

Currency Risk and Money Market Hedge

Halil D. Kaya

Abstract

This case deals with currency risk. It teaches students about the risk itself and also about how to eliminate or reduce the risk. They will devise a hedge strategy that would eliminate currency risk. This is a hands-on experience for students who want to learn about international finance, exchange rates, exchange rate risk, and methods to reduce or eliminate exchange rate risk.

Keywords: currency risk, forex risk, foreign exchange risk, exchange rate risk, hedge, hedging, money market hedge

JEL classifications: G15, G23, G31

Introduction

Mary Geller is working for an import company. Her company generally works with European firms. They have placed an order with an Italian firm for €10,000,000 worth of textile products. The payment (in euro) is due in six months.

Mary's boss is worried about the dollar/euro exchange rate. He has told Mary that they don't have enough funds to buy those euros today (so they cannot just buy the euros today and sit on them). He has suggested that they would need to figure out a way to hedge this currency risk. He gave Mary one week to figure out how to hedge this risk. Mary and her colleague Linda are starting to work on this task.

"Linda, what should we do first?" Mary asked. "I mean, after contacting our banks and getting all of the information on rates. Should we focus on derivatives or should we see how a money market hedge would work first?"

"Mary, we can look at so many different things for this. We can use currency options or futures. We can look at the forward rates if we want to go with a forward market hedge. Or, as you are suggesting, we can look into a possible money market hedge. I think, as always, we need to look into all of these options and then decide which one would work for us the best. What do you think?"

"I agree. As we always do, we need to check everything. Then, we can choose the best option for us. What do you think? Should we start with the money market hedge first?"

"Yes, let's start with that one. First, let's contact our banks to see their rates. Then, we can design the hedge"

Mary responds "O.K. Then, let's call them first."

Linda adds "Yeah. But, don't forget that we have only a week to work on all of these alternatives. Kind of a stretch!"

"Yeah, I know" Mary responds. "But, I think we can do it. Let's start working on this then!"

Currency Risk

“Currency risk (i.e. Exchange Rate Risk) is the possibility that currency depreciation will negatively affect the value of one's assets, investments, and their related interest and dividend payment streams, especially those securities denominated in foreign currency. Corporations with operations in overseas markets are also exposed to currency risk since their foreign financial results must be consolidated into the company's home currency. Corporate treasurers and investment managers, particularly with larger multi-national firms where the risk is material, attempt to manage this risk with various hedging techniques where appropriate.” (www.forextraders.com)

Investopedia.com explains the FX risk as follows:

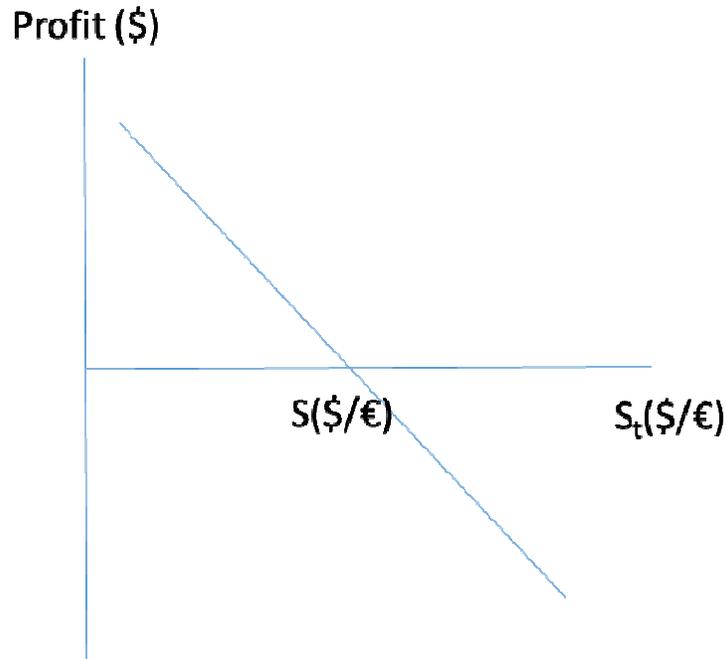
“Foreign exchange risk - also called FX risk, currency risk, or exchange rate risk - is the financial risk of an investment's value changing due to the changes in currency exchange rates. This also refers to the risk an investor faces when he needs to close out a long or short position in a foreign currency at a loss, due to an adverse movement in exchange rates.

Foreign exchange risk typically affects businesses that export and/or import their products, services and supplies. It also affects investors making international investments. For example, if money must be converted to another currency to make a certain investment, then any changes in the currency exchange rate will cause that investment's value to either decrease or increase when the investment is sold and converted back into the original currency.

A firm is exposed to foreign exchange risks if it has receivables and payables whose values are directly affected by currency exchange rates. Contracts between two different firms with different domestic currencies set contracts with specific rules. This contract provides exact prices for services and exact delivery dates. However, this contract faces the risk of exchange rates between the involved currencies changing before the services are delivered or before the transaction is settled.”

