli Susmel
Dept. of Finance
Univ. of Houston

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Chapter 20 - Short Term Financing

- Typical short-term financing instruments:

1. Bank Debt
2. Short term debt Instrument
    - Commercial Paper/Notes
    - Revolving bank debt (adjustable rate)

- Cost of borrowing = Base Rate + Spread
Base Rate: Prime, LIBOR, T-bill.

• Determination of the Cost of Borrowing

The cost of borrowing is easy to determined the interest rate (i) quoted by a bank. But, when borrowing abroad, borrowers should also consider e_f

For a US MNC, the effective borrowing cost (in USD) has two elements:
- Cost of borrowing = quoted interest rate = i
- But, when borrowing abroad, borrowers should also consider e_f

For a US MNC, the *effective borrowing* cost (in USD):

$$R_{b,FC} \text{ (in USD)} = (1+ i_{FC} \times T/360)(1+ e_{f,t}) - 1$$

As we know, $e_{f,t}$ is unknown and difficult to forecast. Let's assume we know/estimate $E[e_f]$.
Then, $R_{b,FC}$ (in USD) is an expectation, the *expected* effective borrowing cost => $E[R_{b,FC}]$.

MNCs: Evaluation of Borrowing Choices

MNCs can borrow in almost all countries. Q: Where should a MNC borrow? Where it is cheaper. MNCs will compare effective borrowing costs (translated to the domestic currency of the MNC, say USD).

Example: BHP Billiton, Australia's mining giant, can borrow at home or abroad, say China.
Data:
$i_{AUD} = 7\%$
$i_{CNY} = 10\%$
$E[e_{f,t}] = -1\%$ (CNY expected to depreciate 1% against AUD next quarter)
T = 90 day loan (T/360=90/360=1/4)

$R_{b,AUD} = i_{AUD} = 7\% \times 90/360 = .0175$ (or 1.75%)
$E[R_{b,CNY} \text{ (AUD)}] = (1+ i_{CNY} \times 90/360) \times (1+ E[e_{f,t}]) - 1 = (1+.1/4) \times (1-.01) = .01475$ (1.475%)
⇒ BHP should borrow abroad –i.e., in CNY. It faces a lower expected borrowing cost. ¶

MNCs can borrow anywhere. MNCs can also have portfolios of borrowings.
Why? For diversification purposes: It reduces the risk of interest rates increasing in one place (revolving credit).

Example: Petrobras choices: Home (Brazil) or Abroad (single currency or portfolio of currencies)
Data:
$i_{BRL} = 9.1\%$
$i_{NZD} = 9\%$ $\quad E[e_{f,t}] = 2\%$
$i_{JPY} = 2\%$ $\quad E[e_{f,t}] = 6.8\%$
Portfolio: w_{JPY}=.8, w_{NZD}=.2
For simplicity assume T=1 year (=> T/360=1).

Where should Petrobras borrow?
1. Home: $R_{BRL} = 9.1\%$
2. New Zealand: $E[R_{NZD}] = 11.18\%$
3. Japan: $E[R_{JPY}] = 8.936\%$
4. Portfolio: $E[R_{Port}] = .80*(8.936) + .20*(11.18) = 9.3848\%$
$\Rightarrow$ Petrobras should borrow in Japan. ¶

Problem: We have assumed that we know the expected change in S_t -i.e., $E[e_{f,t}]$. But, we have not said anything about the precision of the expectation, that is, we have ignored the FX risk of each currency. In general, we work with a probability distribution. It gives us an idea of risk, since we will see a realization from the distribution, not the expectation.

Example: Now, we introduce probability distributions for e_f.
Data:
$i_{BRL} = 9.1\%$
$i_{NZD} = 9\%$
$i_{JPY} = 2\%$

NZD

$e_{f,t+90}$	Probability	R_{NZD}
.01	.5	(1+.09)*(1.01)-1=10.09%
.03	.5	(1+.09)*(1.03)-1=12.27%

JPY

$e_{f,t+90}$	Probability	R_{JPY}
.02	.4	(1+.02)*(1.02) -1=4.04%
.10	.6	(1+.02)*(1.10)-1=12.2%

Where should Petrobras borrow?
1 Home: $R_{b,BRL} = 9\%$
2. NZ : $E[R_{b,NZD}] = .5*(.1009) + .5*(.1227) = 11.18\%$
3. Japan: $E[R_{b,JPY}] = .4*(.0404) + .6*(.122) = 8.936\%$

NZD$e_{f,t+90}$	JPY$e_{f,t+90}$	Joint Prob(Ind)	Effective borrowing cost (BRL)
.01	.02	.5*.4=.2	.8*(.0404) +.2*(.1009) = .0525
.01	.10	.5*.6=.3	.8*(.1227) +.2*(.1009) = .1178
.03	.02	.5*.4=.2	.8*(.0404) +.2*(.1227) = .0566
.03	.10	.5*.6=.3	.8*(.122) +.2*(.1227) = .1221
			$\Rightarrow E[R_{b,port}] = .09379$

Now, it is likely Petrobras will borrow in Brazil; but not so clear, preferences matter. ¶

Note: We have paid no attention to the variability of interest rates. Variability in borrowing costs was only introduced through the distribution of $e_{f,t}$. But interest rates do change and it may be very important to an MNC. For example, if an MNC selects a revolving debt, it should consider the variability of the rates. In this chapter, we are considering this exercise as a one shot game.

Chapter 21 – Short-term Investing

The usual instruments for short-term investments are:

- Bank deposits & CDs
- Short-term bills/paper/notes

Idea: MNCs with excess cash for a short term period (7 days, 15 days, a month)
MNCs will try to invest in the country that offers the highest return, once exchange rate effects are considered. We are back to the context of the IFE.

Note: This Chapter presents a similar idea to the one in Chapter 20, but, now, we are maximizing a rate of return, instead of minimizing the cost of borrowing.

Alternatives for MNCs: Home, abroad, portfolio
Exactly like in Chapter 20, when investing abroad, MNCs should also consider e_f. Since we do not know e_f, we work with $E[e_{f,t}]$. That is, for a US MNC, the (expected) *effective yield/return* (in USD):

$$E[R^{USD}_{FC}] = (1+ R_{FC} \times T/360)\,(1 + E[e_{f,t}]) - 1 \qquad \text{(yield in DC=USD).}$$

Example: IBM can invest at home, the U.K., and Mexico.
Data:
$R_{USD} = 6\%$
$R_{GBP} = 5\%$ $\quad E[e_{f,t}] = 0.7\%$
$R_{MXP} = 12\%$ $\quad E[e_{f,t}] = -1\%$
T = 1 month $\quad$ =>T/360=1/12.
IBM will translate the foreign return into an effective USD return, R^{USD}_{FC}.

1. Home

$$R_{USD} = .06 \times 30/360 = 0.005 \qquad (0.50\%)$$

2. Abroad

UK: $\quad E[R_{GBP}^{USD}] = (1+.05/12)*(1.007)-1 = .011196 \qquad (1.12\%)$

Mexico: $E[R_{MXP}^{USD}] = (1+.12/12)*(1-.01) - 1 = -.0001$ (-0.01%)

In terms of expected returns, MSFT should invest in the U.K. ¶

Problem: For a more realistic problem, we need to introduce probability distributions for the MXP/USD and GBP/USD.