GradeMiners

Problem Set

by (Name)

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The Date

Problem 1

The Excel file provided information about Occidental Petroleum Corporation (Oxy).

1. **In the Excel file, calculate Altman's Z-score for each of the last five years.**
2. **What does Altman's Z-score suggest regarding Oxy's likelihood of default over the last five years?**

The Altman's Z-score is an indicator which attempts to predict a company's risk of going bankrupt in the next 2 years. Using this measure, companies having a score of between 0 and 1.8 are usually in the distress zone, while those between 1.8 and 3 are usually in the grey zone. Those above 3.0 are usually fiscally healthy.

In 2018, the z-score value for the selected firm was 3.68 which declined to 1.50 in 2019 and -0.02 in 2020. The score, thereafter, improved to 1.52 in 2021 and stood at 3.04 in 2022. Generally, there is a significant variation during the observation period. Whereas the company started the observation period in the green zone, the 2019 score indicated a tendency towards distress which crystalized in 2020. While it is unclear why the company may have approached distress in 2019, the COVID-19 pandemic may have contributed to its distress levels in 2020. The chance of default was highest in these years and remained in the red in 2019 and 2021. However, the company regained low levels of default in the final observation year, demonstrating its rebound from the effects of the pandemic. At the end of the observation, it could be argued that the firm had very low likelihood of default in the subsequent two years.

Problem 2

A Saudi company has borrowed SAR 50 million from Bank A at the Saudi Arabian Interbank Offered Rate (SAIBOR) + 200 basis points (2%). It is concerned about an increase in interest rates and wants to hedge with an interest rate swap. Bank B has quoted the following:

- Notional Principal: SAR 50 million
- Reference rate: SIBOR
- Swap rate: 6.90%

- Quarterly exchange on a net basis

Who of the company and Bank B would make the fixed rate payment? The floating rate payment?

The company is the fixed rate payer while the bank B becomes the floating rate payer.

2. **In the Excel file, calculate the cash flows associated with the loan and with the interest rate swap as well as the total cash flow for the quarter for different levels of SAIBOR between 6% and 8%.**

Problem 3

A Saudi company has bid for an export order to a customer in the U.K. That order would generate a cash flow of £5 million in three months.

Currently, the spot rate is SAR4.70/£ and the three-month forward rate is SAR4.68/£.

1. **What kind of foreign exchange (FX) exposure it it? Translation, transaction, or economic exposure?**

This is considered transaction exposure because there is a future cashflow in another currency, that is the GBP.

2. **Is the £ expected to appreciate or to depreciate relative to the SAR over the next three months?**

The forward rate is lower than the spot rate. Thus, the £ is expected to depreciate.

3. **What is the forward discount or premium? Express it on an annual basis.**

Forward Premium = $(4.68-4.70)/4.70 \times 12/3 = -1.70\%$

The company's CFO wants to hedge this FX exposure, and he has asked you to help him determine whether it should be with a forward or with an option, considering that the company faces two sources of uncertainty:

- The uncertainty related to the export order, which it may or may not receive
- The uncertainty related to the exchange rate between the SAR and the £ in three months

Forward

4. **If the company hedges with a forward, what would happen now? Specifically:**
- **What would the position be?**
- **What would the exchange rate on the forward be?**
- **Would there be a cash flow?**

Position	Buy £ forward
Exchange rate	SAR4.68/£.
Cash Flow	No

5. **If the company hedges with a forward, what would happen in three months? Specifically, explain what the company would do and what the cash flow in SAR would be in the four following scenarios.**

	The spot rate in three months is SAR4.66/£	The spot rate in three months is SAR4.70/£
The company receives the export order	Converts the 5 million to SAR 5 million * (4.68) =23,400,000	Converts the 5 million to SAR 5 million * (4.68) =23,400,000
The company does not receive the export order	Results in a loss of £5 million × (SAR4.66/£ - SAR4.68/£)	Results in a loss of Loss = £5 million × (SAR4.66/£ - SAR4.68/£)

(*) In this cell, calculate the cash flow in SAR in three months if the company receives the export order and if the spot rate in three months is SAR4.66/£.

Option

6. **If the company hedges with an option, what would happen now? Specifically:**
- **What would the position be?**
- **What would the exchange rate on the option be?**
- **Would there be a cash flow?**

Position	Buy a call option on £
Exchange rate	SAR4.68/£
Cash Flow	Yes

7. **If the company hedges with a forward, what would happen in three months? Specifically, explain what the company would do and what the cash flow in SAR would be in the four following scenarios.**

	The spot rate in three months is SAR4.66/£	The spot rate in three months is SAR4.70/£
The company receives the export order	Company exercises if strike price is greater than SAR4.68/£	Company exercises if strike price is greater than SAR4.68/£
The company does not receive the export order	Cash flow limited to the option premium paid	Cash flow limited to the option premium paid

8. **What is the major advantage of using an option compared to a forward to hedge the FX exposure related to this export order?**

The key advantage of using an option rather than a forward is the flexibility that the option creates. The owner has a right but no obligation to exercise it. Should the GBP appreciate, the company can let the option expire and benefit from the favorable spot option. However, a forward is a contract which creates an obligation on the parties to exchange currencies at the established rate.