Let's say a firm owes some foreign currency to another firm. Instead of buying the foreign currency and sitting on it right now (i.e. buying it now and putting it in a bank account), let's say the firm wants to buy the foreign currency when the time comes and then make the payment (due to possible reasons like the firm not having enough dollars to buy the foreign currency now). If that foreign currency is lower against the firm's home currency when the time comes, that would be good news for the firm. The money paid would be worth less in the firm's home currency when the firm buys the foreign currency. In other words, the firm would have to pay fewer dollars to buy the foreign currency, which is good.

On the other hand, if that foreign currency is higher against the firm's home currency when the payment is due, that would be bad news for the firm. The firm would have to spend more dollars to buy the foreign currency, which is bad. The profit graph for a U.S. firm that has a payable in euro is shown below:



Where the horizontal axis shows the value of the euro at time t (i.e. payable is due at time t) and the vertical axis shows the profit/loss for the firm in U.S. dollars. If the euro is higher at that time compared to its current value, then the firm would be worse off in dollars (i.e. loss in dollars), because when the firm buys those euros, it would have to pay more dollars.

Therefore, on the right-hand side of the graph where the euro is higher, the firm is having a loss in dollars. Its payment is fixed in euros but since the exchange rate is less favorable, the firm will have to pay more dollars.

On the other hand, if the euro is lower at that time compared to its current value, then the firm would be better off in dollars (i.e. profit in dollars), because when the firm buys those euros, it would have to pay fewer dollars. Therefore, on the left-hand side of the graph where the euro is lower, the firm is making a profit in dollars. Its payment is fixed in euros but since the exchange rate is more favorable, the firm will have to pay fewer dollars.

The right-hand side of this graph is where the firm is worried about. If euro goes up before the payment is due, then the firm will lose U.S. dollars. Therefore, it would consider some strategies that would eliminate this loss if the euro goes up.

Money Market Hedge

Naturally, the firm that is expecting to pay foreign currency in the future would be worried about that currency to go higher in the future. To eliminate this risk and to convert this FX payable into a payable in its home currency, the firm might take a precaution. There are different things that the firm could do: It could use currency futures contracts, a forward contract, currency options contracts, or it could design a money market hedge.

A money market hedge would work as follows:

First, the firm would borrow some U.S. dollars from its bank. Then, it would convert these dollars into euros at the current rate (i.e. spot rate). Then, it would deposit those euros into a

bank account at a certain interest rate. When the time comes, the firm will have some euros in its bank account. It will transfer these euros to the other firm's account. So, that way, the firm will have made its payment. But, the firm's actual payment would be in its home currency. The firm's actual payment would be to its bank. It would pay the principal of the loan that it initially borrowed plus the interest on the loan. In the end, the firm's actual payment would be in dollars, not in euros. The euros in the bank account would just be transferred to the other firm's account, but the actual payment by the firm would be made to its bank in its home currency, which is U.S. dollars for this U.S. firm.

By organizing this hedge, the firm actually converts its euro payment into a dollar payment. Therefore, any increase in the value of the euro before the payment is due will not affect the firm. By doing this "money market hedge", the firm actually fixes its payment in its own currency, which is U.S. dollars.

The Decision

Mary's firm is an importer of textile products. They have placed an order with an Italian firm for €10,000,000 worth of products. Payment (in euro) is due in 6 months. They want to use a money market hedge to redenominate this six-month payable into a dollar-denominated payable with a six-month maturity. Below are the rates that their bank has provided them with:

	<u>In \$</u>	<u>Per \$</u>
€	1.1120	0.8993
3 months	1.1080	0.9025
6 months	1.1090	0.9017
9 months	1.1060	0.9042
12 months	1.1050	0.9050

The first row shows the spot rate between the euro and the dollar. The following rows show the forward rates between the two currencies for 3-month, 6-month, 9-month, and 12-month maturities. The 6-month CD rates for the \$ and the € are 2% and 1% respectively (these are not annual rates; these are semiannual rates. Depositors earn "net" 2% for their dollar deposits in 6 months, and "net" 1% for their euro deposits in 6 months. A firm that deposits \$1,000 for 6 months will have \$1,020 after 6 months).

1. What are the rates shown under "In \$"? What are the rates shown under "Per \$"? Is there a relation between these columns?
2. Why is Mary worrying? Is she worried about euro going down or up?
3. What is the purpose of a money market hedge? Is it to make a profit?
4. Can Mary achieve the same objective in other ways (i.e. other than a money market hedge)?
5. To achieve this objective, instead of doing a money market hedge, can Mary use forward contracts? Explain.
6. To achieve this objective, instead of doing a money market hedge, can Mary use futures contracts? Explain.
7. To achieve this objective, instead of doing a money market hedge, can Mary use options contracts?
8. In order to do a money market hedge here, which currency should she borrow?
9. How much should she borrow?

10. Explain the steps in this money market hedge. Show all of the numbers in each step.
11. 6 months later, what will be her company's payment? Will the actual payment be in euros or in dollars?
12. If euro goes up over that six-month period, how will Mary's firm be affected? How will their payment affected?

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Author

Halil D. Kaya

Associate Professor of Finance, Department of Accounting and Finance, College of Business and Technology, Northeastern State University, Broken Arrow, USA, kaya@nsuok.edu